UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

Managing Resources in Highly Uncertain Environments

-exploring a company's resource management process

Kadri Hutchins and Johanna Wikstrand

Graduate School

Master of Science in International Business and Trade
Master Degree Project No. 2011:3
Supervisor: Roger Schweizer

Abstract

One of the most debated triggers for change in a business is technology, and the continuous new development of technologies plays a critical role for the management of a company's resources. Companies increasingly experience that their industries drastically are changing due to the constant emergence of new technologies and innovations. Technological change also brings with it a high degree of uncertainty and makes it difficult, if not impossible, for companies to predict what lies ahead and how they should act and manage their resources. Therefore, this thesis highlights the importance of resource management under a high degree of uncertainty. Consequently, the research question is to study *how resources are managed in highly uncertain environments.* To answer the research questions a conceptual framework was formulated. These theories were empirically studied in a highly uncertain environment by examining a company that experienced radical changes in their industry in terms of technological innovations.

The analysis of the company's resource management and theoretical findings resulted in the development of a model entitled: *The Effectuative Resource Management Process.* This model describes how resources are managed in highly uncertain environments in order to regain, maintain or create competitive advantage.

Keywords: Resource Management, Strategy, Causation, Effectuation, Uncertainty, Unpredictability, Competitive Advantage, The Effectuative Resource Management Process.

Acknowledgement

We would like to take the opportunity to express our gratitude to the many people that have made this study possible by their support, encouragement and involvement throughout the process of our master thesis.

First we would like to thank our supervisor Professor Roger Schweizer from the School of Business, Economics and Law at Gothenburg University, for his encouragement, guidance and patience throughout the process. Without your support we would not have been able to accomplish the research. We would like to extend our special thanks to our case company and our supervisor from the company, Hans Ericsson, for all help, support and involvement in our study. Thank you for organizing interviews and company visits. We would further like to thank all our interviewees for your time and showed interest. Your insights and knowledge were of great help in our study.

Additionally we would like to thank our fellow students for reading and critically discussing our study and thereby improving the quality of our thesis. Finally we would like to thank our friends and families. Thank you for all the love, support and encouragement throughout our studies. Without you we would not be here today.

Thank You!

Gothenburg May 2011

……………………………….. ………………………………..

Kadri Hutchins Johanna Wikstrand

Table of Contents

List of Exhibits

1. Introduction

"If I can predict the future, I can control it.

If I can control the future, I do not need to predict it".

(Sarasvathy 2001; Wiltbank et al. 2006)

1.1 Problem background

There are several dimensions of change, which can be altered by the speed, direction and effect of change (Dawson, 2003). In the Change Management literature there are numerous theories to change, for example; radical, incremental, strategic, permanent, revolutionary and disruptive change (Bower & Christensen, 1995; Burnes, 2009; March, 1991; Shani & Stjernberg, 1995; Stjernberg & Philips, 1993). The need for companies to change can be triggered by different types of internal and external events. However, one of the most debated triggers is technology, since there is a consistent pattern of failure of leading companies trying to stay on top of their industries when technologies change (Bower & Christensen, 1995). Further, new innovations can create or even destroy existing markets. For example mobile telephony, a disruptive technology, created a huge market but more or less destroyed the established technology of wire line telephony (Christensen, 2003).

The continuous new development of technologies plays a critical role for the management of a company's resources (Nicholls-Nixon & Woo, 2003). Earlier, innovation cycles were quite long and the drivers for innovations were hardware and physical capital. Today, the pace of technological change has accelerated, partly due to the speed at which information is being spread. Important inputs for innovation have been transformed into software and knowledge, which has enabled entrepreneurs to easier and faster convert their ideas into up and running businesses (Hill & Jones, 2008). Bower and Christensen (1995) differentiate between two different types of technological innovations. *Sustaining technologies* refer to incremental improvements to an already established technology. A *disruptive technology* describes a new technology that unexpectedly displaces an established technology (Christensen, 2003). Dicken (2007) identifies a similar phenomenon and refers to it as various "types of technological changes”. One of them is ”the changes of technology systems” which could be compared to disruptive technologies (ibid). He explains it as a change that has impacts on several parts of the economy and could also create new economic sectors (ibid).

Increasingly, companies experience that their industries are drastically changing due to the constant emergence of new technologies and innovations. Hill and Jones (2008) describe that the rapid technological change “*can make established products obsolete overnight and simultaneously create a host of new product possibilities*” (Hill & Jones, 2008: 66). This phenomenon is expected to accelerate in the future and cause serious effects on established companies and industries (Yang, Wee, Liu, & Fong, 2010). This development further puts pressure on companies to affirm the ability to continually update their technological know-how and capabilities in order to survive the competition (Nicholls-Nixon & Woo, 2003).

Technological change brings with it a high degree of uncertainty, which can be defined by a future that is extremely hard to predict and control (Wiltbank, Dew, Read, & Sarasvathy, 2006). Thus, high uncertainty makes it very difficult, if not impossible, for companies to predict what lies ahead and how companies should act and manage their resources in this type of reality becomes important (ibid). Many established companies have failed to embrace new technologies that dramatically change the environment the company is operating in. For example, Digital was considered as a well-managed, successful company but somehow they missed the arrival of the desktop computers. Another example is IBM, who dominated the mainframe market but missed by years the emergence of minicomputers. A similar example is Apple’s failure to create the personal computing market, even though Apple is regarded as one of the best managed companies in the world (Christensen, 2003). According to Christensen (2003) the explanation for why well-managed, successful companies fail to capture disruptive technologies lies in the way decisions are made. Thus, how resources are handled in highly uncertain environments that are impossible to predict, is perceived as essential to strategic management. Companies are faced with challenges of new competitors and new customers with new rules and needs (Kim & Mauborgne, 2000; Stringer, 2000). Theory on how managers and companies should handle their resources in this type of reality is almost non-existent (Dew et al., 2009; Wiltbank et al., 2006). However, Christensen and Overdorf (2000: 68) argue that “*it is not that managers cannot see disruptive change coming, nor do they lack resources to confront them”*. Instead, “*what managers lack is a habit of thinking about their organization as capabilities”* (Christensen & Overdorf, 2000: 68).

High uncertainty makes it difficult for managers to make strategic plans and take decisions, since there is no clear picture of the future (Sirmon, Hitt, & Ireland, 2007). Over the next several years, it will become vital for managers to control the management of their company's resources in highly uncertain environments. To battle these changes, companies need new strategies and techniques to stay on top of their industries. This need for new views and methods can also be witnessed in the literature on strategic management, where there has been a development from static strategies such as the Resource-Based-View towards more dynamical models such as Resource Management (Grant, 1991; Sirmon et al., 2007).

1.2 Theoretical background

Strategic management research has a long history of using the Resource-Based-View (RBV) of the company to explain that a company's resources drive value creation through their competitive advantage (Barney 1991; Barney, Wright & Ketchen, 2001). However, during the recent decade scholars have questioned the static outlook of the RBV and lack of external perspectives and managerial involvement (Sirmon, et al., 2007). A common criticism to the RBV is that it says very little regarding the vital questions of how resources can develop and change over time (Sirmon et al., 2007; Sirmon & Hitt, 2003). Some scholars argue that merely possessing sustainable resources does not guarantee value creation or competitive advantage (Barney & Arikan 2001; Priem & Butler, 2001). Many scholars argue that to create value, companies need to create dynamic capabilities through accumulating, combining and exploring new resources to match the external environment (Ambrosini, Bowman & Collier, 2009; Easterby-Smith, Lyles & Peteraf, 2009; Eisenhardt & Martin, 2000; Teece, Piasano & Shuen, 1997). Others have disputed that the RBV of strategy lacks details and is therefore difficult for companies to implement. A more comprehensive framework is required if it is to be useful to companies (Priem & Butler, 2001). Sirmon et al. (2007) and Sirmon & Hitt (2003) takes the RBV a step further and state that the RBV requires an expansion from focusing on the characteristics of resources only, to explore how managers manage their resources as a process.

Therefore, Sirmon et al. (2007) developed a framework for Resource Management, which highlights that resources are necessary, but insufficient to achieve competitive advantage. Resources must also be managed effectively in order to compete in today's dynamic markets (Griffith & Harvey, 2001; Sirmon & Hitt, 2003). Hence, managers must continuously update their resources through accumulating, combining and exploiting resources to sustain their competitive advantage (Sirmon & Hitt, 2003; Teece et al., 1997).

1.2.1 Resource Management under high uncertainty

The above described framework was developed and studied in a different context than the one described in the beginning of this chapter. The context that Sirmon et al.'s. (2007) framework was developed in emphasizes *positioning* the company for the future through analyzing the external attributes of their industries, such as incremental changes in customer demands, offerings by competitors, or minor changes in technologies or laws (Wiltbank et al., 2006). Thereafter, managers make strategic decisions either according to the *planning approach*, which emphasizes analyzing and organizing resources, or through the *adaptive approach*, which focuses on centralizing and streamlining resources in order to quickly adapt to changes (Ansoff, 1979; Eisenhardt, 1989; McGrath, 1999; Teece et al., 1997; Wiltbank et al., 2006). Thus, this context is characterized by the interplay between companies and their environment through planning and adapting (Wiltbank et al., 2006). Consequently, the *positioning context* is based on the presumption that "*if we can predict the future, we can control it*" (Sarasvathy 2001; Wiltbank et al. 2006). However, as described in the problem background, this way of managing resources is not applicable in a context characterized by complexity and unpredictable and radical changes in technology. In this context, managers should focus more on *constructing relationships*, with deliberate efforts to make the environment endogenous, while the context that Sirmon et al.´s (2007) *resource management process* is studied in focuses on predicting and navigating an exogenous environment (Wiltbank et al., 2006). Furthermore, the *constructing context* rests on the logic of *"if we can control the future, we do not need to predict it"* (Sarasvathy 2001; Wiltbank et al. 2006).

In this, rather unexplored context, managers can practice two different views of resource management; the *visionary approach* and the *transformative approach*. The former is more familiar to strategic management, and emphasizes persistent entrepreneurs who impose their will upon the world through clear goals, and thereby shape future markets (Wiltbank et al., 2006). According to Christensen (2003) the visionary approach is not applicable for most companies, since disruptive technologies are an external power that affects companies. Thus, it is only the inventors of the disruptive technology that can apply the visionary approach. The transformative approach focuses on co-creating goals with others, where action often precedes clear goals and predicted outcomes. Therefore this study focuses on the transformative approach.

1.3 Research question

How companies and managers behave and manage their resources in the transformative approach is relatively unknown. The literature on disruptive technologies and management of discontinuous innovations has provided valuable insights on how to organize discontinuous innovation, but there are few examples of how companies deal with this type of change (Bower & Christensen, 1995; March, 1991; Phol, Styhre, & Elmquist, 2009). This study therefore aims to fill this gap by studying the *resource management process* in a rather unexplored context, the *construction context*. The future in the construction context is impossible to predict and instead of prediction, managers assume that by using transformative strategies they can control the future and therefore they do not need to predict it (Wiltbank et al., 2006). Thus, studies on resource management are relevant both to academia and to the business arena. Our contribution is to add knowledge on how to manage resources under high uncertainty. Furthermore, this study provides new insights to the literature field of Resource Management and Strategy. This is enabled through combining existing theories within the field of Strategy and Resource Management, and by studying them in a different context than other scholars previously have done. In order to provide an understanding and answer to this matter, a research question has been formulated and elaborated on.

Research question
How are resources managed in highly uncertain environments in order to regain, maintain or create competitive advantage?

The reason for including three words attached to competitive advantage, regain, maintain or create, is due to that the research question can be studied from several angels regarding which market we look at. For example, a company entering a newly established or yet unknown market, the question is how to *create* competitive advantage in a new market. Another angel is for example, an established company that is trying to *maintain* its competitive advantage through managing their resources to fit a new innovation. And lastly, if a company has lost its position on the market, incorporating new technological innovations can help a company to *regain* their competitive advantage.

As mentioned previously, the process of managing resources in environments that are unpredictable and exposed to disruptive technologies, is a highly relevant topic and a reality for many companies today. The topic also addresses issues that will become even more vital for companies in the future due to the rapid and radical innovations, later referred to in the problem background of this thesis (Yang, Wee, Liu & Fong, 2010).

As will be discussed further in the methodology part of this paper, in order to answer the research question a case study was conducted. The selected case company, Graphic Printers, operates in a conventional branch that recently has been affected by a disruptive technology due to the emergence of new innovations such as iPad, Smart phones etc. This new technology is predicted to have an enormous impact on their business and how the company handles its resources. The case company is in an ongoing process of change which enables research of the case company's resource management before and after the emergence of the disruptive technology. Thus, there is a great opportunity to study the actual transformation that the case company is experiencing.

1.4 Purpose

The objective of this thesis is to study how managers behave when faced with disruptive technologies that radically change a company's environment. The study examines the *resource management process*, evaluates the importance of different activities and describes how this process appears in a highly uncertain environment. Ultimately, this study aims to provide researchers and companies with answers to how managers can achieve control and competitive advantage in an environment that is impossible to predict.

1.5 Delimitation

The context of this thesis can be seen as a process of change from one point to another, from a past to a current state. In order to examine this process, a qualitative case study of a company was carried out. One limitation however, is that the authors focus on 3/4 of the process of change due to the fact that the case company has not yet arrived at the last stage of their process of change. Thus, the focus is to describe the process of change that has already occurred and how the resources have been managed during this time. However, from a theoretical point of view, the authors investigate the whole process of change and present theories regarding a complete resource management process.

1.6 Thesis disposition

The thesis is structured to follow a traditional academic approach and is divided into six chapters. This *introductory* chapter has outlined the background and problematization of the subject of this study and described the purpose and delimitations. The next chapter is *methodology*, where the methodological choices are described and motivated and how the data was collected and analyzed is explained. The third chapter is the *conceptual framework* where the various theories regarding resource management are presented and integrated. The following chapter provides the reader with the *empirical findings* in order to get an understanding of the process of change in an uncertain environment. The chapter is followed by an *analysis* where the empirical findings are confronted with theory and the conceptual framework, which consequently results in a final model. The last chapter is the *conclusion* where the findings and conclusions of the study are presented and the contribution to the academic research within resource management etc. is outlined.

2. Methodology

The purpose of this chapter is to discuss and motivate the chosen methodology used in the research process. First, the choice of research approach and design is discussed, followed by an explanation of how data was collected and analyzed. The chapter subsequently ends with a discussion of validity and reliability of this study.

2.1 Research Approach and Design

The research process was initiated by a meeting with a company that is experiencing radical changes due to major technological breakthroughs in their industry. The meeting led the authors to wonder about how decisions are made and how activities are coordinated in a reality where there are no clear goals and directions of the future.

In order to get a holistic understanding of the many views of organizational management, an extensive literature study was conducted. It became evident in comparison with Sirmon et al. (2007), Wiltbank et al. (2006) and Dew et al. (2009) that there was no theory that completely explained the *management of company resources* when the environment is radically changing. When realizing the existing gap, a conceptual framework was constructed, which consists of theories related to the process of managing resources, strategies under different degrees of uncertainty and the role of effectuation. The purpose of the conceptual framework is to theoretically explore the process of how to manage resources in highly uncertain environments and thereby outline how competitive advantage can be achieved when the environment is impossible to predict. Through exploration of the literature and the empirical material, the authors started to build up operational definitions and priorities which resulted in a final research question: *How are resources managed in highly uncertain environments in order to regain, maintain or create competitive advantage?*

The empirical data was analyzed and confronted with theory by the usage of the conceptual framework. Throughout the process the theoretical framework had to be complemented with additional theories such as transformative strategies and effectuation. In addition some theories were excluded from the framework. Therefore, the interaction between theory and empirics has been a continuous series of activities, which finally resulted in a conclusion.

According to Babbie (2007) the choice of research design is influenced by the characteristics of the research problem. The above described research problem was formulated as a multifaceted process characterized by unknown directions for future resources, capabilities and actors. According to Merriam (1998) a case study is preferable when studying complex processes, when it is unclear which factors affects what. Further, as mentioned above, the research problem of this thesis has previously been studied from a different perspective. Therefore a case study has been chosen to, in a good manner, be able to add valuable information in the existing research gap. This is in line with how Merriam (1998) describes the use of a case study.

When conducting a case study the option falls between a multiple and a single case study approach (Babbie, 2007). The single case study approach is advantageous when the case represents a critical case that examines a formulated theory. Further, a single case can develop and question the existing theory with the ultimate objective being to contribute to a new focus for future studies in a whole new area (Yin, 2003). Further, as the aim of this research was to get a holistic understanding of the *resource management process* in a new context, the authors found it suitable to adapt a *single case study* method for this study. Another aim was to examine decisions and see why they were taken, how they were applied and what the results were, which according to Schramm (1971 in Yin, 2003) is best performed by a single case study. The strength of the single case study is that it gives an opportunity to get a deeper understanding of the problem in contrast to a multiple case study design, which gives an overall view of the phenomenon and fails to capture important details and aspects that can be covered in a deeper investigation (Esaiasson, Gilljam, Oscarsson, & Wängnerud, 2007). The single case study helped the authors to reveal knowledge about a phenomenon that otherwise would not have been accessed (Merriam 1998).

The selection of the case was based on that the company, Graphic Printers, is experiencing a major change that was caused by what Christensen (2003) refers to as disruptive technology, in this case innovations such as the iPad, Smartphones etc. This change has had and will have a tremendous impact on the printing and graphic industry, where Graphic Printers operates in, and the future of the printing and graphic industry is almost impossible to predict. According to Merriam (1998) this type of selection is referred to as *unique sampling*, since it is based on rare attributes and occurrences of the phenomenon of interest. The case company is currently in a process of change towards a future that is unknowable. Current resources and capabilities may be mismatched and obsolete in the new future, however, since it is impossible to predict the outcome of the disruptive technology, it is hard to evaluate which resources are valuable and which ones are not. Thus, this development makes it very interesting to study the process of change the company is going through in order to bring some clarity to the identified research gap.

2.2 Data collection

Both primary and secondary data has been gathered during the research process (Saunders, Lewis, & Thornhilll, 2003). Patton (1990: 244) highlights the advantage of multiple sources of information and claims that "*by using a combination of observations, interviewing, and document analysis, the fieldworker is able to use different data sources to validate and cross-check findings*". However, it should be acknowledged that the main source of information in this research is primary data, gathered through interviews at the case company.

