Enterprise Resource Planning systems and the Effects on Management Control

Master's Thesis in Economics

Radboud Universiteit Nijmegen

Author: Jurre Cuppen - s4520750

Course: Master's Thesis in Economics

Specialization: Accounting & Control

Supervisor: Drs. R.H.R.M. Aernoudts

University: Radboud University

Faculty: Nijmegen, School of Management

Date: July 8, 2016

Abstract

This thesis investigates how changes regarding Management Control (MC) systems can be explained in response to an implementation of an ERP system, considering the pre-set objectives of the implementation. For this investigation, a single positivistic case study is conducted at BP, a firm which produces designer furniture and sells them to furniture stores. BP decided to implement the ERP system of ISP, a provider of business software specific for the roller shutters and solar protection industry, in 2004.

From the literature study it is concluded that the results, regarding the changes of MC that ERP implementations may entail, are inconsistent. In current literature, there is no explicit distinction made between a strategic implementation and a technical implementation. The latter is usually applicable in practice and involves little or no change in MC. This distinction can be the reason behind the inconsistent results of previous research in this area. The results of this thesis show that the implementation of the ERP system at BT concerns a technical implementation and only limited changes in MC have occurred. The main reason is that when there is a case of a technical implementation, only an integration of existing processes takes place. This contrasts with a strategic implementation, in which processes are fundamentally redesigned and thereby, involves the expectation that there are changes regarding MC.

Table of Contents

1. Introduction

1.1 Introduction

When markets become increasingly competitive, firms seek new opportunities to improve their competitiveness. Therefore, firms use advanced information technology, such as Enterprise Resource Planning (ERP) systems, in order to achieve advantages over their competitors. ERP systems have been used on a large scale by firms in the hope to increase, among others, their market agility since the introduction of these systems in the 1990s (Grabski & Leech, 2007). An ERP system has the potential to integrate all the data and the information flowing throughout the entire firm (Davenport, 1998) and these systems have been defined as "enterprise wide packages that tightly integrate business functions into a single system with a shared database" (Quattrone & Hopper, 2005, p. 735).

Over the whole world, we can see a rapidly increasing number of firms that adopt an ERP system (Granlund & Malmi, 2002). An obvious example of the rising importance of ERP systems is the considerable sales increase of the largest vendor, SAP, which has grown from less than $500 million in 1992 to $17,6 billion in 2014 (Davenport, 1998; SAP annual report, 2014). This has to do with the fact that firms seem to think that an implementation of an ERP system leads automatically to higher efficiency, and hence for better performance relative to non-adopting firms (Bernroider 2008; Davenport 1998). Further, expectations are that an ERP implementation has major implications for the organizational structure, the manner of working and also on management control (MC) (Grabski & Leech 2007; Kallunki, Laitinen & Silvola, 2011). The potential suggested benefits regarding ERP systems have attracted significant attention from researchers in the area of accounting (Booth, Matolscy & Wieder, 2000).

Several studies in the accounting literature have demonstrated that the results, regarding the changes that ERP implementations may entail, are inconsistent (Dechow & Mouritsen, 2005). In many cases, the expected changes are only partially realized or even not at all (e.g. Granlund & Malmi, 2002). This is caused because ERP systems, among others, are a complex phenomenon (Poston & Grabski, 2001). Due to their complexity, business problems and technical challenges arise and many firms fail to implement an ERP system in a proper way (Davenport, 1998). In 2008 is reported that 70% of ERP implementations failed to reach their corporate objectives (Bernroider, 2008).

In recent studies, it is mostly only investigated whether the expected results of an ERP implementation are achieved, but there is little discussion regarding the impact of ERP systems on MC of a firm (Granlund, 2011). In current literature, there is also no distinction made between a strategic implementation, involving the expectation that there are changes regarding MC, and a technical implementation. The latter is usually applicable in practice and involves little or no change in MC. Furthermore, Hyvönen, Järvinen and Pellinen (2008) argue that there are many important questions unanswered and need more investigation. Especially, how MC systems are influenced by ERP systems is a question which should be given more attention.

Recently, Mahama, Elbashir, Sutton and Arnold (2016) propose in their paper that the agency of information systems, such as ERP systems, have to be reinterpreted as relational. They showed multiple limitations concerning the technocentric view, in which ERP systems are viewed as technology with predefined functionality and predictable effects, and the anthropocentric view, in which ERP systems are seen as a tool and agency is attributed to human beings. Mahama et al. (2016) argued that the social and material entities that make up ERP systems should not be viewed in isolation, but that their collective force defines the agency of ERP systems.