2.2.1 Primary Data

"*Data are nothing more than ordinary bits and pieces of information found in the environment*" (Merriam, 1998: 69). These pieces become important first when they are collected with a purpose to study a particular phenomenon (ibid). One reason why interviews are a preferable data collection tool for qualitative case studies, is that one can access insight to the interviewee's mind and understand their point of view more deeply (Patton, 1990: 168). Thus, it was crucial for the understanding of the research problem to meet and discuss different aspects of the company's resources and capabilities in order to get a realistic view of their management process. In order to get a deeper understanding of a rather invisible *resource management process*, the authors made several visits to the company's production factory. These visits enabled the authors to conduct the analysis of the primary data in a better manner.

2.2.2 The interviewing process

The interview process started with the selection of the interviewees followed by the development of the interview guide. The interview guide was designed before the actual interviews in order to make sure that relevant areas of interest were covered during the interviews. Some of the areas that were covered during the interviews was the ongoing process of change, thoughts regarding the future, earlier changes, challenges and the company's strength and weaknesses. Before the interviews, a document with question areas was sent to the interviewees to prepare them for the discussion and to be able to gain as much relevant information as possible concerning the authors' area of interest. Following this reasoning, the interviews were considered to be between the *highly-structured* and the *unstructured* interviews, described by Merriam (1998). Most of the interviews were based on a person-to-person interaction and both authors were present during the interviews and the questions were open-ended. This enabled the interviewees to develop their own answers, and the interviewers were able to ask follow-up questions (Yin, 2003). Some of the interviews were recorded with a voice recorder in order to access all relevant information to use for analysis and interpretation. Additionally some interviews were carried out using telephone communication, due to the fact that it was impossible to meet face-to-face with some of the interview objects.. The telephone interviews were shorter, contained less information and some interview questions were different from the person-to-person interviews. The company was furthermore very open about sharing information and all interesting interview objects were made available to the authors, which is also in line with how Saunders et al. (2003) describe a preferable interview situation. After the interviews the material was transcribed and later shared with the interview objects for comments and feed-back.

2.2.3 Selection of interviewees

In total 11 interviews were carried out, most of them with different managers at Graphic Printers, but also with employees working directly under the managers. The authors decided on three relevant criteria to base the selection of the interviewees on; the *knowledge* the interviewees had about the ongoing change and the subject of study; the amount of *time* they had worked for Graphic Printers; and the *position* they held in the company. Knowledge about the ongoing change was essential in order to gather relevant information. Time was a relevant factor since the authors sought to collect different perspectives. Interviews with both newcomers and experienced employees were conducted. The position criteria was chosen since it influences and colors the interviewees' stories and answers concerning how they experience the ongoing change. Consequently, the authors wanted to get a holistic view of the complex situation, and therefore the interviews were collected at different levels in the organization such as top management, middle managers and employees (see table 1). Table 1 describes the interviewees' position in the company, year of employment and type of interview. Further, some interviewees were interviewed several times due to that some interview objects had better insight in the companies resource management process and the fact that the authors needed to get some further clarifications from some interview objects. The interview objects names are made-up since it was of importance not to reveal their real names.

Table 1. The characteristics of the interview situation

	Year of employment	Position	Number of interviews	Type of interview
Lauren	2005	Management team	1	In person
Robert	2003	CEO	1	In person
Brian	2010	Employee	1	In person
Steven	1991	Middle manager	1	Telephone
Michael	2000	Middle Manager	2	In person
Ben	2010	Management team	3	In person
Cindy	2007	Middle manager	1	In person
Ashley	2006	Middle manager	1	Telephone

Source: Authors own elaboration

2.2.4 Secondary data

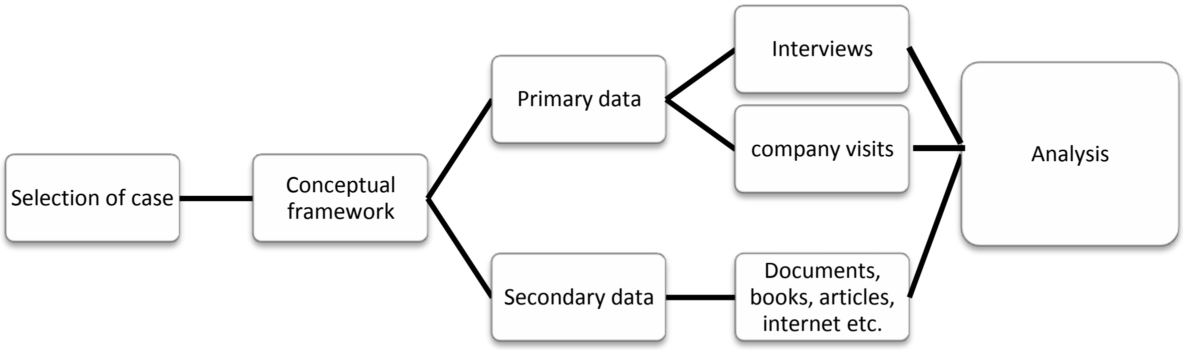
The secondary data was obtained through a variety of reliable sources and was mainly collected through branch magazines, strategy documents, trend rapports, academic books, periodical articles and the internet, i.e. company web site and industry related web pages. These various secondary sources were used in order to gain an understanding of the environment and to be able to create a context for the studied phenomena, but also to get a deeper understanding of the case company and the challenges it faces.

2.3 Data presentation and analysis

The analysis process was initiated by the selection of the case, followed by literature studies. Through the literature study and the discussion with the tutor at the case company the foundation of the conceptual framework started to emerge (see figure 1). The first interviews were carried out early in the research process in parallel with the development of the conceptual framework. Simultaneously, the collected secondary empirical data was processed and compiled to a cohesive text. The primary data was collected and transcribed and sent back to the interviewees in order to verify the information. This material was then analyzed using a coding system, similar to Yin's (2003) discussion techniques pattern matching and logic models. These techniques compare an empirically based pattern with a theoretically expected or predicted pattern. The primary and secondary data was categorized and grouped according to words which represented different activities necessary for the understanding of the research. The specific words were chosen by analyzing the conceptual framework, which can be seen as the foundation of the analysis. The data analysis process can further be characterized by loops of information which symbolize that through analysis the understanding of the research problem increased and thereby new angels and findings emerged which resulted in a revised conceptual framework. The loops of information also contributed to a greater understanding of the case company and the printing and graphic industry which also enhanced the analysis process. Thus, gradually the authors own analytical repertoire was developed.

The data analysis process is illustrated in figure 1, which shows the research process from initiation to the final analysis.

Figure 1. The data analysis process.



Source: Yin, 2003 and Authors own elaboration

2.4 Evaluation of results

This study has been carried out as an interactive process between data collection and analysis, which has made it possible to produce reliable and trustworthy findings. During the interviews careful notes were taken and as mentioned, some of the interviews were recorded in order to absorb as much information as possible. These recordings were listened to several times after the interviews and subsequently transcribed. The notes and transcriptions were read through numerous times and sent back to the interviewee's for feed-back and clarification. The collected data from the various sources was continuously compared and analyzed to find differences and contradictions. All this was done to ensure validity and reliability of the gathered information. Another action taken to assure the reliability of data collection through interviews was the selection of interviewees. They were, as earlier described, carefully selected by relevance to this study. This study was also conducted according to the *triangulation* rationale explained by Yin (2003). The *data triangulation* was considered through the multiple source data collection. A *triangulation among the investigators* was carried out through discussions and seminars etc. Furthermore, *theory triangulation* was done through the literature study where the various scholars were compared. Additionally, a *method triangulation* was carried out and the different methods were compared in order to choose the most suitable methodology for this study. These four types of triangulations are discussed by Patton (1978, in Yin, 2003) and are used to evaluate the quality and validity of the research.

Merriam (1998) further argues that since reality is a mental construction by human beings, the data analysis and interpretations in qualitative studies are likely to be closer to reality than in quantitative studies. This is due the fact that human beings are collecting the data, and they have a direct link to reality through the interviews and observations (ibid). With this reasoning, the authors consider this study to be reliable and the findings trustworthy.

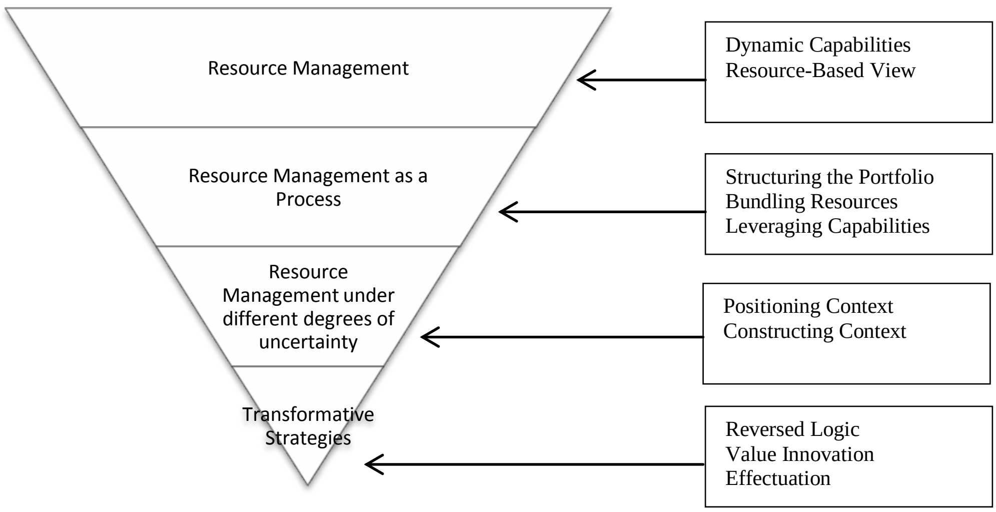
3. Conceptual framework

The purpose of this chapter is to present and discuss relevant theories and concepts that have been applied in the investigation and analysis of this thesis. The reader needs to be aware of that the choice of theories was inspired by the empirics. The conceptual framework will help the reader to gain a deeper understanding of Resource Management. The chapter starts with a broad discussion of the *resource management process* and is followed by a discussion of the *resource management process* in different contexts. Finally, there is a presentation of different strategies that strategic managers can use when faced with a high degree of uncertainty.

3.1 The framework

In order to clarify the connections and developments of the theories presented in this chapter, the authors have chosen to concretize them and created a theoretical framework which illustrates the relevant theories used in the study. The framework can be seen as a reversed triangle which illustrates the theoretical chapter's different areas of importance and in which order they were discovered and added to the conceptual framework. Further, the four boxes demonstrate the relevant theories connected to the different areas.

Figure 2. The process of the conceptual framework



Source: Authors own elaboration

Moreover, this chapter presents a conceptual framework where different theories come together in order to illustrate the authors' view of the research area. The conceptual framework was developed throughout the study and some theories were excluded while others were discovered during the process. The initiating theory was the Resource-Based-View which was later excluded. Thereafter, theories on Resource Management made the authors curious about the process of managing resources (Sirmon et al., 2007). Later, the theories developed by Wiltbank et al. (2006) made the authors reflect upon the fact that the *resource management process* might appear differently in different context and was therefore included in the conceptual framework. As described in the first chapter of this thesis, the authors discovered that there was a gap in the literature covering how resources are managed in highly uncertain environments. Therefore, the authors decided to explore the existing theories in this field, especially Sarasvathy's (2001) model of effectuation. Thus, this development resulted in a conceptual framework that consists of different blocks (see figure 2). The theories described below make up the conceptualization of how to view the *resource management process* in highly uncertain environments. Thus, the *resource management process* developed by Sirmon et al., (2007) and Wiltbank et al., (2006) describing different strategies of resource management under different degree of uncertainty together with Sarasvathy's (2001) model of effectuation have become the pillars of the conceptual framework**.**

3.2 The Resource Management view of Strategy

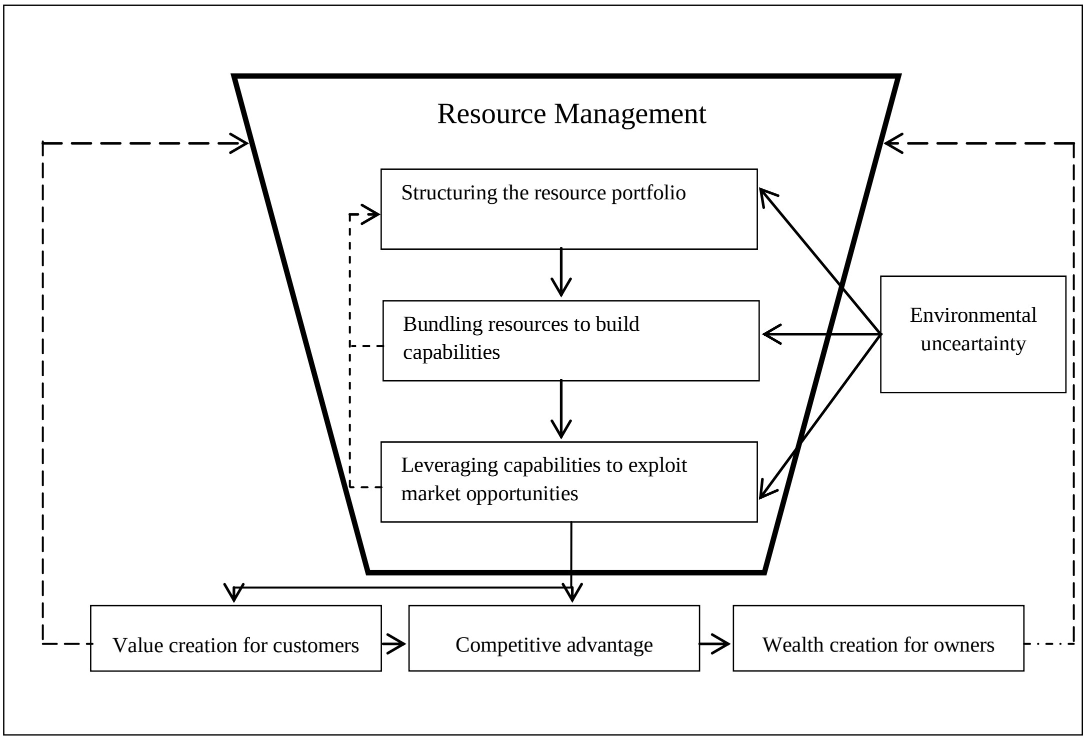
Strategy consists of many processes such as defining a company's position, making trade-offs and shaping a fit among activities (Porter, 1996). All these actives involve the manager's ability to take actions and decisions regarding their resources (ibid). Further, the fundamental question in the field of strategic management is how companies achieve and sustain competitive advantage and why some companies perform better than others. Numerous strategy researchers have confronted this question from several perspectives (Barney, 1991; Hitt & Ireland, 1985; Porter, 1980; Prahalad and Hamel, 1990; Shapiro, 1989; Teece et al., 1997; Wernerfelt, 1984). Among these is the Resource Management Approach which can be seen as an extension of the Resource-Based View (Sirmon et al., 2007; Sirmon & Hitt, 2003).

The literature on Resource Management highlights the importance of managing resources effectively in order to be able to compete in today's dynamic markets (Sirmon & Hitt, 2003). Sirmon et al. (2007) and Sirmon and Hitt (2003) argue that just possessing resources is not enough and does not assure value creation. Rather, a company must accumulate, combine and exploit resources (ibid). Sirmon & Hitt (2009) develop this concept further and examine dynamic managerial capabilities, which emphasize managers' resource related decisions. The researchers want to highlight the importance of managers in strategic decisions and their ability to build, integrate and reconfigure organizational resources. Similarly, Teece et al. (1997) argue that the winners in the global market have been companies that possess dynamic capabilities (i.e. management capability), to effectively renew, coordinate, redeploy and release internal and external resources to match and even create market change to sustain competitive advantage (Eisenhardt & Martin, 2000; Wang & Ahmed 2007).

3.2.1 The Resource Management Process

Resource Management can be referred to as "*a process of structuring the company's resource portfolio, bundling the resources to build capabilities and leveraging those capabilities with the purpose of creating and maintaining value*" (Sirmon, 2007: 273). Resource Management is as important for value creation as the resources per se. In other words, how a company manages its resources separates it from other companies with similar resources (Zott, 2003). The *resource management process* can be perceived as more dynamic than the Resource-Based-View and, as seen in figure 3, the process is affected by several loops of information. For example, one loop of information that affects the companies' *resource management process* is environmental uncertainties such as changes in the industry structure or the probability of external shocks. Another loop of feedback arises from the customers and the owners allowing for resource and capability adaptations (Sirmon et al., 2007). The *resource management process* works on the logic of prediction, what can be predicted can be controlled i.e. causation (Wiltbank et al., 2006). Figure 3 illustrates Sirmon et al.´s (2007) resource management process.

Figure 3. A dynamic Resource Management Process



Source: Sirmon et al., 2007: 276

Sirmon et al. (2007) developed a resource management framework that separates the process into three stages: structuring the resource portfolio, bundling resources and leveraging capabilities. This framework is an extension of Sirmon and Hitt's (2003) previous work on resource management. Other scholars that emphasize the importance of dynamic capabilities argue that the process of managing resources comprise of four main procedures: reconfiguration, leveraging, learning and integration (Ambrosini et al., 2009). However, this report will follow the structure of Sirmon et al. (2007) and Sirmon and Hitt (2003). Thus, the *resource management process* is divided into three stages with several activities involved. These activities are further described below.

3.2.1.1 Structuring the portfolio

Company managers must constantly review their resource portfolio to match the requirements of the external environment (Sirmon & Hitt, 2003). According to Grant (1991), resources can be seen as inputs that enable an organization to carry out its activities and include items of financial, physical, human, technological and organizational resources etc. Thus, examples of resources are; people, equipment, technology, product design, brands, information, cash, and relationships with suppliers, distributors, partners and customers (Christensen, 2003; Stringer, 2000). More recently, Wang and Ahmed (2007: 35) defined resources "*as the foundation of a company and the basis for company capabilities"*.

The resource portfolio is the sum of all resources a company owns and the structuring consists of three activities; acquiring, accumulating and divesting resources (Lei, Hitt & Bettis, 1996; Makadok, 2003; Sirmon & Hitt, 2003; Sirmon et al. 2007). These activities are affected by changes in the environmental context such as shifts in consumer demand, efficiency on factor markets and centralized decision making (Keats & Hitt, 1988).

Acquiring

Acquiring is referred to the activity of purchasing resources from the market place (Barney, 1986; Sirmon & Hitt, 2003). For example, resources obtained from the market can be tangible resources such as equipment or intangible resources such as intellectual capital. One way of gaining new resources is through mergers and acquisitions or strategic alliances (Sirmon, Gove, & Hitt, 2008). However, this is not a preferred option for a company operating in a highly uncertain environment due to high investment costs, changes in the social capital and cultural obstacles (Sirmon et al., 2007).

Accumulating

Accumulating refers to the creation of new resources internally, which is necessary since the market might not provide a company with all its needed resources (Sirmon et al., 2007). Accumulating can require different people or groups in a company to interact differently and at a different pace (Christensen & Overdorf, 2000). Accumulating enables companies to create a pool of resources that competitors cannot imitate easily since it is unique to the company (Sirmon et al., 2007). However, one important aspect of accumulating is learning and if a company wants to develop their intellectual capital, the employees must increase their tacit knowledge. One example of spreading tacit knowledge is to assign managers to work in projects with more experienced managers across different functions in a company (ibid).

Divesting

Divesting resources involves shedding non valuable resources i.e. resources that might reduce a company's value (Sirmon & Hitt, 2003). Examples of resources that might be divested are human capital, non-core businesses, sell specific assets or outsourcing (ibid). The opportunity costs of maintaining and leveraging unnecessary resources can hamper the competitive advantage and reduce a company's ability to be flexible towards acquiring and accumulating more valuable resources (ibid). However, divesting resources can also harm the ability to build capabilities due to unawareness of the resources future value and changes in the social and intellectual capital. Therefore, companies must be careful when divesting so that current and future competitive advantages do not suffer (Sirmon et al., 2007).

3.2.1.2 Bundling resources

The second stage in managing a company's resources is the process of bundling resources to capabilities. This bundling refers to unique combinations of resources allowing the company to adapt and suit different functions together such as marketing, R&D, etc. (Easterby-Smith et al., 2009). Grant (1991: 119) defines capabilities as the "*capacity for a team of resources to perform some task or activity*". Building capabilities involves complex patterns of coordination between people and other resources. This process requires learning through repetition and a capability can be characterized as a routine or a number of interacting routines. Furthermore, there are different types of bundling activities such as stabilizing, enriching and pioneering (Sirmon et al., 2007).

Stabilizing

Stabilizing is referred to as the activity of making minor incremental improvements of existing capabilities. Example of such improvements could be to require employees to attend a number of training hours per year to enhance their knowledge and skills (Sirmon et al., 2007).

Enriching

The second activity is *enriching* which is the procedure of extending current capabilities. Capabilities can be enhanced by learning new skills or by adding complementary resources from the resource portfolio. For example a newly acquired resource or an additional resource that has existed in the portfolio can be integrated to enrich an existing capability (Sirmon et al., 2007).

Pioneering

The third activity, *pioneering*, is referred to as the process of creating new capabilities. This process requires exploratory knowledge and involves integration of completely new resources that were recently acquired from the resource portfolio (Sirmon et al., 2007). The exploratory knowledge refers to creativity and a deep knowledge base that stimulate the creation of new capabilities (March, 1991). The attributes enhance the manager's probability to recognize unique value adding ways of integrating single capabilities. The need for completely new capabilities is larger in highly uncertain environments and also a requirement when exploiting new opportunities in dynamic environments. Therefore, the enriching and pioneering activities are more pronounced under conditions of high environmental uncertainty (Sirmon et al., 2007). Operating under these conditions makes it difficult to predict moves from competitors or developments outside the industry that might create technological discontinuities. Thus the stabilizing activity is more frequently used by companies operating under conditions of low uncertainty (ibid).

3.2.1.3 Leveraging Capabilities

The last stage is the process of applying a company's capabilities to create value for customers and owners. This stage focuses on exploiting market opportunities (Sirmon & Hitt, 2003). It is vital for companies to have effective leveraging strategies since even if a company has created competitive bundles of capabilities the company is unlikely to realize value creation if they are not leveraged effectively in the marketplace. Thus, a company must decide where and how to effectively leverage its capabilities (Miller, 2003). This entails matching capabilities to customer needs and developing new products and new markets to create value. Furthermore, the leveraging process' aim should be to strive towards a fit between the company's internal capabilities and the external environment (Chatzkel, 2002). The process of leveraging involves three sequential activities i.e. mobilizing, coordinating and deploying. The managers must first mobilize their resources before they can be coordinated or deployed (Sirmon et al., 2007). However, the last two activities can occur simultaneously.

Mobilizing

Mobilizing is the activity of recognizing the capabilities required to design capability configurations essential to exploit opportunities in the market and gain competitive advantage (Hamel & Prahalad, 1994). Thus, mobilizing involves the design of the leveraging strategy (ibid). Sirmon et al. (2007) identifies three different leveraging strategies that require specific capability configurations; the resource advantage strategy, the market opportunity strategy and the entrepreneurial strategy. These three leveraging strategies are similar to Wang and Ahmed's (2007) distinctions between different types of capabilities; absorptive capabilities, adaptive capabilities and innovation capabilities.

'The resource advantage strategy' focuses on to leverage capability configurations that produce a distinct skill. This skill provides the company with more value to its customers than

the competitors (Sirmon et al, 2007). Wang and Ahmed (2007) use a similar classification and identify that companies can have an *'absorptive capability'*. This refers to the manager's ability to evaluate and realize valuable outside knowledge, and apply this to own activities. Another leveraging strategy is the *'market opportunity strategy*' that emphasizes investigation of the external environment to recognize the opportunities for which the company has capabilities that can be configured to exploit them (Sirmon et al., 2007). Wang and Ahmed (2007) also discuss market opportunities as a separate strategy and refer to the *'adaptive capability'* of a company. This concerns the company's ability to identify and exploit emerging markets opportunities. Such a strategy is likely to be more effective in dynamic markets than the *'resource advantage strategy'* (Sirmon et al., 2007). The third strategy is the *'entrepreneurial strategy'* which entails developing capability configurations to produce new products or services that require new markets and may replace an existing market (ibid). Wang and Ahmed (2007) distinguish this third strategy as the *'innovative capability'* of a company, the ability to develop new products or markets. This strategy is most likely used by companies operating under conditions of environmental shocks such as discontinues innovations or political catastrophes. However, in highly uncertain environments, companies will use all three leveraging strategies suitable for different times (Sirmon et al., 2007).

Coordinating

The second activity in the process of leveraging, *coordinating*, involves the process of integrating identified (mobilized) capabilities into effective capability configurations (Sirmon et al., 2007). The goal is to integrate capabilities in a way that is hard for competitors to duplicate (Chatzkel, 2002). Thus, effective coordination processes facilitate the development of creative and flexible capability configurations (Sanchez, 1995). In order for the coordination to be effective, a company must diffuse the knowledge about the value of individual capabilities through communication networks. It is critical for coordinating that explicit as well as tacit knowledge is spread throughout the company and that internal network facilitates diffusion and learning (Hitt & Ireland, 2002). Another important aspect is that the technology infrastructure also enables communication. The manager's task is to combine the internal networks and infrastructure to build social capital in order to effectively coordinate capabilities (Sirmon & Hitt, 2003). Some examples of integration mechanisms are cross-functional-teams and routines for rewarding creative ideas to integrate different functions (i.e. R&D, engineering, marketing etc.).

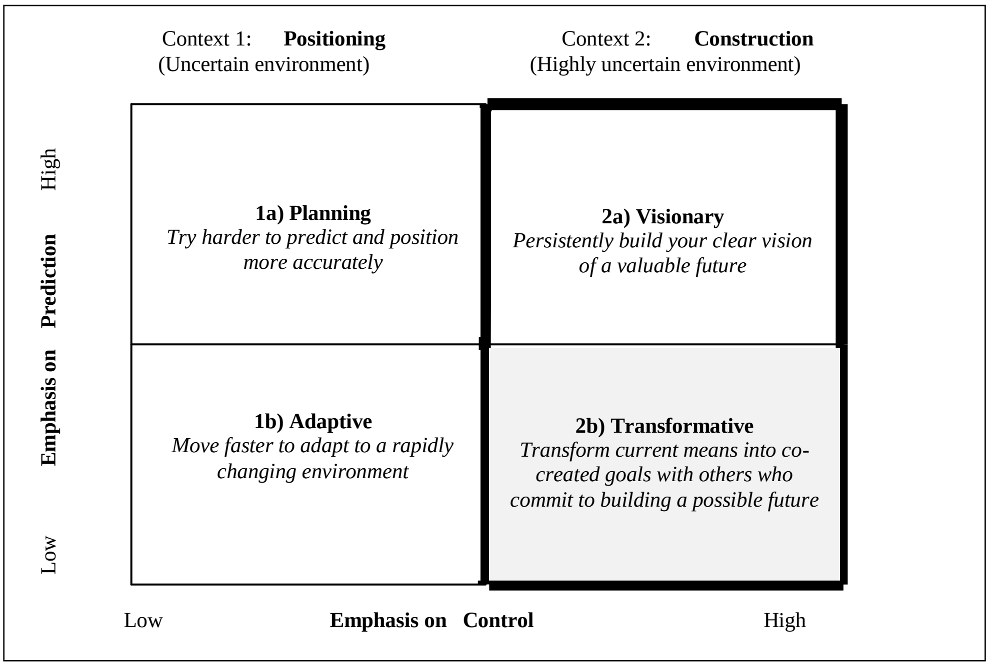
Deploying

The third and final activity in the process of leveraging is *deploying*, the activity that decides in which specific market segments to engage the investments in. The activity entails physically using capability configurations to support the selected leveraging strategy (resource advantage strategy, market opportunity strategy or entrepreneurial strategy). Successful deployment is realized through the ability of the company's capabilities to create value for the customers (Sirmon et al., 2007). The deploying activity relies on the set of explicit and tacit knowledge. In order to be effective the company must coordinate as much as possible into organizational routines and try to diffuse as much tacit knowledge as possible between individuals (ibid).

3.3 Resource Management under different degrees of uncertainty

As mentioned in the introduction chapter, the above-described *resource management process* has previously been developed and studied in a context that is quite different from the context of interest in this thesis. In order to describe various contexts that companies can operate in and provide an understanding of in what reality resource management has been applied in, the authors use a matrix developed by Wiltbank et al. (2006). As seen in figure 4, the matrix discovers different ways of making strategic decisions under different degrees of uncertainty. The matrix consists of two contexts that vary on the level of uncertainty. In turn, the different contexts entail different approaches that vary on the role of prediction and control. Prediction is a central issue in strategy and relies on the presumption that what can be predicted can be controlled (Wiltbank et al., 2006).

Figure 4. Various approaches under different degrees of uncertainty.



Source: Wiltbank et al., 2006: 983

3.3.1 Context 1: The Positioning Context (Uncertain Environments)

Even though this context is not the primary focus of this study, it is presented below in order to give the reader a holistic understanding of the field of resource management. Further, as mentioned in the introduction chapter, the theories in the positioning context are also presented due to the opportunity for the authors to study the case company's transformation during the process or change. Therefore, these theories are needed to analyze the transformation.

The positioning context is the one that Sirmon et al.'s (2007) *resource management process* has been developed in. The context is characterized by companies trying to position themselves for the future by analyzing their external environment and by trying to navigate and predict the exogenous environment. The presumption is that the level of control is low since the environment is hard to predict. The two approaches within this context; planning and adaptive, differ primarily in how they cope with a given uncertainty. Uncertainty in this context is defined by incremental changes in technology, consumer demand and competitors' moves (Christensen, 2003)

3.3.1.1 Approach 1a: Resource Management in a Planning Approach

The planning approach is one of the most studied fields in strategic management research (e.g. Porter, 1980; Ansoff, 1979). The literature suggests that resources should be managed through planning and predicting what lies ahead to minimize the risk of failure (McGrath, 1999). Managers should try to systematically organize and analyze trends, competitors, and financial indicators, and to evaluate alternatives to be able to predict and position themselves better for the future (Ansoff, 1979). To avoid failure it is favorable to have as many options as possible which can predict the future (McGrath, 1999). This is quite similar to Schoemaker's (2002) discussion regarding scenario planning as a strategy. However, this type of strategy has consequences for the management of resources. The scenarios and options need to be evaluated and analyzed, which both requires many resources, and is time-consuming. Therefore, the company needs to make heavy investments in human resources, systems and techniques for the development of scenarios and options (McGrath, 1999: Schoemaker, 2002).

In conclusion, the strategic key is; as uncertainty increases, companies that work hard to analyze and predict more accurately, will outperform those who do not (Wiltbank et al., 2006).

3.3.1.2 Approach 1b: Resource Management in an Adaptive Approach

The adaptive approach also focuses on positioning the organization within an exogenously given environment. However, managers in this approach assume that it is no use trying to predict the future. Instead they focus on learning what to do next by minimizing the use of predictive rationality and instead experimenting and moving quickly to capture new opportunities (Mosakowski, 1997).

In this type of approach resources are streamlined and centralized in order to make fast decisions and adapt to a changing environment (Eisenhardt, 1989; March & Olsen, 1976). Reports and careful analysis of the external environment are seen as obsolete and unnecessary (Bourgeois & Eisenhardt, 1988). Teece et al. (1997) emphasize the importance of dynamic capabilities, which refer to the capacity to renew competences by adapting, integrating and reconfiguring internal and external organizational skills and resources. Thus, of key importance to the management of resources is: timing, innovation and creativeness in order to meet the fast changing environment (Teece et al, 1997). The scholars in this field also emphasize that it is important to shorten the strategic decision process and planning horizon by using fewer alternatives and obtaining inputs from few resources (Wiltbank et al., 2006). Further, the adaptive approach accentuates that resources should be integrated into top management teams. Thus, company performance relies on few persons knowing the enterprise well and can interpreting the information rapidly when major decisions arise (Eisenhardt, 1989).

3.3.2 Context 2: The Constructing Context (Highly Uncertain Environments)

Several scholars address criticism to the positioning context and claim that it is a rather naïve approach and state that the reality is quite different than the one assumed in the positioning context (Christensen, 2003; Rindova & Fombrun, 1999; Sarasvathy, 2001; Tellis & Golder, 2002). The reality in the positioning context is that uncertainties are characterized by *incremental changes* in technology (sustaining technologies) and consumer demand. Christensen (2003) on the other hand argues that for many companies the reality today is lined by *radical changes* and disruptive technologies which puts the *resource management process* under great pressure. Disruptive technologies interrupt the path the industry was incrementally moving towards and high uncertainty arises. This is defined as unexpected, radical changes caused by disruptive technologies that destroy markets and industries. This creates an environment that is lined by ambiguity and unclear goals for the future (Christensen, 1995; Christensen, 2003).

In the constructing environment the techniques, methods and strategies used in the positioning context become obsolete. For example, it is no use utilizing planning techniques since they are costly and time-consuming. Also, trying to match competitors is unnecessary since a renewed resource process will be outdated before it is executed. It is also rather pointless to use the adaptive techniques since centralization and rationalization leads to information asymmetry, which creates confusion and uncertainty among the top managers in knowing what resources are needed and not. In conclusion, the *resource management process* needs to be tested and evaluated in a context more similar to the one perceived by many companies in general, an environment lined by disruptive technologies and high uncertainty (Christensen, 2003; Wiltbank et al., 2006).

The constructing context focuses, in contrast to the positioning context, on making the environment endogenous through relationships. This context emphasizes achieving control in highly uncertain situations and viewing market development in the lens of construction artifacts such as organizations, institutions and stakeholders (Wiltbank et al., 2006). As opposed to an exogenous evolving environment suggested by positioning strategies, constructive approaches assume either the non-existence of key elements of the environment or the organizations ability to affect the evolution of those elements. There are two different approaches within the construction context; the visionary approach and the transformative approach. These two approaches differ in the existence and clarity of goals and the availability and quality of resources (ibid).

3.3.2.1 Approach 2a: Resource Management in a Visionary Approach

The visionary approach is more acquainted to strategic management than the transformative approach and focuses on predicting the future to achieve control (Wiltbank et al., 2006). The visionary approach is characterized by pioneering and entrepreneurial companies that have a strong drive to succeed among their competitors (Hamel & Prahalad 1991). Companies using the visionary approach also tend to be leading their customers rather than following them (ibid). This puts pressure on companies' management of resources since companies need to continuously be innovative and come up with new ideas faster than their competitors (ibid).

The *resource management process* starts by imagination future possibilities (Wiltbank et al., 2006). Thereafter, visionary leaders create a vision of the future based on their experience and knowledge and thereby create new spaces in the environment (Tellis & Golder, 2002). Thus, the future that will exist does so due to managers choosing to create it by following and committing to a clear vision of how the future would be (Wiltbank et al., 2006).

An important resource for companies to attract and acquire is risk-taking managers with a strong personality that can take responsibility and get other people in the organization believe and support their visions (Hamel & Prahald, 1991). Courtney, Kirkland and Viguerie (1997) discuss the decision making for future strategies under high uncertainties and point out that it is common for managers in the visionary approach to lay out a vision of future events and then base their decisions on that. Therefore, managers must have the confidence to make decisions, since they create the future themselves, together with their constituents (Rindova & Fombrun, 1999). It is crucial for companies, using this approach, to invest in common knowledge, beliefs and values in order to be able to communicate a vision effectively (Tellis & Golder, 2002).

Another attribute of the visionary approach is the aim for the mass market rather than a niche market (Tellis and Golder, 2002). This requires resources such as investments in factories, technologies, marketing and communication in order to reach many customers. Hamel and Prahalad (1991) argue that marketing is a key in order to create markets ahead of the competitors.

3.3.2.2 Approach 2b: Resource Management in a Transformative Approach

This thesis' focus is directed more towards the transformative approach as according to Christensen (2003), the visionary approach is not applicable for most companies since disruptive technologies are an external power that affects companies. Thus, it is only the inventors of the disruptive technology that can apply the visionary approach. Additionally, visionary managers tend to have an "over-belief" in their own capabilities which creates uncertainties rather than control (Courtney et al., 1997).

Scholars have recently been attracted to Frank Knight's (1921) work on the relationship between prediction and control. One scholar that has discussed Knight's findings is Wiltbank et al. (2006). Knight's work challenges the presumption of what can be predicted can be controlled and he argues that in highly uncertain environments there is a stark distinction concerning the independence between control and prediction (Knight, 1921 in Wiltbank et al., 2006). Knight (1921) identified three types of uncertainty, the first type consists of known distributions and unknown draws, the second consist of unknown distributions and unknown draws and the last consists of non-existent distributions that cannot be classified (ibid). Thus, these three approaches can be summarized as the known, the unknown and the unknowable. The latter is referred to as the Knightian uncertainty and is further discussed and analyzed by Wiltbank et al. (2006).The Knightian uncertainty is characterized by meaning that prediction can never be adequate for the purpose of control. Thus, in these environments prediction and control are mismatched, "*because of the role of human creative action in actually producing a non-existent, not just hard-to predict future"* (Knight, 1921 in Wiltbank et al., 2006: 988) The Knightian uncertainty states that innovations are unclassifiable (such as Internet, Google & Mobile phones) and it is no use trying to predict the development of innovations. Instead managers should try to shape the development of innovations (ibid). Thus, Knight's work is quite similar to Christensen's (2003) ideas on disruptive technologies and their impact on companies. In conclusion, the transformative approach works on the presumption that control can be achieved without trying to predict the future (effectuation). The transformative approach is therefore more suitable than the visionary approach for companies affected by disruptive technologies.