1.2 Literature overview

In the last two decades, more and more firms have implemented an ERP system and multiple papers have been written concerning the effects of ERP systems on MC. This section presents a brief overview of literature that is published so far in the area of accounting research, which concerns mainly positivistic and interpretive research.

Several papers have attempted to test the relationship between an ERP implementation and performance or MC. For instance, Poston and Grabski (2001) found no significant improvement of performance in response to the implementation of an ERP system. The results of their study show only a significant decrease in the ratio of costs of goods to revenues and significant reduction in the ratio of employees to revenues three years after the ERP implementation. This contrasts with Hayes, Hunton and Reck (2001) who found that the firm performance of adopters is significantly better when compared to non-adopters.

Chapman and Kihn (2009) attempted to improve the understanding regarding how ERP systems can assist managers in enhancing performance. They analyzed the direct associations, as well as whether ERP is associated with the four design characteristics of enabling control systems (repair, internal transparency, global transparency and flexibility), and whether these in turn are associated with perceived system success and performance. They found the following results: positive relations between ERP and perceived system success, between ERP and the four design characteristics of enabling control (except for flexibility) and between the four design characteristics of enabling control and perceived system success (except for flexibility) and a partial support regarding the relationship between enabling control and business unit performance. Booth, Matolscy and Wieder (2000) concluded from their results that ERP users report high levels of information integration; perform better in transaction processing and ad hoc decision-support than in sophisticated decision-support and reporting and that ERP systems have little impact on the use of new accounting practices. Kanellou and Spathis (2013) also provide empirical evidence that a number of accounting benefits derived from ERP systems.

Multiple interpretive studies in this research area have demonstrated an amplification regarding the complex nature of the relationship between ERP systems and MC. According to Scapens and Jazayeri (2003), the field studies suggested that ERP systems have only a relatively little impact on the character of MC and the work of a controller. In their case, they only found changes in the role of controllers, for example elimination of routine job and line managers with more accounting knowledge, but no fundamental changes regarding MC. Granlund & Malmi (2002) conducted a multiple case study to explore the effects of ERP systems on MC and they also found that ERP implementations have led to relatively small

changes to MC.

In contrast to the previous mentioned field studies, Caglio (2003) and Quattrone and Hopper (2005) drew a different conclusion from their results. Caglio concluded by means of the structuration theory that the MC and the positions of accountants changed in his case. The following changes were visible in response to the implementation of the ERP system: a higher degree of standardization of accounting, a stronger need for integration and interfunctional collaboration and a more prominent role of the accounting department. Quattrone and Hopper (2005) conducted a case study in two different firms and want to analyze the effect of implementing an ERP system on MC. The results of this study were that in one firm little change appeared regarding to MC and in the other firm several changes were visible. The different results were explained due to the fact that both firms adopted different strategies, which resulted in different configurations, implementations and usages of the ERP system.

1.3 Research problem

From the introduction and the brief literature overview, the following conclusions can be drawn. More attention should be given to how ERP implementations influence MC systems in a firm. Also the objective of an ERP implementation, namely a technical or a strategic implementation, is not taken into account in previous studies, and the results of the various studies are thus inconsistent. Additionally, it is proposed to do research regarding this topic with a more relational view of the agency of ERP. The above mentioned research problems have led to the following research question:

"How can changes in MC systems be explained in response to an implementation of an ERP system, considering the pre-set objectives? "

The aim of this study is to provide more insights with regard to how MC changes in response to an ERP implementation, in which also the pre-set objectives of the company concerning the ERP implementation are taken into account. By means of an extensive literature review and a single positivistic case study, it is attempted to answer this research question.

1.4 Relevance

The scientific relevance is that there is little attention paid so far in the literature on how MC systems are influenced by ERP systems. Furthermore, current literature does not take the firms' objective of the ERP implementation (strategic or technical) into account and that can be seen as a gap in the accounting information systems literature. The practical relevance of this research is especially for managers and employees who are responsible or involved with the implementation of an ERP system in the firm. This kind of research provides them more insights regarding the effects of an ERP implementation on MC system and therefore, they can adjust their expectations when they are involved in a similar situation.

1.5 Structure of the thesis

The structure of this thesis is organized as follows. The opening chapter introduces the topic in question to the reader, discusses the published literature briefly, the research problem and why it is relevant to do research in this area of the accounting literature. The second chapter

discusses all the relevant literature that the author uses for the case study. The current knowledge regarding the topic in question is elaborated and a distinction is made between research with a positivistic, interpretive and critical research perspective. The final section of this chapter presents a summary of the relevant theory and from this a conclusion is derived. Chapter three elaborates the research methods of this investigation. Subsequently, the fourth chapter describes the results from the case study and discusses the analysis of the results. The thesis ends with chapter five, in which the results are linked with the literature, elaborated in chapter two, the conclusions of the research are described and thus the initially stated research question is answered. Finally, this section discusses the limitations of this research, how the findings contribute to the accounting literature and provide suggestions for further research.