In order to bring some clarity into the increasingly important research on transformative approaches, the existing literature on transformative strategies is outlined and summarized below. The objective is also to give an understanding of the historical development within this field and to highlight the need for further research on transformative strategies.

3.4 Transformative Strategies

The research on resource management in the transformative approach is almost non-existent even though some researchers have taken some initial steps (Kim & Maubourgne, 1997; March, 1982b; Sarasvathy, 2001; Simon, 1993; Wiltbank et al., 2006). March (1982) stated that one should be able to develop better techniques and those techniques will most likely undermine the structure of rationality and consistency. They will *"involve some way of thinking about action now as occurring in terms of a set of unknown future values"* (March, 1982: 75). Karl E. Weick is another pioneer on this subject and his theory of enactment placed the decision makers in organizations at the center while more commonly accepted models rested exclusively upon the environment. Weick (1979) argues that "*decision makers in organizations intervene between the environment and its effects inside the organization*" (Weick, 1979 in Sarasvathy, 2001: 256)

Building on these pioneers' thoughts, a number of scholars have developed models and ways of reasoning around how companies should manage their resources in highly uncertain environments (Hayes, 1985; Kim & Mauborgne, 1997; Sarasvathy, 2001; Wiltbank et al., 2006). The existing research in this field revolves around four concepts; reversed logic of the planning process, value innovation, co-created goals and effectuation which all have an impact on how managers view their resources (Hayes, 1985; Kim & Mauborgne, 1997; Sarasvathy, 2001; Wiltbank et al., 2006). Common for these four concepts is that they place the companies' resources at the center of the organization and try to build on what they have and know rather than trying to predict and navigate the external environment. These concepts view resource management as a constant process that is dynamic and controllable (Hayes, 1985; Kim & Mauborgne, 1997; Sarasvathy, 2001).

3.4.1 Reversed Logic

Robert Hayes (1985) discusses the reversed logic ("means-ways-ends") of the planning process which impacts the management of resources, by placing the selection and evaluation of resources first rather than starting with the companies' objectives, then form strategies and lastly obtain the resources necessary ("ends-ways-means"). Thus, companies should start by training employees and managers in a variety of jobs, educate them about the general competitive situation, teach them to identify and solve problems. The companies should acquire and experiment with new technology and techniques so that managers understand the possibilities and constraints with the new resources (Hayes, 1985). These actions are then formed into capabilities and as opportunity in the market appear, managers should be encouraged to explore matches wherever they occur (ways). The top management's role then is to facilitate entrepreneurial activity, provide resources and encourage cooperative actions. The "ends" only work as a compass and provides a sense of direction and possible ends (ibid).

3.4.2 Value Innovation

Kim and Mauborgne (1997) build on Hayes' (1985) findings and state that companies' that practice the *conventional logic* waste their resources on trying to stay ahead of their competitors. Instead, companies should focus on making a strategic logic leap in *value innovation*. The logic of value innovation and conventional logic differs on five basic dimensions of strategy. First, many companies take their *industry* as given and set the strategy accordingly. Value innovators instead look for new ideas and quantum leap in value to shape the industry. Second, many companies let competitors set the parameters of their *strategic thinking*. According to the value innovation, competitors are not the benchmark, a company should instead pursue a quantum leap in value to dominate the market. Third, many companies seek growth through retaining and expanding their *customer* base. Value innovators focus on the key commonalities in what customer values and targets the mass of buyers. Fourth, many companies view their opportunities in the lens of their existing *resources and capabilities*. Value innovators instead ask themselves the question, "*What would we do if we were starting new?"* Lastly, the usual competition takes place within a set of *boundaries* determined by product and service offerings. Value innovators see the total solution the buyers seek, and offer it even though it is outside their industry. Kim and Mauborgne (1997) argue that successful resource management is achieved by a combination of eliminating and creating features. Managers who handle the companies resources should ask themselves; *"Which of the factors that our industry takes for granted should be eliminated? Which factors should be reduced well below the industry's standard? Which should be raised well above the industry's standard? What factors should be created that the industry has never offered?"* (Kim & Mauborgne, 1997: 107).

3.4.3 The Effectuation Model

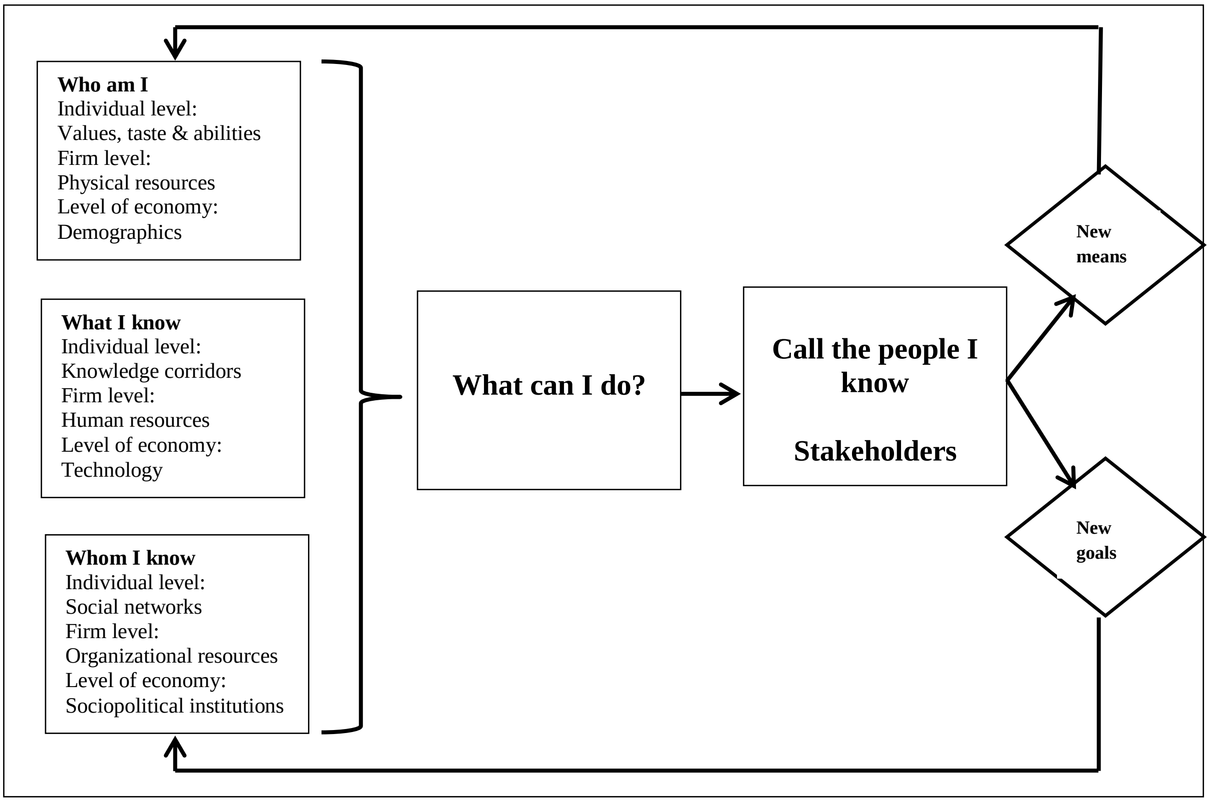
The above-mentioned questions and Knight's (1921) theory are quite similar to Sarasvathy's (2001) ideas regarding her model of effectuation (see figure 5). The effectuation model has been extended and elaborated on by Wiltbank et al. (2006). The model outlines a process of how organizations can confront the unpredictable future. Effectuation focuses on the controllable aspects of the unpredictable future. Thus, the logic of effectuation is that to the extent we can control the future; we do not need to predict it. There are several advantageous of avoiding predicting the future. For example, it encourages and enables creativity and entrepreneurship which is important for strategizing. Further, it makes strategizing cheaper by eliminating costs of trying to predict the future as well as reducing the cost of failure (ibid). The process (shown in figure 5) starts with that companies reflect upon "*who I am, what I know and whom I know"* in order to evaluate the current situation. Sarasvathy's (2001) discussions on effectuation resulted in four principles that form the core of the theory:

- Affordable loss rather than expected returns
- Strategic alliances rather than competitive analysis
- Exploration of contingencies rather than exploration of preexisting knowledge
- Controlling an unpredictable future rather than predicting a certain one

The principles above show that the logic of effectuation is the alternative or opposite of causation. They differ on several vital aspects such as; how they see the future, the basis for taking action, the attitude towards outsiders and unexpected contingencies and predisposition towards risk and resources. The casual logic views the future with prediction since the future is seen as a continuation of the past. The effectual logic sees the future as shaped by willful agents and therefore prediction is not useful, but rather creative (Dew, Read, Sarasvathy & Wiltbank, 2009). The basis for taking action according to the causation frame is goal orientated (goals determines actions), while the effectual frame is based on that means and goals appear "*by imagining courses of actions based on given means*" (Dew et al. 2009: 290). Further, the logic of causation focuses on expected returns rather than focusing on affordable loss as the *effectuator* does (ibid). The attitude towards outsiders according to the causation model is competitive and driven by competitive analyses. The logic of effectuation is built on partnership and creates new markets together with other actors. Contingencies are by the logic of causation, obstacles that need to be avoided while effectuators see contingencies as opportunities for creation and to be leveraged (ibid). Thus, the effectual logic can be summarized as: identify more potential markets, pay less attention to predictive information, invest only in what is affordable to loose and emphasize stitching together networks and partnerships (ibid). In addition, Dew et al. (2009) suggest that entrepreneurial experts frame their decisions according to the effectuation logic while novices use a predictive thinking.

The market is defined as a community of people willing and able to commit enough resources to sustain the company. The effectuator's role is to bring together enough stakeholders who support the company (Sarasvathy, 2001). Further, the model is driven by means rather than by goals (Wiltbank et al., 2006). In the second step of the process the managers should ask themselves, "*What can we do with these resources*?" and "*What else can we do with them*?" (Dew, Sarasvathy &Ventakaraman, 2004). Figure 5 illustrates a combination of Wiltbank et al. (2006) and Sarasvathy's (2001) theoretical findings regarding effectuation.

Figure 5. The theory of effectuation.



Source: Sarasvathy, 2001: 253: Wiltbank et al., 2006: 992

The third step in the process is Wiltbank et al.'s (2006) contribution to Sarasvathy's effectuation model which emphasizes calling and socializing with people. In order to get inputs on how to proceed with the things they could do (Wiltbank et al., 2006). In particular, managers should engage and leverage its stakeholders and try to expand their network of relationships. Thus, the transformative approach focuses on co-creating goals with others in order to commit to a future where action often precedes clear goals and predicted outcomes (ibid). Christensen (2003) discusses the importance of value networks, a context within a company which identifies and responds to customer needs, solve problems, reacts to competitors, procure inputs that determines what a company can and cannot do. Christensen (2003) also highlights that when disruptive technologies destroy or create markets, managers must identify and discover the non-existing market through building relationships together with suppliers, distributors and customers rather than doing a market analysis (ibid). Thus, managers must create information about such markets through investigating, “who will the customers be?”, “which dimensions of product performance will matter most to the customers?”, “what price can be utilized?” etc. This information could be gathered through monitoring pioneering companies, monthly meetings with technologists, academics, venture capitalists and other nontraditional sources of information (Bower & Christensen, 1995).

Phol et al. (2009) also emphasize the importance of networks in the implementations of new technology. They argue that no one is capable of mobilizing all resources demanded when implementing the new technology. The innovator or entrepreneur is always a hub in a network of actors. Thus, social capital becomes important in the transformative context. Phol et al. (2009: 53) establish a concept titled “*Interessment*” which entails interesting and increasing number of allies around the potential innovation. Also Nicolini (2009) highlights the importance of networks in innovation transformations and argues that the success of an innovation lies in developing complex networks.

Lastly, the process ends in the creation of new means and goals. Thus, the transformative approach generates new goals and new environments from current realities. In conclusion, several scholars claim that in the transformative environment, the key to performance is to focus the management of resources on constructing strategies and capabilities through relationships (Wiltbank et al, 2006).

4. Empirical Findings

The purpose of this chapter is to provide the reader with a description of the empirical data, collected through both primary and secondary data. The chapter starts with an overall description of the industry, followed by the case company profile. The ongoing process of change is then described in a chronological order to understand the width and depth of the company's activities and resource management.

4.1 Industry profile

4.1.1 Definition

The printing/graphic industry has traditionally covered the entire printing process from creation to distribution and to other non-print services. However, ever since the digitalization, the printing/graphic industry has developed into also including multimedia, graphic design and web page creation (Lyne, 2002). The industry is divided into different segments, which consist of books, catalogues, directories, magazines, newspapers, advertisements, office stationary, security and commercials (The European Graphic Companies' Federation, 1999).

4.1.2 Development of the printing/graphic industry

Before the digitalization the printing/graphic industry was characterized by high turnovers and rather low costs. The actual work was considered as a dignified handcraft with high salaries. However, during the last three decades the printing/graphic industry has evolved "beyond ink-on-paper" due to the implementation and use of IT in its processes (The European Graphic Companies' Federation, 2001). The digitalization has affected the way of production and the industry has changed from a craftsmen's trade into an industrial production and computer-integrated manufacturing (Kipphan 2001).

The digitalization of the printing/graphic industry was perceived with resistance and criticism from many people in the industry, and the progress towards more digital solutions has been rather slow in comparison to other industries. The resistance to change resulted in that actors in the printing/graphic industry lost business opportunities and jobs to people outside the industry or to their customers themselves (Sepulveda, 2010).

The printing/graphic industry is characterized as extremely fragmented with many small and medium-sized companies (Facta Consult, 2010). This issue is enhanced by the fact that European competition laws prevent collaborations across larger companies (Facta Consult, 2010). The printing/graphic industry is seen as a mature market with limited job creation and slowdowns (European Commission, 2010). For example, the market value of the Western European market has since 2005/2006 decreased in value and is expected to continue to decrease in the future. However, the market segment for printed magazines is one of the most successful, since consumers have maintained their appetite for printed magazines. The market for digital printing is at the same time increasing its market share (Smyth, 2008).

Another characteristic of the printing/graphic industry is the presence of powerful buyers, such as retailers and publishers, and also the presence of strong suppliers as for example paper, production equipment and graphics software suppliers. In addition, the industry is characterized by intense competition between printers, which is further exacerbated by over-capacity. This is mainly due to increased efficiency of new machinery, caused by overinvestments to reduce production costs and to cut prices (BPIF, 2005; Facta Consult, 2010). The competition is also colored by the emergence of new economies, like China, that invest in the printing industry and thereby undercuts the European prices, which are already under pressure (European Commission, 2010). This is further complicated by the increasing costs of paper, ink, energy and varying labor costs across Europe (Facta Consult, 2010). The shift of advertising to the web-based media is likely to have a negative effect on the printing/graphic industry. The area can be described as a battlefield, where participants attack each other and new multimedia attacks the industry as a whole, which has led to a high rate of company failures (Facta Consult, 2010).

The printing/graphic industry's biggest challenge is the uncertainty of the fast changing market and the pace of technological change, which makes it hard to envision the future (Facta Consult, 2010). New innovations such as e-readers and smartphones will speed up the rather slow transformation from traditional printing to digital publishing (Senor & Wilpers, 2010). Other actors in the industry claim that these innovations will revolutionize the whole industry just as the iPod transformed the music industry and as the iPhone changed the mobile industry. The revolution is referred to as the *interactive revolution* (Sepulveda, 2010, p.4). In Senor and Wilpers (2010)'s report, *Innovations in Magazines*, they state that the future of printing is hopeful, but does not resemble anything we have seen in the past. They also predict that we will see more and more virtual products that will have a certain lifespan, and then vanish. Thus, the technological development will have a huge impact on the actors' resources and processes, and the future is unclear and hard to predict. According to Sepulveda (2010), the interactive revolution will change our way of experiencing information, reading newspapers, books and magazines. Furthermore, the key driver for the printing companies is that this might be a great opportunity for larger margins and higher revenues.

The development towards the replacement of print by digital and web-based media and the growth in the use of social media puts high pressure on the actors in the printing/graphic industry. The changes in customer behavior and technology might reduce the demand for print and thereby affect several processes such as technological equipment and the workforce (Facta Consult, 2010). There is a huge need of multi-skilling, which requires education of the existing staff. Since many companies also have an ageing workforce with traditional skills, new skills and competence requirements will be essential to meet the demands of new technology (Facta Consult, 2010). For example, in the future there will be a demand for skills like; IT, pre-press, engineering, interpersonal, customer management, managerial, customer relationship, leadership, creative and strategic skills (European Commission, 2010)

Therefore, the industry needs to reinvent itself and create an image that places it in the center of the communication industry. This requires a focus on strategy development and a capability to create new working relationships with others in the sector (Smyth, 2008). The selected case company is one of the actors in the printing/graphic industry that has been affected by the new technological innovations, and has therefore started to develop towards publishing via iPads.

4.2 Company profile

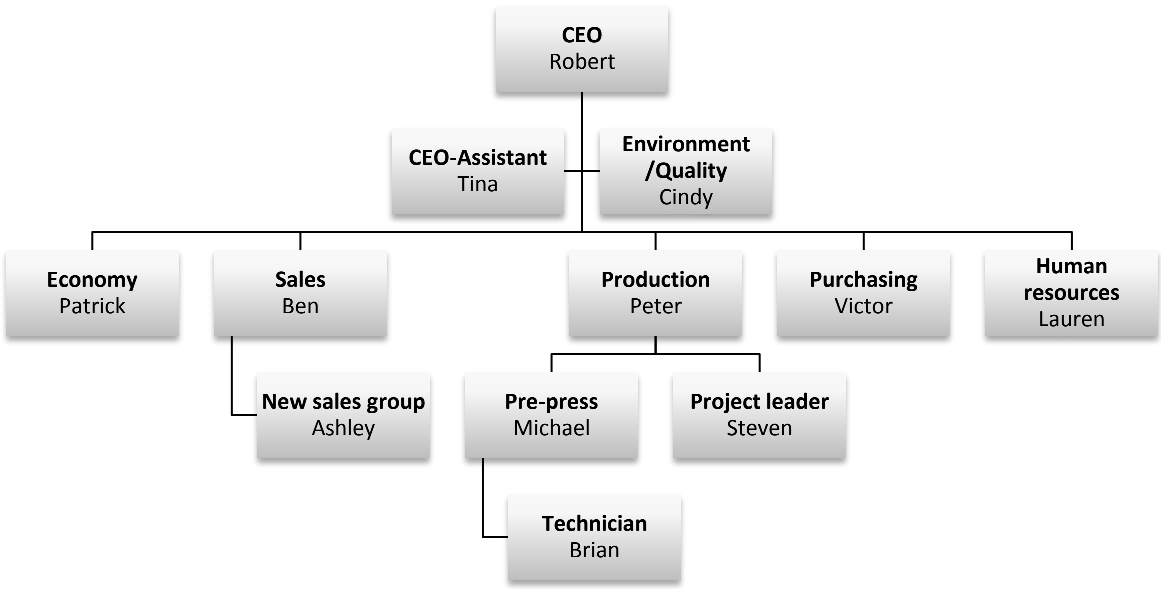
4.2.1 Characteristics

Graphic Printers (GP) is a medium-sized company in Western Europe and their niche is within the segment of magazines. Today GP employs around 300 workers and is a part of the corporate group named the *European Printing Group*, which has operations in six countries (Graphic Printer's website, 2011).

4.2.2 GP's development

GP was founded already in 1950s and was from the beginning a small family business that subsequently started to grow into a well-recognized company (Lauren – see table 1). GP is located in a small industrial town with a relatively small population. GP has for many decades been successful due to low costs and high revenues, which characterized the industry for a long time. The market was regarded as a company's market rather than a customer's market, which contributed to a relaxed attitude of innovation and improvement regarding equipment, personnel and services (Robert – see table 1). There was simply no need for improvement since they were so successful. The profession as a printer was highly valued and respected, since it was considered a true handcraft. The typical employee is an experienced, male worker originating from the small town where GP operates (Lauren). Thus, the long history of GP gives a traditional imprint to the company and permeates the company's culture and working processes (Robert). The history and tradition of the company has also contributed to the hierarchical organization that GP has today. GP's organization is presented in figure 6. All the managers that were interviewed for this study are also included in the figure.

Figure 6. GP's Organizational Chart



Source: Graphic Printer's internal document

GP has from a historical perspective gone through only minor changes over the years, and there have only been a few larger changes with major consequences for the company (Lauren). One of the larger changes includes the effects of the above-mentioned digitalization. The digitalization shortened GP's production process and it became more difficult to earn money, since the value added work enabled by digitalization was taken by other players. This development left GP with small margins and high costs. However, GP was still successful a couple of years into the 21^{st} century (Robert). A couple of years later, the business environment became even tougher due to lower consumer prices, higher costs and increasing customer requirements. The market shifted from being a company's market to becoming the customer's market. The market started to become saturated, the profitability was decreasing fast and the future was uncertain (Robert).

4.2.3 The interactive revolution

The above-described interactive revolution was perceived by GP as both a threat and an opportunity to their business. It was a possibility to earn money as well as a risk due to the fact that the company had to re-think the whole operation agenda (Robert). The fast development of new virtual and technological products puts an increasingly high pressure on GP, since the company, together with their traditional spirit and history of operating in an environment that has mostly experienced incremental changes, does not have experience of confronting disruptive technologies (Robert). This development has also had, and will further in the future, have impacts on the company's structuring and managing of resources. The impact of the interactive revolution will be described further below, chronologically in order to get a clear picture of the company's management of resources in a new and unpredictable environment.

4.3 Process of change

In order to get a better understanding of the management of GP's resources, a description of GP's processes is given below.

4.3.1 Graphic Printers operations

The company consists of five parts: the sales department, the project management team, the pre-press department, the printing and the after-press department (see figure 7). The sales department is located in a capital city and employs nine people. Their work is tightly connected to the customers, and their main assignment is to sell them offers. When the sales force has sold a product, the project management team, consisting of 11 employees, steps in. Their job is to make sure that the daily operations run smoothly. They also handle all complaints, and prepare the material and orderings necessary for the sold product. The pre-press department, in which 18 people are employed, handles the documents, retouches, edits photos, makes printing plates, press fits, manages files and creates PDFs. The major parts of the process are the printing and the after-press department. These two departments together employ over 80 percent of GP's workforce. The printing is the core of the business, and the most important products consist of magazines and retail. The after-press department handles the bookbinding and packaging (Brian; Steven – see table 1).

Figure 7. Graphic Printer's operations and processes.

Source: Interviews and Graphic Printers website

4.3.2 The first initiations towards digital publishing

GP's process towards digital printing actually started already in the end of 2006. The same year, the company bought a software program called E-magin with the purpose of creating PDFs for publishing on the internet. This investment required training, and many hours were spent on educating the workforce at the pre-press department. In addition, the workforce, at the pre-press department, attended three external seminars that were held to inform about the new software program (Michael – see table 1; Brian). The decision to buy the program was initiated by Michael, who is a true believer in digital publishing and its importance in the future. Other managers at GP refer to Michael as an enthusiast and visionary (Ben; Cindy – see table 1). After the seminars, Michael presented his ideas to the management team. The reactions were positive, but the next couple of years were used to persuade the management team, and counter the fear of that digital publishing would lead to the death of printing. There was also a fear that digital publishing would fragment the organization and destroy GP's core business (Michael).

The return of the investment in E-magin was in the early years rather slow, and only a few customers requested the service. Later, in May 2010, E-magin gave out a new version that allowed GP to produce *enriched PDFs*, which was an upgrade from ordinary flat PDFs to more advanced ones. This also required training of the employees to handle the new application. The updated version could also be seen as a light version of iPad publishing and the first real step towards publishing on iPads (Michael; Brian).

4.3.3 The early years of development

During 2006, a new manager (Ashley) was hired to create a new group within the sales department in order to increase GP's presence on the market, and to find new opportunities and market segments. Ashley was also hired to be responsible for internal restructurings that resulted in a transformation of the sales department. Before this, the sales department consisted of a rather archaic group with experiences and knowledge based on the environment that existed before the digitalization (Ben). Thus, many workers were transferred, laid off or resigned due to natural wastage (pensions). Some of these workers were replaced by new, provocative and progressive workers (Lauren). One thought behind the new recruitments was to hire people with a great sales competence rather than recruiting with the notion that the employee must have printing/graphic experience. This was a completely new way of thinking, since printing experience previously was valued higher than sales competence. Today, the new group within the sales department consists of four workers with Ashley as a leader of the workflow. The group attends an internal training several times a year entitled ”practice or production development” with the purpose to teach the workers more about new technology (Ashley – see table 1).

In the middle of the 20th century GP's corporate group, *The Printing Group*, went bankrupt. This was unfortunate since GP was left with heavy commitments that they had to finance themselves. However, a couple of years later *The European Printing Group* bought GP. This resulted in many new investments, which had been unusual during the previous ownership (Robert).

In 2007, a new manager (Cindy) was hired to work with quality management. Cindy educated the management team on new ways to steer an organization's processes and systems through study visits to a large telecommunication company and through discussion with the management team (Cindy).

4.3.4 The launch of iPads in America

In the beginning of 2010, GP improved the E-magin system with a payment function in order to enable payments for digital publishing. However, these thoughts were interrupted in May 2010 when the iPad was launched in the United States (Michael; Brian).

The launch of the iPad in United States immediately started a discussion among a couple of workers and managers at GP on how the company should respond to this development and if there were any opportunities in this segment. One important contribution to the discussion was an external entrepreneur that operated in the printing/graphic industry. This entrepreneur owns an educational enterprise and has held educations at GP for over ten years. This partner is referred to as an external visionary in the printing/graphic industry (Michael). The external visionary identified a gap in supply and helped GP to realize that through these new innovations there was a "*need to produce again"* (Michael). The decision to investigate the possibilities to become a digital publisher was also based on the fear that if GP did not act, they might miss the opportunities of additional revenues. For 20 years ago, when digitalization appeared, GP and the printing/graphic industry lost large parts of their handicraft, and other actors claimed the work that GP previously had controlled at the pre-press department. For example, seven years ago, the emergence of new and better PDF systems enabled more people to handle this type of publishing and therefore the customers themselves executed the documentation and imagining (Brian).

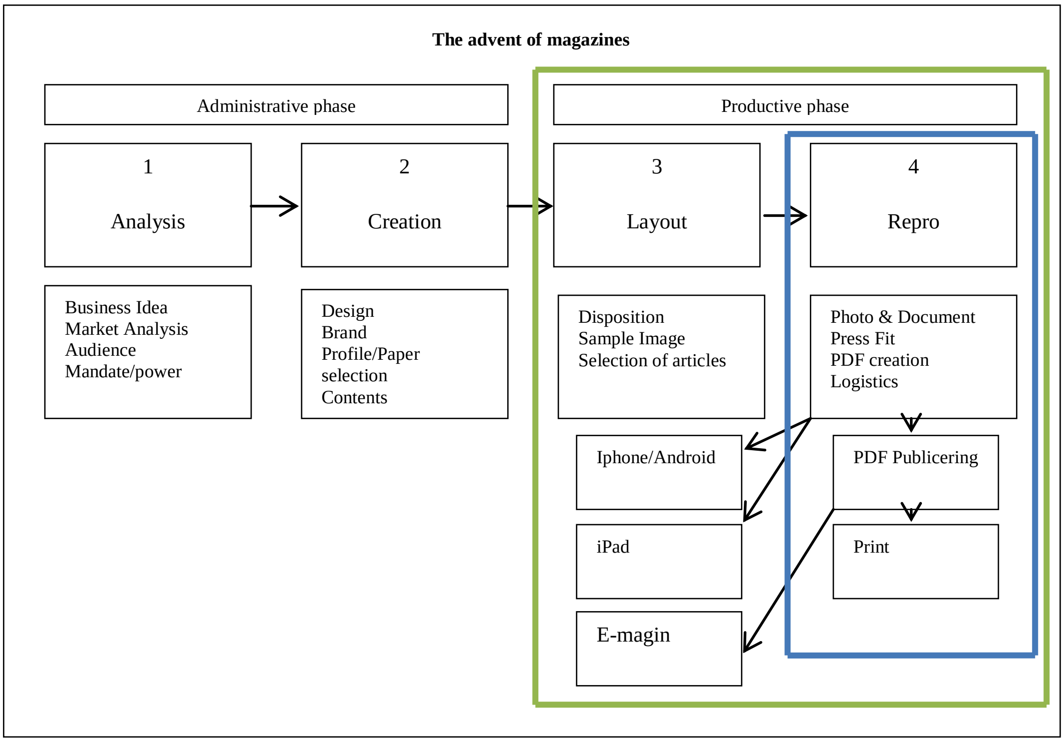
Through these discussions, an opportunity was identified to broaden the publishing from magazines to the web and to other new media. They also realized that the new way of publishing would allow for better marginal and higher revenues. At this time, trend setters in the printing/graphic industry showed no signs towards the development of publishing on iPads. The industry associations claimed that digital publishing is a completely different market (Michael).

4.3.5 The breaking point

In August 2010 GP hired a new manager (Ben), whose task was to broaden the company's service offerings (Robert). It was at this point that the work towards publishing on iPads really took form (Cindy; Lauren). The initiative to broaden GP's product offerings was seen as necessary to survive, since there is an uncertainty if printing will even exist in the future. Later, Ben's tasks developed into building digital publishing and coordinating this work. Shortly after the recruitment decision, GP made new investments in equipment to the printing department in order to modernize the printing process. Thus, some equipment became obsolete and divested, while heavy investments were made in the pre-press department. Thereafter, the focus of digital publishing was formed (Ben). The idea regarding digital publishing was to build on the strategy that GP already had formulated, which was to build a one-stop-shop. This means that all services are offered in-house. Through digital publishing GP could take the position as the broadest publishing and printing company, which once and for all could secure their position as a one-stop-shop (Michael).

Soon after Ben was employed, he started to communicate with Michael regarding digital publishing. These discussions resulted in that Ben encouraged Michael to visualize and concretize his ideas. In October 2010, Michael delivered his first inputs concerning digital printing to Ben (Ben). The input described the process of how magazines were made, and highlighted that GP only covered the final stage of this process, which was related to PDF publishing (E-magin), imagining and printing. The managers realized that GP should cover the whole production phase to also include layout and publishing through iPad, iPhone, Android and other e-readers. The input also included thoughts on how GP should package their offerings and what the value chain should look like (see figure 8). In figure 8, the blue line represents Graphic Printer's operations today and the green line represents the part of the value chain that the company wants to be in control of (PowerPoint 1).

Figure 8. Graphic Printer's Value Chain



Source: PowerPoint 1, 2011. Graphic Printer's internal document.

These insights formed the foundation for a seminar that was held in September 2010. Michael held this awareness seminar together with the above-mentioned external entrepreneur and another external actor. During this time, Ben was also involved in the process, and he and Michael started to think outside of the ordinary printing activities, and instead of what they could do and what they should do next (Ben; Michael).

After the seminar, Michael continued to develop the input that he had delivered until December 2010. As a result of the seminar, the sales department and the pre-press department were restructured to fit these new ideas. In September 2010 a new employee (Brian) was hired as a technician to handle software programs at the pre-press department.

In November 2010 the iPad was launched in Europe. Through discussions, Michael, Robert and Ben developed the previously identified gap in supply and realized that none of their competitors offered any iPad services (Michael; Ben). Brian was also engaged in the development of publishing on iPads, due to the fact that he showed interest and curiosity and replied to public messages sent by Ben. Ben therefore included Brian in the work regarding digital publishing (Ben).

In December 2010, GP decided to buy a new software program named Woodwing, which is a tool used to publish on iPads (Ben; Michael; Brian). Shortly thereafter, Brian was on several occasions (5-6 times) sent on training on how to use the new program. This knowledge was then shared with Ben. Ben’s research stated that there were some risks in the new investment, such as the emergence of more simplified systems and technical problems. However, GP tied two partners in Woodwing to themselves; the above-mentioned entrepreneur and one more external actor, a freelancer that made layouts for iPads. Thus, at this point Ben stated that GP holds the competence to introduce digital publishing to the customers and how to educate the workforce, but not enough competence if customer demand will increase rapidly (Michael).

The meetings between Michael and Ben continued and they discussed how to visualize the change towards digital printing and how they actually could accomplish it. Their thoughts were that the digital media opportunity should evolve around their core business, magazines. Therefore, they should focus on publishing magazines on iPads (Ben; Michael).

4.3.6 The first structured presentation and discussion

In December 2010, Michael and Ben presented what they had been discussing to the management team. This meeting was the first well-structured meeting that covered discussions about how GP could implement digital media in their offerings. The agenda and outlined topics were as follows (PowerPoint 2):

- What do we have today?
- How much value added does digital media entail?
- What does the competition look like?
- What are we lacking internally and externally?
- What competence do we have today?

- What is there to win?
- How do we do it? (Our way forward)
- Activity map, broadly step by step
- Time plan

One important topic was a discussion regarding what GP had today in terms of equipment and knowledge. It was stated that GP had the software (E-magin and Woodwing) they needed and that Brian was attending training on Woodwing tools. They also declared that GP's sales personnel had low knowledge of what GP had to offer and how to sell the new product of iPad applications. Similarly, the knowledge of the project leaders was also low. It was also stated that GP had two workers that could add value and five workers that could be trained to use the program to produce PDFs through E-magin. At this point in time, it was only one person (Brian) who had the knowledge needed for publishing on iPads through Woodwing (PowerPoint 2).

Another topic during the meeting was the value added that digital media entails. They stated that for GP, the value added was lower costs, better marginal and to broaden their offerings. The value added for the customers was a cheap information carrier, parallel publishing and interactivity. For the user, the value added was the opportunity to interact and the increased availability. It was also stated that if there were no contracts with customers made before the end of 2011, the investment in digital publishing would be dropped (Ben). During the meeting they also discussed what type of competition GP could face in the new segment (PowerPoint 2). They stated that advertising agencies, studios, PR agencies, magazine publishers, customers, printing companies and information departments were the competitors. However, the conclusion was that considering the technical requirements, it was rather easy to join the competitors in this development due to high price levels. In addition, during GP's customer visits they did not meet any companies that worked with iPad publishing (PowerPoint 2).

Yet another topic of the meeting was what GP were lacking, both internally and externally in terms of resources. Internally they realized that the knowledge of digital media was isolated to just a few workers. They also identified issues with knowledge transfers and that GP's sales people had low understanding for the new product they were offering. GP also declared that they only offer a small part of the value chain and would prefer to take the opportunity to expand. Externally they discussed the issues of the insecurity of real value for the end consumer and what business models to use.

They also discussed what they could gain by using opportunities and risks. The opportunities identified were: making money, being an independent producer and creating a separate segment that does not interfere with GP’s core business. The risks stated were that GP might be too late and does not have the knowledge to go back in the value chain and meet the customers’ needs. Another identified risk was that Brian and Michael handle most of the process of digital publishing (PowerPoint 2).

The next question discussed was how to further develop the business and what GP should do next. They stated that the mission must be learning by doing and that the next step was to ask their customers what they actually think of digital publishing. GP declared that they would work on incorporating a larger part of the value chain and create an offer regarding iPads. They also made an activity plan, in which they stated step by step what they should do in the next coming month. This plan entailed draining Brian and Michael on information regarding digital publishing, define their offering and the value added opportunities to work with GP, define a prioritized customer list, buy iPads to practice on, train GP’s sales people and project leaders, create what Ben called a *Tiger team* with GP’s sales people, project leaders, pre-press technicians and other relevant people. They also defined a time plan which entailed that during January they should develop their internal competence and start communicating with customers. Ben also stated that their work could be described as “pure guessing”, but that there are many concrete ideas (PowerPoint 2).

4.3.7 The progress in the year 2011

In January 2011, Ben requested to borrow Brian for 20 days to work more closely with digital publishing. Brian was also needed to explain GP’s new offerings to customers and sales department (Ben). During this process, Ashley started to get involved in digital publishing by booking meetings with customers and spreading the information to the sales department (Ashley). Between January and the 18th of March, 25 customer visits were carried out in order to see if there was any interest in this new product. The goal was to visit 5-10 customers per sales person. These visits were made by Brian, Michael and sales personnel (Ben). At this stage, another manager (Steven) was also involved in discussions regarding digital publishing with the idea that he should spread the information to the project leaders (Steven). There were also thoughts on including Cindy in the digital publishing team, but this did not lead anywhere (Cindy). Thus, the people working closely with this are now the management team, including Michael and Brian who more exclusively worked with iPad publishing. The customer meetings only resulted in that a few customers showed interest in the new product. During this time, Michael stated that GP needs to be more official and attend more fairs and work in a more effective way with their customers. He also specified that GP needs to create a department with 3-4 people that work directly with these issues. Michael identified that GP has some difficulties in meeting the new innovations, due to an old and sluggish workforce, whose knowledge mainly consists of traditional printing skills.

Michael also believes that there is a need to restructure the employees and that GP needs new external competence. Ever since the company started to work with digital publishing there have been huge shifts, replacements and layoffs (Michael).

In February 2011, a structured meeting was held by Ben to present their ideas regarding digital publishing to the sales department. During this meeting they discussed the background to the ideas, the way forward and they also demonstrated how iPads worked. The agenda and outlined topics for the meeting was as follows (PowerPoint 3):

- What is happening on the market?
- What does the future look like?
- How should we act?
- What do we know today? (What can we do today?)

They discussed what was happening on the market, such as the emergence of new innovations and new markets. A vision of the future was also described; GP should be a publisher, and support their customers to publish in whatever media they demand, magazines, the web, iPads, smartphones, PDFs etc. (PowerPoint 3). The result of the meeting was a conflict, since the employees did not know what to relate to and they might have felt threatened. The employees expressed feelings such as: *are you going to kill the print*?, *You are digging your own grave,* etc. However, there were also positive reactions to change (Ben).

Also in February 2011, a *Tiger team* and a *Steering group* were formed. The Tiger team consists of four managers from different departments (Michael, Ben, Robert and Steven) and their purpose is to work directly with digital publishing and present inputs to the Steering team. The Steering group consists of four managers, with the notion that one more from the IT department is needed. In this group the CEO, Michael, a controller and Ben was included.

This group is responsible for structuring the work and making sure that the digital publishing process is progressing. These two groups are having meetings every week (Ben).

During 2011 and the end of 2010, many changes were made in the organization. For example, the pre-press department transformed their tasks and went through several training sessions, including education from the external visionary and seminars (Michael). Similarly, the project leaders and the sales department have gone through the same development (Steven; Ashley). Personnel in all three groups have been laid off and some have been transferred. Brian played a critical part in educating the workforce on digital publishing (Steven). In April 2011, Ashley declared that the sales group needed more stimulating and inspiring activities, such as seminars and speakers. She also requested that more training was needed within the area of digital publishing since most of the sales people are not aware of all information. The sales people needed to understand the product before they can be creative towards the customers. Ashley also stated that there was a lack of financial resources (Ashley). The project leaders have been trained to broaden their knowledge in iPad publishing and to learn new things. The training has been given both internally and from external actors. The project leaders were on their way to hire a person with some new competence, but a notice to lay off 32 workers at the company as a whole in April 2011 postponed this recruitment. The project leaders have also bought equipment in terms of new systems and programs (Steven).

In February 2011, the corporate group - *The European Printing Group*, announced that they had created a new position and hired a CEO to be in charge of the corporate group. At the same time, the corporate group declared that consolidation might become an option in the future due to price pressure in the market. This development led to that The European Printing Group was forced to close GP's sister plant in France (Ben).

In March 2011, GP attended two seminars together with the *Apple Store*, where GP presented their work and thoughts regarding publishing through iPads. It was also decided that two more people would be educated in the software program Woodwing. It was identified that GP needed more competence to handle this program. One idea was to contact a practical printing school, *Graphic School*, to acquire new resources (Michael). One strategy behind acquiring Woodwing was that smaller customers cannot afford the necessary investments needed to maneuver the program and GP could thereby offer this service to them (Michael).

In March 2011, the management team started to visualize GP's network. They made a map that identified which connections in this network were of high value in order to know what

GP could potentially focus on incorporating. The network shows who GP is, which actors integrate with GP and what connections GP would like to control (PowerPoint 4). At this point, it was also stated in a discussion with Michael and Ben that there was no cooperation within the corporate group. However, this would be of great interest for GP, since their sister company in Southern Europe has come further in their process towards digital publishing. These two managers consider their sister company as a model to compare themselves with. Brian also highlighted the importance of this communication. However, some communication between GP and the sister company has recently developed. Other actors that GP tied to themselves were a couple of agents in Scandinavia with the purpose to book meetings with clients, but the agents have been unsuccessful due to their lack of ability to present the idea in a visualizing manner (Ben; Michael).

In addition, several managers had during this time discussions regarding cooperation with other external actors. Ashley also identified that GP needs more resources in order to lead the development of digital publishing. Michael stated that they need to broaden their network and that a joint venture was a possible way to do so. Ashley pointed out that it would be of interest to have an exchange with other people in the business in order to compare and benchmark GP's processes. Ben raised some thoughts about external partners such as *European Magazines*, *The Graphic School* and *Modern Magazines.* For example, one idea was to cooperate with a famous blogger that owns her/his own magazine and thereby connect the two worlds of printing and internet. That would allow the consumers to recognize GP with a more modern profile. Ben also stated that it is important that cooperation partners are tied to GP as soon as possible. Ben discussed that the project towards digital publishing will be a development similar to trial and error tactics (Ben). Ashley mentioned that the International Data Group (a publisher who writes about technology) or other branch organizations could be possible partners. This cooperation could result in discussions concerning how GP could develop and make use of the latest technology (Ashley).

Today the sales force is more positive towards digital printing and they have realized that it is not about printing *or* digital publishing, but rather printing *and* digital publishing. However, there is still a fear among the employees that GP might become too broad, which makes them slow and not in a position to lead the way for new innovations (Brian). Thus, the size makes GP vulnerable (Brian). The management team is also unsure about the future, and the company still lacks resources. For example, they lack the knowledge of how to use iPads and the financial strength to buy them. In April 2010, GP ordered iPad 2s to the management team. The launch of publishing via iPads has led to that customers now demand enriched PDFs, which indicates that the customers have taken a little step forward (Ben).

During April 2011, the sales force started a new round of customer visits. This time the sales force was asked to investigate how the customers were thinking. This investigation showed that the customers were positive to digital publishing, but they did not know how they should use a digital version of their magazines. Ben then realized that they need to separate the publishing of enriched PDFs and iPads and the sales force must inform the customers about this issue more clearly (Brian; Michael).

In April 2011 GP made their first test version of an application to iPads. Shortly after they made an application for the Graphic School and one for European Magazines as a sponsor project (Brian). The management team also held a meeting to revise their vision and strategy, which was completely outdated, to include this new development, but the new strategy has not yet been presented. It was also around this time that GP published on their website that they could offer this new product (Ben).

On the 13th of April, GP hosted a seminar together with the external visionary mentioned above, where they invited all their customers, some from the sales force and other agencies to discuss publishing on iPads to make customers more aware (Michael). However, the sales force had no mandatory obligation to attend this seminar, since it is a strategy of the management team to only involve employees that are really interested. This strategy permeates the whole working progress towards digital publishing. Thus, the employees that work with digital publishing have first and foremost been involved since they have shown interest in the development (Ben). However, during the preparations for this seminar Ben realized that Michael and Brian had great technical knowledge, but less knowledge in how to visualize and communicate the message clearly to the customers. Ben stated that he does not yet know who could take such a role. The goal with the seminar was to niche GP's profile. Ben said that GP does not have any clear goals for the future, but rather some small goals and activities that they follow. For example, GP has booked 10 applications and the goal is to fill them. They also have goals for how many clients to visit and how much they should sell (Ben).

4.3.8 Further development

Below follows a description of the ongoing discussions of the interviewed managers of what they will do and investigate next in the process of change.

In April 2011, Ben stated that GP needs more knowledge on how to spread the idea of publishing via iPads and raise the awareness in the industry, as well as increase GP's own knowledge level. Ben also stated that GP is doing something they have never done before; they are creating a new market instead of being pressured with low prices again and again (Ben).

These thoughts have led to that the Tiger team is having discussions regarding what else they need in order to move forward. One identified need was new competence. In the end of 2011 The European Printing Group are going to implement a new business system which will entail that the organization will automatically change the organizational structure (Cindy). For example, people who calculate prices will be unnecessary since the system performs those tasks. However, GP will need people who work with system support and upgrading of production parameters. Thus, Robert identified that in the future, the biggest concern will be to handle new recruitments; one of the challenges is the city in which GP operates. It is characterized by a cultivation mentality, which means that many people has a rather low educational level with a small strive for change and that many citizens have been employed at the same employer for a very long time. This indicates that the employees' references are very limited (Robert). Furthermore, ever since the start of digital publishing, almost 100 employees have been forced to leave the company. At most, there have been around 500 employees at GP, and only around 300 currently remain. Before next year, the number will be reduced to 200 employees (Lauren). As a result, GP is working on creating new positions in the company that they can recruit new competence to. For example, more specialist competence is needed, such as engineers and MBAs. In order to attract such competence, GP needs to become more creative in their recruitment process and also see other opportunities than recruiting new people to gain knowledge (Lauren). Another manager complained about the company's ability to hire the right competence. The manager stated that they have graphic competence, but lacks core competences in the fields of IT, logistics, support systems, management work. Along the process of change, it was stated that the need for a competence switch is high (Cindy).

Another identified need was communication. One manager complained about the ambiguity of in which way the company was heading. The manager also lacked clear goals and visions, and the company's intranet was seldom used to spread information on, even though this was brought up frequently (Cindy). Another manager also said that the management team needed to show the way clearly (Ashley). Cindy stated that there is a big gap between the management team and the rest of the managers. This could lead to that the management team might miss ambitions and ideas further down in the organization due to lack of a two-way communication. Cindy highlighted that the process of change is not seen as a radical change by the whole company, and that digital publishing is rather seen as an isolated island. Cindy also stresses that the vision is not incorporating the new product (Cindy). She also identified that the management team has not been thinking about issues such as environmental concerns and quality assurance, which means that some processes around publishing via iPads are not finished. Robert also stated that the integration between different parts of the company did not exist. The communication between managers needs to be increased both horizontally and vertically (Robert). Lauren highlighted that there needs to be a greater internal flexibility for workers to circulate inside the company to learn new things and develop new references. Another issue addressed by Lauren was that the management team must trust their employees and their knowledge (Lauren). Ashley points out that the communication needs to be better and not only include what GP is currently doing, but also why the company is acting the way it is (Cindy). However, one manager criticized the way that the decision towards digital publishing was made. She stated that before taking such a decision, the management team should have started discussions with their customers and tried to work together with them. GP could have then for example cooperated with a large customer and maybe create their software program together with them. The manager also stated that GP behaves reactive, and that it is common for GP to first take decisions and then check what customers actually want. Another manager complained about that the management team is weak on informing internally what is going on (Cindy; Ashley; Lauren).

A third need that was identified through discussions between the managers was the necessity of internal revision. Ashley discussed that GP has several internal challenges, such as adjusting and streamlining internal routines and administration. She also declared that GP has to learn from their experiences and not invent the wheel again and again (Ashley). Ashley and Lauren highlight the importance of accountability among line managers and the importance of being active with customers. Today there is an ambiguity of who is responsible for what (Robert; Ashley).

To conclude the empirical findings, one of the managers made an interesting comment that needs to be shared: *"We are only half way into the first round. We still do not know how the game will end"* (Ben).

5. Analysis

The purpose of this chapter is to compare and contrast the conceptual framework with the empirical findings and ultimately attempt to answer the research question. The chapter starts with an analysis of GP's resource management process, which is compared with Sirmon et al.'s (2007) theory. Thereafter follows a discussion of the transformation of GP's resource management. Further, the similarities and differences of GP's resource management are compared with transformative strategies. Ultimately, the chapter ends with a presentation of the *effectuative resource management process.*

In order to analyze the management of a company's resources in highly uncertain environments, we see the necessity to initiate the analysis discussion with an elaboration of Sirmon et al.'s (2007) *resource management process* applied on the empirical data. Thus, for the purpose of clarity and understanding, the first part of the analysis is visualized in a table (table 2) where the empirical data is compared to the theoretical framework. However, the overall analysis chapter is formulated according to the conceptual framework.

5. 1 GP's Resource Management Process

The comparison between GP's *resource management process* and Sirmon et al.'s (2007) theory made it evident and visible how and where the different activities appeared in the process. The comparison is presented in a table in order to get a clear overview of how GP manages their resources (see table 2). The table is divided into three phases, which follows the process of change. The motive for this division is to see if some activities were more frequent in different parts of the process, and if they had different importance in parallel with an increasing level of uncertainty. The first phase covers the early years of development towards digital publishing, and extends between the years 2006-2009. The second phase ranges from the launch of iPads in the United States to GP's first structured meeting regarding iPad publishing. This development occurred during the year 2010. The last phase covers the ongoing development during the first part of 2011.

When analyzing the table, several reflections were made. It became obvious that structuring the portfolio was more pronounced in the first phase of development, especially the acquiring activity. During the first phase, there were also some bundling activities, particularly enriching activities. However, there was no execution of the leveraging activities in this phase. As seen in table 2, in the second phase, the focus has shifted more towards bundling and leveraging activities. However, structuring activities still occurred during this phase, especially accumulating. This since the need to reconfigure the existing resources increases further into the process. In addition, it is clear that the bundling activities appear more frequently. However, the most peculiar finding was that the leveraging activities emerged during the second phase. During the last phase the pattern from the previous phase continues to develop towards more bundling and leveraging activities. Consequently, in the beginning of GP's *resource management process* structuring the portfolio is more noticeable and later in the process the weight is shifted towards bundling resources and leveraging capabilities. Furthermore, the different activities appear rather randomly throughout the process. This can be explained by that further into the process of change the level of uncertainty increases, and therefore the activities appears more randomly and other activities are more important than in the beginning of the process.

By analyzing table 2, several similarities and differences compared to Sirmon et al.'s (2007) theory becomes visible. For example, the most interesting finding was the difference from the reasoning behind Sirmon et al.'s (2007) process, which is the logic of causation. These findings are discussed further below.

Table 2. Overview of GP's Resource Management Process.

Time	Action	Activity
Phase 1 (2006-2009)	Bought E-magin	*Acquiring*
	Training and learning the new system	*Enriching*
	Knowledge sharing between Michael and the Management team	*Accumulating*
	Bought a new version of E-magin	*Acquiring*
	Training and learning of the new version	*Enriching*
	Hired Ashley	*Acquiring*
	Created a new work group	*Pioneering*
	Layoffs of intellectual capital	*Divesting*
	Restructuring of employees	*Accumulating*
	Hired new workers	*Acquiring*
	Frequent training sessions	*Stabilizing*
	Loss of financial capital	*Divesting*
	Investment in equipment	*Acquiring*
	Hired Cindy	*Acquiring*
	Knowledge sharing between Cindy and the Management team (study visits)	*Enriching*
	New function to E-magin	*Enriching*
Phase 2 (2010)	New capability configurations and knowledge sharing	*Coordinating*

	External visionary added new skills and knowledge	*Enriching*
	Recognized the need of new ways of publishing	*Mobilizing*
	Created a new product for an unknown market	*Mobilizing (entrepreneurial strategy)*
	Hired Ben	*Acquiring*
	Integration of new resources (Ben and Michael)	*Pioneering*
	Shedding equipment	*Divesting*
	Bought new equipment	*Acquiring*
	New market opportunities	*Deploying*
	Integration of external actors	*Pioneering*
	Layoffs	*Divesting*
	Grouping employees together differently	*Accumulating*
	Hired workers	*Acquiring*
	Collaboration between managers	*Accumulating*
	Bought Woodwing	*Acquiring*
	Integrated new resources (Brian and Woodwing)	*Pioneering*
	Collaboration between Brian and Michael	*Accumulating*
	Tied external partners to their organization	*Pioneering*
	Decision of market segment	*Deploying*
	Stating their strategy as a production portal	*Mobilizing (Resource advantage strategy)*
	Knowledge sharing between Michael, Ben and the Management team	*Enriching*
	Reviewed resources	*Structuring the research portfolio*
	Made an activity map and time plan	*Mobilizing*
Phase 3 (2011)	Ben borrows Brian	*Pioneering/Accumulating*
	Ashley incorporated in digital publishing	*Enriching*
	Ashley, Brian and Michael trained the sales department	*Enriching*
	Steven incorporated in digital publishing	*Enriching*
	Review of what resources GP lacked	*Structuring of the resource portfolio*
	Knowledge sharing at the sales department	*Enriching*
	Investigated new opportunities in the market	*Mobilizing*
	GP states that they can offer all services in-house at the same time as they can offer a completely new service.	*Mobilizing (Resource advantage strategy and Entrepreneurial strategy)*
	Creation of Tiger and Steering team	*Accumulating*
	Training sessions	*Stabilizing*
	External actors trained employees	*Enriching*
	Layoffs and shedding assets	*Divesting*
	Reviewed resources	*Structuring the portfolio*
	Bought new equipment	*Acquiring*
	Integration of a new external actor (Apple Store)	*Pioneering*
	Spreading knowledge of the new product to others in the industry	*Mobilizing (Entrepreneurial strategy)*
	Review of what resources GP lacked	*Structuring the portfolio*
	Network discussion	*Deploying*
	Review of what resources GP lacked	*Structuring the portfolio*
	Communication with a sister company	*Pioneering*
	Customer visits	*Enriching*
	Bought iPad 2	*Acquiring*
	Review of what resources GP lacked	*Structuring the portfolio*

Source: Author's own elaboration

5.2 Similarities and differences compared to the Causation Resource Management Process

5.2.1 Similarities

When analyzing the empirical data in the lens of Sirmon et al (2007), we found several similarities. *Firstly*, it became clear that the company did not just possess their resources; they accumulated, combined and exploited resources. The different activities defined by Sirmon et al. (2007) were all present in the empirical data. The activities also appeared randomly, which supports Sirmon et al.'s (2007) findings. Additionally, this study takes these arguments a step further, and gives more attention and weight to the independency between the activities. This means that the various activities appear randomly at different stages of the development. This is not surprising, since in a highly uncertain environment, where the future is unknown, it is impossible to predict activities that will be needed or not. Therefore, prediction is unnecessary and different activities arise when necessary. However, the definition of what a newly acquired resource is, made it hard to separate some of the activities in a clear way, since there is an ambiguity of how long a resource is considered as new.

Secondly, one similarity was that Sirmon et al. (2007) stated that stabilizing activities are used more frequently in conditions of low uncertainty, while enriching and pioneering activities are more pronounced under conditions of high environmental uncertainty, which is similar to the result of the analysis above. For example, it was identified that under this process it was two stabilizing activities, while the other two activities combined appeared 20 times (12+8). This was rather expected since radical changes require more pioneering and enriching activities to adjust to new products or new markets.

A *third* similarity was also that all three leveraging strategies (resource advantage, market opportunity and entrepreneurial strategies) were identified in the empirical data, which is similar to Sirmon et al.'s (2007) findings, which declare that all three strategies are necessary in highly uncertain environments.

5.2.2 Differences

During the analysis of the process of change, it became clear that GP's *resource management process* differed from Sirmon et al.'s (2007) theory. *Firstly*, one difference was the order of how the activities appeared in the leveraging process. For example, Sirmon et al. (2007) state that resources must first be mobilized before they can be coordinated or deployed. However, the empirical data showed that the first leveraging activity was a coordinating activity followed by a mobilizing activity. Hence, in highly uncertain environments the form of the activity has no impact on when they appear, and there are no phases and stages to follow. Every activity rather appears when it is needed.

A *second* identified difference is the fact that the coordination activity (together with the stabilizing activity) seems to be the least frequent activity, and also the one that the employees request the most. Some managers did not even perceive the change (digital publishing) as radical, but rather as an isolated island. In addition, the managers did not include all people in the process, maybe because there is a large amount of ambiguity, which makes it hard to steer others in a direction, or the fact that there are no clear goals to communicate. Another reason might be that activities and decisions are taken quite randomly and therefore hard to communicate in a structured fashion. Another reason for excluding people might be that the change is so radical that it will change many processes and resources at the company. In order to keep the workforce calm, they are left in the unknown. Consequently, the leadership in this type of environment is not visible for everyone; rather a small group of employees are interacting and exchanging information with the "leader". This identified leadership is rather "secretive" due to the ambiguity of the future, sudden shifts and the excluding choices made by the decision makers.

Thirdly, the activities following the structuring of the resource portfolio were repeated frequently, especially acquiring. Thus, in the processes of change the need for new equipment and human capital was great, as well as the need for divesting and accumulating. This since a radical change will require many new functions, processes and new skills. Therefore structuring the portfolio becomes central in highly uncertain environments.

Lastly, an additional difference is the repeated questions in the empirical data of "what do we have today", and "what do we need to do". This type of continuous backwards loops of actions is to some extent present in Sirmon et al.'s (2007) *resource management process*, but not to the same extent and not as important as the empirical data expresses. The empirical data shows a constant activity of reviewing the existing resources to later make adjustments to it. Thereafter, the needs that follow these adjustments are taken care of as they arise. Thus, one activity or decision seems to give rise to many more. The result is that through activities, rather than goals, a company steer their organization to something unknowable without an end destination. For example, one manager said: *"We are only half way into the first round. We still do not know how the game will end"* (Ben).

The biggest difference from Sirmon et al.'s (2007) *resource management processes* is that the process is not a line of activities that follows a clear goal and ends in an ultimate objective. Sirmon et al. (2007) emanate their process from a goal and the trick is to identify the right activities to reach the goal. There is no *causation*, logic of prediction, evident in the empirical data, but rather a trial and error and learning by doing rationale. Consequently, managers in this environment learn through actions how to manage their resources. Further, the learning is enhanced by the level of experience that managers possess. The process seems to continue on without an end and the goals are activities which are constantly revised throughout the processes. Thus, it seems as GP's *resource management* process is resting on the logic of effectuation.

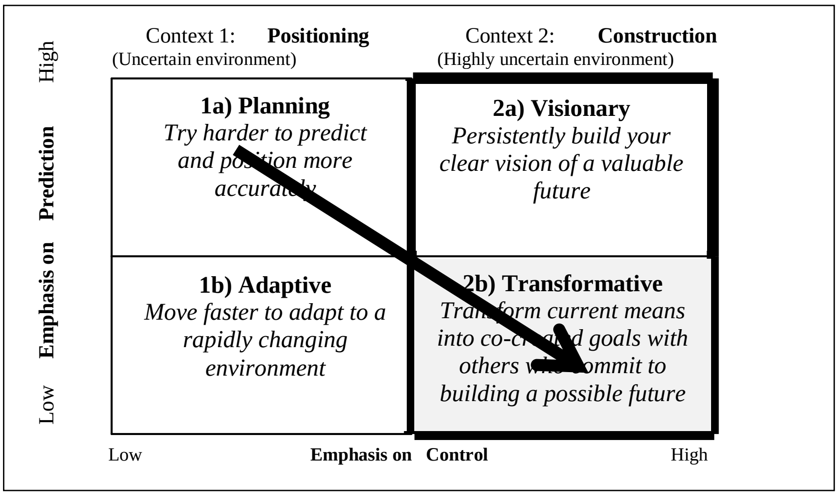
5.3 From causation to effectuation

As mentioned in the introduction chapter the case company enabled the opportunity to study the transformation in a process of change. Consequently, this allows for discussion and analysis around the development of a process of change.

Based on the analysis above it is clear that Sirmon et al.'s (2007) *resource management process* differs from the studied reality and thus it is obvious that their processes is not applicable in an environment like the one analyzed in this thesis. However, Sirmon et al.'s (2007) *resource management process* might have been more valid before the emergence of new innovations (iPads and Smartphones) since the innovations impacted on how GP managed their resources. Before the innovations GP's environment was characterized by the positioning context and there was no high uncertainty of future events. For example, as explained in the empirical data, the industry was traditional and had only experienced incremental changes in technology, politics, social and economics before the radical change. This environment also pervaded GP's way of managing their resources. According to the interviews, the impression was that before the new innovations, GP's resource management strategy was similar to the planning strategy with focus on positioning themselves in the external environment. For example, GP focused more on prediction by analyzing and planning their actions and resources. However, today the environment that GP operates in is much more similar to the constructing context and the resource management strategy seems to be in line with the transformative approach, which is further developed below. The development is visualized in figure 9. The figure shows GP's transformation process that was triggered by new technology, which created a more uncertain environment. Consequently, this led to that the case company changed their way of managing resources and capabilities. Thus, it is distinct that the context determines how a company manages their resources. Furthermore, as the context changes, the resource management process transforms and develops to fit new strategies and approaches necessary to survive in the new context.

The next section describes the similarities and differences between GP's resource management strategies and the transformative strategies.

Figure 9. The extended matrix of various approaches under different degrees of uncertainty.



Source: Wiltbank et al., 2006 p.983 and author's own elaboration

5.4 Similarities and differences compared to transformative strategies

5.4.1 Similarities

There are many similarities between GP's resource management strategies and transformative strategies, but there are also some differences. The empirical data revealed a reversed logic of the planning process, just as suggested by Hayes (1985). The *resource management process* in highly uncertain markets seems to start with an evaluation of the company's resources rather than by objectives or goals. However, one difference is that strategies and goals appear throughout the way forward, and the evaluation of resources seems to happen several times during the process of change. Another logic that is present in the studied *resource* *management process* is value innovation (Kim & Mauborgne, 1997). As observed from the empirical data GP does not take their industry for granted rather they looked for new ideas to shape the industry. Further, GP crossed the boundaries determined by their products to give their customers the total solution (GP's strategy, one-stop-shop) even if digital publishing by many is considered to be outside the printing/graphic industry. However, conventional logic is also present in the process, such as the thoughts of GP's customer base; they do not seek the mass of customers, but rather retain the ones they have.

As mentioned above, Sirmon et al (2007)'s *resource management process* is built on the logic of causation, which is the opposite of transformative strategies that are based on the logic of effectuation (control). GP's *resource management process* has many similarities to effectuation. *Firstly*, GP focuses on the aspects that they can control. Several times during GP's process of change, the questions and reflections of "what do we have today" emerged as well as "what can we do next". These questions are almost identical to Sarasvathy's (2001) model of effectuation. Throughout the process of change, the managers reviewed their resource portfolio to identify what resources were needed and which ones were not. A *second* similarity is the fact that there are no clear goals, but rather activities followed by minor steps (goals), which appear after imagining or executing an activity based on means that they already have. This then forms the foundation of a new activity. For example, the activity to explain the concept of digital publishing to the sales department was followed by the activity of making customer visits. Thereafter a goal was set to meet 25 customers before the 18th of March. Through those visits GP realized that their offerings were unclear, which led to the activity of defining them better. Another example is that GP first established that the sales and project leaders' departments had low knowledge of digital publishing. The activity to borrow Brian to train them was therefore initiated. Each activity gives rise to new activities and goals, and thus the need for new resources or new configurations of capabilities emerge based on what they have today.

A *third* similarity is GP's strategy of only including people in the process that show a great interest and are willing to work towards digital publishing. For example, a seminar that GP held for their customers was voluntary for the employees, but with the ulterior motive to see who was willing to engage in the new product. This is quite similar to Sarasvathy's (2001) theory that the effectuators' role is to bring enough stakeholders together that support the company and are willing to commit enough resources to sustain the company. It was in particular one person (Ben) that could be seen as the effectuator, who was responsible of the strategy of excluding people that were not willing to commit. For example, Ben tied Michael and Brian together, who are the most committed persons regarding the concept of digital publishing. Michael is a visionary in this field and has worked with digital publishing for many years. Brian was included since he asked questions and was curious about the new product. The stitching of committed people was present throughout the whole process. Ashley, Steven and Lauren were later engaged in the development of the new product. This strategy of only including committed people could also be an explanation of why many employees felt that the communication was poor, as discussed earlier.

A *fourth* similarity is the idea of co-creating goals with others. For example, GP has, as mentioned in the empirical data, developed a relationship with an external visionary to be able to spread the opportunities of digital publishing to other external actors and customers. These actions can be seen as a way to shape a future market. Furthermore, GP have tied relationships to Apple Store and external layout providers, which also are actions that are based on co-created goals to make digital publishing of magazines possible. During the process of change, there have been many thoughts and ideas around extending GP's network. There are ideas and plans of tying the Graphic School, a blogger, the sister company, branch organizations etc. to GP's network. One manager even mentioned a potential joint venture. Thus, it is likely that a next step for GP is to expand their network with people they can co-create their goals with, and subsequently shape the market for the new product. Through these actions it is also evident that GP is trying to make their environment endogenous rather than focusing on placing or adjusting themselves to an exogenous environment which is one of the characteristics of the constructing environment.

5.4.2 Differences

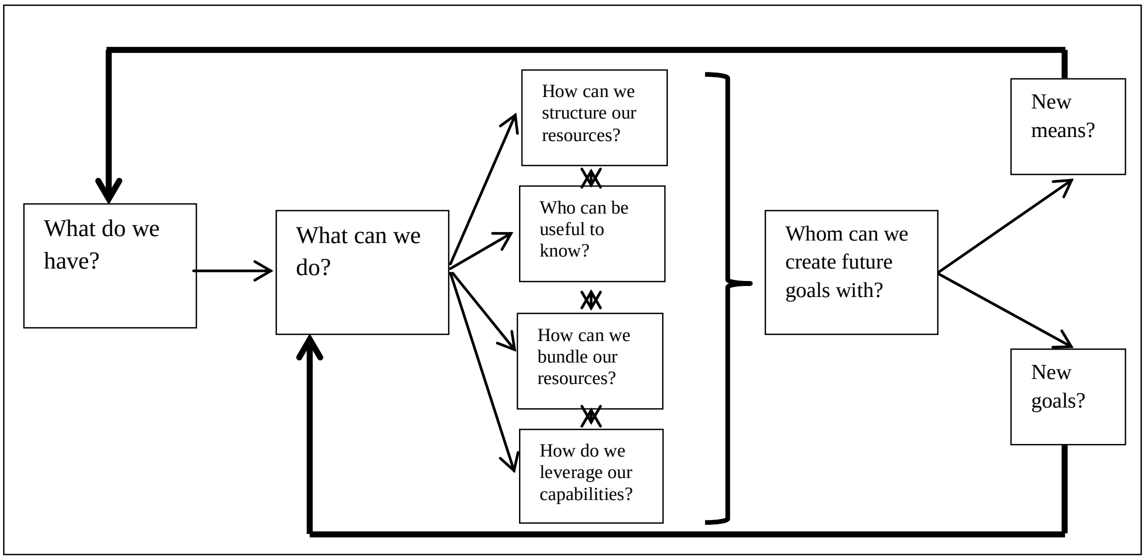
Some differences from the model of effectuation were also discovered. One difference is that it seems as if there are still old ways of thinking and acting left in the organization. This is not very peculiar, considering GP's traditional background and the fact that the printing/graphic industry is rather conventional. Maybe it is difficult or even impossible to completely change the way to act, or GP believes that their way of confronting the new innovations is successful. One difference is that all external elements are not non-existing as stated in the constructing environment. For example, GP has made some efforts to investigate what the competition looks like and which actors will be their future competitors. This behavior is not in line with the approaches in the constructing environment, but more similar to the planning strategy. There are also some elements of the visionary strategy visible in the empirical data. For example, one manager was referred to by the other managers as a visionary or entrepreneur that had worked for several years with opening the rest of the organization's eyes to new opportunities. The visionary imagined an idea of the future and started to create a space in the organization to work with his vision. Another example is the similarities between the adaptive approach and GP's tendency to create a smaller team of committed employees. This is comparable to the adaptive reasoning which accentuates that resources should be integrated into top management teams. Thus, maybe the lines are not that clear in the reality between the different approaches, as suggested by Wiltbank et al. (2006).

In addition, one difference is that the principles of affordable loss and expected return both seem to appear in this case. For example, GP's discussions and guidelines were evolving around what value added digital media entailed. However, it was also stated that if GP would not get enough agreements signed with customers during 2011, the investment in digital publishing would be forced to close, which can be seen as the limit for an affordable loss. This shows that there is no clear distinction between the applied principles.

5.5 The Effectuative Resource Management Process

Throughout the analysis it became obvious that to regain, maintain or create competitive advantage in a highly uncertain environment, GP focused on the aspects that they could control. It was no point in trying to predict something that is unknowable, which is the logic of effectuation. Moreover, based on the analysis above, the authors created a model that shows how resources are managed in highly uncertain environments to regain, maintain or create competitive advantage, which is entitled *The Effectuative Resource Management Process* (see figure 10).

Figure 10. The Effectuative Resource Management Process



Source: Authors own elaboration.

The *effectuative resource management process* starts with a reflection and review of what resources the company possesses. These resources can be equipment, technology, human resources, knowledge, business relationships or social networks. However, the first stage also includes an evaluation of the company's previous experiences, values and demographics (i.e. administrative heritage). For example, GP's previous experience from the default reactions when digitalization emerged and the loss of business opportunities made GP aware of the importance of reacting to changes in technology. That experience made them alert and willing to venture on the new opportunities of digital publishing. The demographics also plays an important role in radical changes in technology, since in the small industrial town where GP operates, it is hard to find the intellectual capital needed and this impacted the resource management in terms of creative recruitment, company culture and training activities. In addition, the values practiced by a company are also present in the process. For example in the case of GP; the old ways of doing things might still be present in a company with a long history, characterized by being a family business, operating in a conventional industry etc. Therefore it is naive to think that a company operates according to a specific approach. A company that needs to transform due to radical changes, as in this case technological change, rather bring their baggage and values into a new setting and try to make the most out of it. Thus, the result is a mix of different strategies and approaches that fit the company's administrative heritage and context.

The evaluation of what the company actually has in terms of resources initiate discussions of what they could do to go forward in their development. As discussed in this study there are several activities that a company can perform or implement; structuring the portfolio (acquiring, accumulating, divesting), bundle resources (stabilizing, enriching, pioneering) and leverage capabilities (mobilizing, coordinating, deploying). An additional activity that needs to be extra highlighted is the reflections of who can be useful to attach to the team that works with the change internally. This activity merge willful employees' together that are committed and engaged to develop the work forward and undertake new activities and consequently increase the knowledge throughout the organization. However, these activities do not follow any stages or orders rather they appear randomly and independent from one another. To emphasize the independence the different activities are placed at the same level in figure 10. Furthermore, the coordination activity is more or less isolated to the team that the effectuator builds and therefore is no new communication systems and communication infrastructure needed. This since the effectuator's team works closely to each other and the team only consists of a handful of the employees and therefore are no systems necessary.

Further, through the analysis above it became evident that the question of 'what can we do next' or 'what else can we do' appeared several times. This step emphasizes that the implementation of one activity leads to thoughts on new activities to implement. This can also be seen as a trial and error or learning by doing principle. Hence, we learn as we go along what activities are successful and not and through the process of change we learn how to make decisions that is needed to meet the unknown future. Further, when the internal adjustments to the radical change have started, the need of extending the social network becomes evident. Consequently, a company ties actors to their network whom they can co-create goals with to shape the future market. However, the investigated case company has just started with this step and therefore there is no more evidence to present after this step but we can still proclaim as discussed above that one activity leads to new goals and activities.

In conclusion, the *effectuative resource management process* rests upon the logic that "*if we can control the future, we don't need to predict it"* rather than *"if we can predict the future, we can control it"*. The idea is to concentrate on what we have and know and build on that. Thus, control is the key to achieve competitive advantage in an environment that is characterized by high uncertainty. Further, the thicker arrows emphasizes that the *effectuative resource management process* is a constant process of perpetual loops of information with no end destination but rather with new actions and decisions.

6. Conclusion

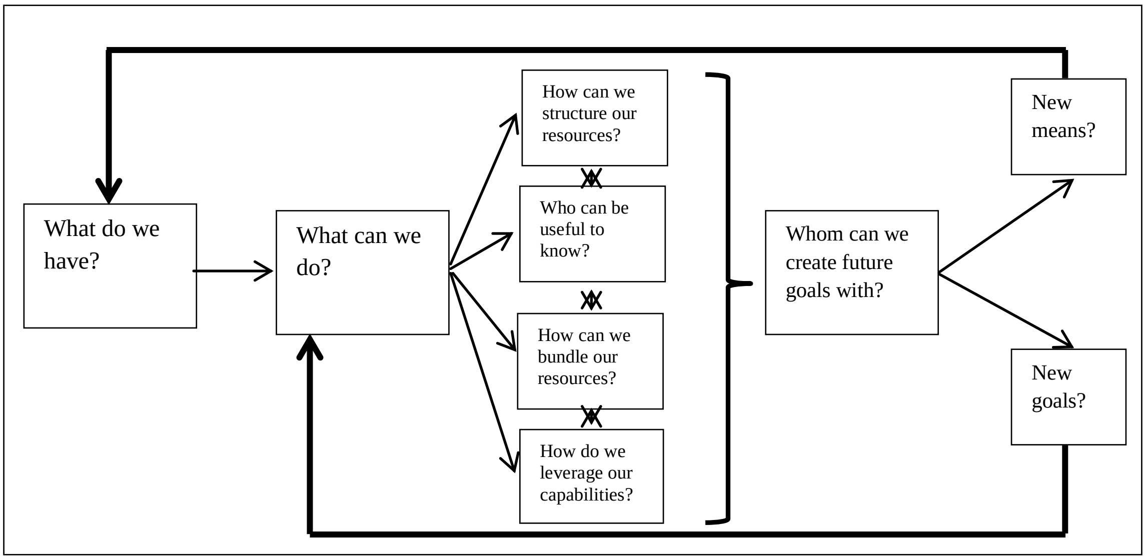
The purpose of this chapter is to outline the development of the thesis process and to present the final results and conclusions of the analysis of the empirical and theoretical findings. The aim is further to present the fulfilled purpose and answer the research question: *How are resources managed in highly uncertain environments in order to regain, maintain or create competitive advantage?*

The purpose of this thesis was to: study how managers behave when faced with disruptive technologies, examine the *resource management process,* evaluate the importance of different activities, and provide researchers and companies with answers to how managers can achieve control and competitive advantage in an environment that is impossible to predict. In order to fulfill this purpose our main arguments are presented and outlined below.

In highly uncertain environments, managers tend to rely on the resources that the company have and build their decisions and activities on the existing resources. Managers constantly review their resource portfolio and ask themselves; what can we do with these resources, and what else can we do with them? In addition, the leadership is not as visible as in other contexts and only a few employees are informed and engaged in the objective of the company. Thus, the leadership in this type of environment is more secretive due to the uncertainty of the future. A very crucial part of the managerial perspective is the role of the effectuator. The effectuator is a manager who drives the work of merging committed employees, in order to develop the company further in an unpredictable environment.

The *effectuative resource management process* is based on four principles; learning by doing, trial and error, perpetual loops and effectuation. Managers and employees learn the processes of a new product or market as they go along, and through testing different activities they make the way towards an unknown future. Furthermore, managers' focus on what they can control to move forward, rather than wasting resources on predicting what lies ahead.

Figure 11. The Effectuative Resource Management Process



Source: Authors own elaboration.

As can be seen in figure 11, the *effectuative resource management process* starts with a reflection of what resources the company possesses, and then the managers make decisions based on what they can do through structuring the resource portfolio, mobilize committed employees, bundle resources and leveraging capabilities. Subsequently, managers ask themselves; what do we need to do next in order to move forward, and the managers start to involve other actors that are wiling to co-create goals and invest in a new future or market. Lastly, through the course, new activities, resources and goals appear that drives the development further. The process is an ongoing procedure with perpetual loops of information that constantly changes due to the emergence of new goals and activities that reshape the way forward.

Thus, to regain, maintain or create competitive advantage in highly uncertain environments, managers should focus on what they can control, since then there is no need to predict the future.

6.1 Concluding remarks

When analyzing the results of this study, both academic and managerial contributions are evident. The objective of these contributions is to encourage further research, which ultimately will guide scholars and managers, particularly in regards to managing resources in highly uncertain environments.

6.1.1 Contribution to academia

From the strategic perspective, this study contributes to the fundamental question of how companies achieve competitive advantage through analyzing this question in a new context. In particular, how strategies appear in highly uncertain environments characterized by radical changes. The study also adds knowledge to how the strategic planning process appears in this type of environment.

The main contribution of the study is to add knowledge to the identified research gap in the field of Resource Management in highly uncertain environments. Through empirical testing it was identified that Sirmon et al.'s (2007) *resource management process* differed from the reality that was studied. Further the effectuation model was proven to be empirically grounded. Consequently, this study further develops the effectuation model by adding Sirmon et al.'s (2007) findings and the findings of this thesis.

Another finding of this study is the ”secretive leadership” that was discovered during the empirical research. The leadership in highly uncertain environments was recognized to work on the premises to only include employees that showed interest to be included. The leadership is referred to as secretive due to the uncertainty of the companies' actions and future. Therefore, the communication becomes hard or unnecessary due to sudden shifts or findings.

Lastly, due to the previously stated opportunity to examine the transformation before and after the emergence of the disruptive technology (iPads and Smartphones) one additional finding was revealed. It became evident that the context that a company operates in determines how managers manage their resources and capabilities. Thus, as the context change the *resource management process* transform and develops to fit new strategies and approaches necessary to survive in the new context.

6.1.2 Managerial implications

There is a need of new ways of thinking and acting for managers operating in highly uncertain environments. Managers tend not to follow a structured business model with careful analysis and planning of external elements with clear goals. They rather navigate the development further through activities. Thus, managers steer through activities since goals are based on a future that is unpredictable and therefore goals can be a vague or misleading control instrument. Thus, there is no point in wasting resources on trying to predict the future. The managerial focus lies on what resources the company possesses and what they can do with them in order to move forward. Another consequence is that managers need to tie committed employees to their way of thinking in order to handle the uncertainties they are facing. Consequently, this requires a committed and enthusiastic leader that stitches a powerful team together. Furthermore, as contexts change managers needs to be aware of the implication of changing their resource management to fit the new context.

6.1.3 Future Research

Many directions could be followed when it comes to future research on Resource Management in general, and Resource Management in highly uncertain environments in particular. The main hope of encouraging further research is to attain research further that will support, as well as critically discuss our findings. Our empirical data was solely collected from the printing industry, therefore we would recommend future research to include additional industries. Further understanding could be added to the area of research management by studying companies in similar situations as GP but of different sizes, age, or different geographical locations. This would also increase the validity of this study and give a more holistic understanding of the resource management process in general. This research has been limited to only study a certain part of the process. Consequently, this study could be complemented by more thorough follow-up studies, where it would be possible to focus on a different part of the process or even study the whole process of change of a company in a similar situation. This could enlighten new aspects and ways of managing resources in highly uncertain environments.

References

Ambrosini, V., Bowman, C., & Collier, N. 2009. Dynamic capabilities: An exploration of how firms renew their resource base. *British Journal of Management*, 20, pp.9-24.

Babbie, E. 2007. *The practice of social research.* Thomson Wadsworth: Belmont (USA).

Barney, J.B. 1986. Strategic factor markets: expectations, luck and business strategy. *Management Science*, 32(10), pp.1231-1241.

Barney, J.B. 1991. Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), pp.99-120.

Barney, J.B., Wright, M., & Ketchen D.J. 2001. The resource-based view of the firm: ten years after 1991. *Journal of Management*, 27(6), pp.625-641.

Bourgeois, L.J. & Eisenhardt, K. 1988. Strategic decision processes in highly velocity environments: four cases in the microcomputer industry. *Management Science*, 34(7), pp.816-835.

BPIF, 2005. "*Print 21: Coming of age?"* British Printing Industries Federation. [Online] Available at: http://www.britishprint.com/industry/comp/print21report.pdf (Accessed 8 April 2011)

Burnes, B. 2009. Reflections: ethics and organizational change –time for return to lewinian. *Journal of Change Management*, 9(4), pp.359-381.

Bower, J.L. & Christensen, C.M. 1995. Disruptive technologies: Catching the wave. *Harvard Business Review*, Jan-Feb 1995.

Chatzkel, J. 2002. A conversation with Goran Roos. *Journal of Intellectual Capital*, 3(2), pp. 96-117.

Christensen, C.M. & Overdorf, M. 2000 Meeting the challenge of disruptive change. *Harvard Business Review*, March-April 2000.

Christensen, C. M. 2003. *The innovator's dilemma*. New York: Harper Business ed.

The European Printing Group, 2011. [Online] Available at: http://europeanprintinggroup.eu/index.html, (Accessed 16 April, 2011)

Courtney, H., Kirkland, J. & Viguerie, P. 1997. Strategy under uncertainty. Harvard Business Review, 75(6), pp.67-79.

Dawson, P. 2003. *Understanding organizational change. The contemporary experience of people at work.* London:SAGE Publications Ltd.

Denzin, N.K. 1978 *Sociological Methods – A Sourcebook*. McGraw- Hill: New York/US.

Dew, N., Sarasvathy, S. & Ventakaraman, S. 2004. The economic implications of exaptation. *Journal of Evolutionary Economics,* 14(1), pp.69-84.

Dew, N., Read, S., Sarasvathy, S. & Wiltbank, R. (2009) Effectual versus predictive logics in entreprenureal decision-making: Differences between experts and novices. *Journal of Business Venturing,* 24(4), pp.287-309.

Dicken, P. 2007. *Global Shift. Mapping the changing contours of the world economy*. London: SAGE Publications Ltd.

Dubois, A. & Gadde, L-E., 2002, Systematic combining: an abductive approach to case research. *Journals of Business Research*. 55(7), pp.553-560.

Easterby-Smith, M., Lyles, M., & Peteraf, M. 2009. Dynamic capabilities: current debates and future directions. *British Journal of Management*, 20(1), pp.1-8.

Eisenhardt, K. M. 1989. Making fast strategic decisions in high-velocity environments. *Academy of Management Journal,* 32(3), pp.543-576.

Eisenhardt, K.M., & Martin, J.A. 2000. Dynamic capabilities: what are they*? Strategic Management Journal*, 21(10), pp.1105-1121.

Esaiasson, P, Gilljam, M., Oscarsson, H. & Wängnerud, L. 2007. *Metodpraktiken. Konsten att studera samhälle, individ och marknad*. Norsteds Juridik AB: Stockholm

European Commission, 2005. "Forest-based Industries: Printing". [Online] Available at: http://europa.eu.int/comm/enterprise/forest_based/printing_en.html. (Accessed 8 April 2011)

European Commission, Employment, Social Affairs 2010. *The future of the European print industry- in our own hands. Restructuring your toolkit to make it happen.*

Facta Consult, 2010. *The future of the European print industry- in our own hands. What the industry says.* UNI Europa Graphical, Intergraf, KVGO, Assografici

Grant, R.M. 1991. The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation. *California Management Review*, 33(3), pp.114-134

Graphic Printer's website, 2011. [Online] Available at: http://www.graphicprinters.com/Default.aspx?module=4&content=108&lang=SV&fwsite=1, (Accessed 16 April, 2011)

Hayes, R. H. 1985. Strategic planning: forward in reverse? *Harvard Business Review,* 63(6), pp. 111-119.

Hill, C. L. & Jones, G. R., 2008. *Strategic Management Theory: An Integrated Approach.* Cengage Learning Ltd. USA: Maison

Hitt, M.A. & Ireland, R.D. 1985. Corporate distinctive competence, strategy, industry and performance. *Strategic Management Journal*, 6 (3), pp.273-293.

Hitt, M.A & Ireland, R.D. 2002. The essence of strategic leadership: managing human and social capital: *Journal of Leadership and Organizational Studies*, 9, pp.3-14.

Hitt, M.A., Freeman, R.E. & Harrison J.S (Eds.) *Handbook of strategic management :124-188*. Oxford, UK: Blackwell.

Johansson, K., Lundberg, P. & Ryberg, R. 1998. *Grafisk kokbok – Guiden till grafisk produktion (TheGraphic Cook Book – A Guide to Graphic Production)*, Arena: Stockholm.

Kim, W.C. & Mauborgne, R. 1997. Value innovation: the strategic logic of high growth. *Harvard Business Review*, 75(1), pp.103-112.

Kim, W.C. & Mauborgne, R. 2000. Knowing a winning business idea when you see one, *Harvard Business Review*, September-October: 78(5), pp.129-138.

Kipphan, H. 2001. *Handbook of printed media*, Springer-Verlag; Berlin Heidelberg, New York.

Keats, B.W. & Hitt, M.A. 1988. A casual model of linkages among environmental dimensions, macro organizational characteristics, and performance. *Academy of Management Journal*, 31(3), pp.570- 598.

Lei, D., Hitt, M.A. & Bettis, R.A. 1996. Dynamic core competences through meta-learning and strategic context. *Journal of Management*, 22(4), pp.549-569.

Lyne, E. 2002. *"The Printing and Graphics Arts Industry."* Institute of Business Trends Analysis: BMCC

Makadok, R. 2003. Doing the right thing and knowing the right thing to do: why the whole is greater than the sum of the parts. *Strategic Management Journal*, 24(10), pp.1043-1056.

March, J. 1991. Exploration and explotation in organizational learning. *Organization Science*, 2(1), pp.71-87.

March, J. & Olsen, J. 1976. *Ambiguity and choice in organizations.* Bergen, Norway: Universitetsförlaget.

McGrath, R. G. 1999. Falling forward: real options reasoning and entrepreneurial failure. *Academy of Management Review*, 24(1), pp.13-30.

Merriam, S. B. 1998. *Qualitative research and case study application in education*. San Francisco: Jossey-Bass.

Miller, D. 2003. A asymmetry-based view of advantage: towards an attainable sustainability. *Strategic Management Journal*, 24(10), pp.37-54.

Mosakowski, E. 1997. Strategy making under casual ambiguity: conceptual issues and empirical evidence. *Organizational science*, 8(4), pp.414-442.

Neld, K. 2010. *Platt Revolution.* Allt om tidskrifter.

Nicholls-Nixon, C. L. & Woo, C. Y., 2003. Technology sourcing and output of established firms in a regime of encompassing technological change. *Strategic Management Journal*, 24(7), pp.651-666.

Nicolini, D. 2009. Medical innovation as a process of translation: a case from the field of telemedicine. *British Journal of Management*

Patton, M. Q. 1990. *Qualitative Evaluation and Research Methods*. 2nd. ed. Thousand Oaks, CA: Sage Publication.

Phol, H., Styhre, A. & Elmquist, M. 2009. The concept of interessement: the story of a power-split technology for hybrid electric vehicles. *International Journal of Innovation Management*, 13(1), pp.47-64

Porter, M. E. 1996. What is strategy? *Harvard Business Review*, Nov.-Dec., 74(6), pp.61-78

PowerPoint 1, 2011. *Prepress – Emergence of a Magazine.* Graphic Printer's internal document.

PowerPoint 2, 2011. *Digital media – What to do?* Graphic Printer's internal document.

PowerPoint 3, 2011. *The main presentation - 110201*. Graphic Printer's internal document

PowerPoint 4, 2011. Value network. Graphic Printer's internal document.

Prahalad, C.K. & Hamel, G. 1990. The core competence of the corporation. *Harvard Business Review*, 68(3), pp.79-91.

Priem, R.L., & Butler, J.E. 2001. Is the resource based-view a useful perspective for strategic management research? *Academy of Management Review*, 26(1), pp. 22-40.

Power of print. 2010. *POP 10. Internet blir bestående i tryck*. Grafiska företagens förbund

Rindova, V. P. & Fombrun, C. J. 1999. Constructing competitive advantage: the role of firm-constituent interacions. Strategic Management Journal, 20(8), pp.691-710.

(Sanchez, R. 1995. Strategic flexibility in product competition. *Strategic Management Journal*, 16(Special issue), pp.135-159.

Sarasvathy, S.D. 2001. Causation and effectuation: toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review*, 26(2), pp.243-263.

Saunders, M., Lewis, P., & Thornhilll, A. (2003) *Research Methods for Business Students.* (3rd edition) Harlow, Essex, FT Prince Hall.

Schramm, 1971 in Yin, R. K. 2003. *Case Study Research – Design and Methods. 3rd. ed*. Thousand Oaks, CA: Sage Publications.

Schoemaker, PJH. 2002. *Profiting from uncertainty: strategies for succeeding no matter what the future brings.* Free Press: New York.

Senor, J. & Wilpers, J. 2010. *Innovations in magazines 2010. World report*. Innovation International Media Consulting Group

Sepulveda, R. 2010. *Den andra revolutionen*. Stochholm:Education & Publishing Systems-Graphics Tools AB

Shani, A.B. & Stjernberg, T. 1995. The integration of change in organizations: Alternative learning and transformaion mechanisms. *Research in Organizational Change and Development*, 8, pp.77-121.

Simon, H.A. 1993. Strategy and organizational revolution. *Strategic Management Journal*, 14, pp.131-142.

Sirmon, D., & Hitt, M. 2003. Managing Resources: linking unique resources, management and wealth creation in family firms. *Entrepreneurship Theory and Practice*, 27(4), pp.339-358.

Sirmon, D., Hitt, M., & Ireland, D. 2007. Managing firm resources in dynamic environments to create value: looking inside the black box. *Academy of Management Review*, 32(1), pp.273-292.

Sirmon, D., Gove, S. & Hitt, M. 2008. Resource management in dyadic competitive rivalry: the effects of resource bundling and deployment. *Academy of Management Journal*, 51(5), pp.919-935.

Sirmon, D. & Hitt, M. 2009. Contingencies within dynamic managerial capabilities: interdependent effects of resource management and deployment on firm performance. *Strategic Management Journal*, 30(13), pp.1375-1394.

Shapiro, C. 1989. The theory of business strategy. *Rand Journal of Economics*, 20(1), pp.125-137.

Smyth, S. 2008. *The Future of European Printing 2013.* Pira International Ltd

Strauss, A. & Corbin J. (1990*). Basics of qualitative research, Grounded theory procedures and techniques.* Newbury Park: Sage.

Stjernberg, T. & Philips, Å. Organizational innovations in a long-term perspective: legitimacy and souls-of-fire as critical factors of change and viability. *Human Relations*, 46(10), pp.1193-1217.

Stringer, R. 2000. How to manage radical innovation. *California Management Review*, Summer, pp. 70-88.

Teece, D., Pisano, G., & Shuen, A. 1997. Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), pp.509-533.

Tellis, GJ & Golder, PN. 2002. *Will and vision: How latecomers grow to dominate markets.* McGraw Hill: New York

The European Graphic Company's Federation. 1999. *Grafiska företagen i mediabranschen – vad gör vi nu? (Graphic Firms in the Media Business – What Do We Do Now?)* Grafiska företagens service.

The European Graphic Company's Federation. 2001. *Nya värden i E-gutenbergs värld (New Values in the e-Gutenberg World),* Grafiska företagens service.

Wang, C.L. & Ahmed, P.K. 2007. Dynamic capabilities: A review and research agenda. *International Journal of Management Reviews*, 9(1), pp.31-51.

Wernerfeldt, B. 1984. A resource-Based View of the firm. *Strategic Management Journal*, 5(2), pp.171-180.

Wiltbank, R., Dew, N., Read, N. & Sarasvathy, S.D. 2006. What to do next? The case for non-predictive strategy. *Strategic Management Journal*, 27(10), pp.981-998.

Yang, P.C., Wee, H.M., Liu, B.S. & Fong, O.K., 2010. Mitigating Hi-tech products risks due to rapid technological innovation. *Omega* 39(4), pp.456–463

Yin, R. K. 2003. *Case Study Research – Design and Methods. 3rd. ed*. Thousand Oaks, CA: Sage Publications.

Zott, C. 2003. Dynamic capabilities and the emergence of intraindustry differential firm performance: Insights from a simulation study. *Strategic Management Journal*, 24(2), pp.97-125.

Interviews

Ashley, 2011. Interview at Graphic Printers. [Interview] (Personal communication 12 April 2011)

Ben, 2011. Interview at Graphic Printers. [Interview] (Personal communication 6 April 2011)

Brian, 2011. Interview at Graphic Printers. [Interview] (Personal communication 6 April 2011)

Cindy, 2011. Interview at Graphic Printers. [Interview] (Personal communication 6 April 2011)

Lauren, 2011. Interview at Graphic Printers. [Interview] (Personal communication 6 April 2011)

Michael, 2011. Interview at Graphic Printers. [Interview] (Personal communication 3 March 2011; 6 April 2011)

Robert, 2011. Interview at Graphic Printers. [Interview] (Personal communication 3 March 2011)

Steven, 2011. Interview at Graphic Printers. [Interview] (Personal communication 14 April 2011)