2. Literature Overview

2.1 Introduction

A literature overview is elaborated to gain insight in current research in the area of accounting and control regarding ERP systems and the implications on MC. The literature refers to the present state of knowledge which is present concerning this topic. In addition, the gaps in the existing literature are highlighted and based on the main findings of the literature review; the expectations regarding the empirical part of this research are justified.

In section 2.2, the concepts ERP and MC and also the relation between these two concepts are made clear. Subsequently, the implications of ERP systems on MC from different research perspectives in the accounting literature are elaborated in section 2.3. A distinction is made between positivistic, interpretive and critical research. These different research perspectives are discussed one by one as follows: an introduction and the main assumptions of the research perspective, the main theories used in relevant studies in the respective research perspective and an overview of the results of the research perspective. Finally, a summary and a conclusion of the literature overview are provided regarding, among others, how the three different perspectives can complement each other and the gap found in response to the literature overview is highlighted.

2.2 Enterprise Resource Planning and Management Control

2.2.1 Enterprise Resource Planning (ERP)

Currently, an ERP system is the most advanced software solution for firms. In the integrated ERP solution, data relating, among others, customers, suppliers, products, orders and deliveries are stored and managed. Thus, all available data is always consistent and up to date. The number of firms that have implemented an ERP system has increased in the recent, approximately, twenty years (Madapusi and D'Souza, 2012). The rise of the use of ERP systems have a tremendous impact on the way that firms deal with data.

Rashid, Hossain and Patrick (2002) have argued that ERP systems are not invented from one day to another, but that the development of the ERP system began with inventory control systems in the 1960s. In 1970s, material requirements planning (MRP-1) systems were developed which are used to plan the parts required according to the production schedule. Subsequently, manufacturing resources planning (MRP-2) systems were introduced in the 1980s. These systems go further by including the machines, times and people in the planning. In the late 1980s and the first years of the 1990s, ERP systems appeared for the first time and these systems are a substantial extension of MRP-2. Compared to earlier systems, ERP systems distinguish themselves by their information commonality and integration, causing that firms are allowed to use only one information system (Davenport, 2000). The last two decades multiple vendors added more and more modules and functions as "add-ons" (Rashid et al., 2002).

In accounting literature, there are several ERP definitions being used. Aernoudts, Boom, Pijl and Vosselman (2005) argue that an ERP system can be characterized as an information system that is made up of different modules, each supporting the business

processes. The modules are integrated and all gathered data is stored in a central database (p.3). Kallunki, Laitinen and Silvola (2011) define ERP systems as follows: "ERP systems are organization-wide and integrated information systems that can be used to manage and coordinate all the resources, information, and functions of a business from shared data stores" (p. 21). Dechow and Mouritsen (2005) use an almost similar definition: "an ERP system attempts to integrate all corporate information in one central database, they allow information to be retrieved from many different organizational positions, and in principle they allow any organizational object to be made visible" (p. 692).

All three abovementioned definitions of ERP note that "seamless integration of all the information flowing of all organizational areas through the firm" (Davenport, 1998, p. 121) is a central issue to reach. According to Davenport, ERP systems give firms the possibility to store all process related business data in one information system and hereby, for example, managers have the possibility to retrieve easily information from different departments or subsidiaries. ERP systems replace many separated applications used in a firm and integrate different systems.

2.2.2 Management control (MC)

Different definitions arise from the concept of MC and MC systems in the scientific literature. The terms management control systems (MCS), management accounting (MA), management accounting systems (MAS) and organizational control (OC) are occasionally used interchangeably (Chenhall, 2003). According to Chenhall, MCS is the broadest concept and it includes, among others, MAS and other controls such as personal controls.

Two often-cited definitions of MC are those of Merchant and Van der Stede (2011) and Anthony and Govindarajan (2014). Merchant and Van der Stede define MC as follows: "The process by which management ensures that people in the organization carry out organizational objectives and strategies and encourages, enables, or, sometimes "forces" employees to act in the firm's best interest. It includes all the devices or mechanisms managers use to ensure that the behavior of employees is consistent with the firm's objectives and strategies"(p. 5). Anthony and Govindarajan (2014) use the following definition: "MC is the process by which managers influence other employees of the firm to implement the firm's strategies" (p. 6).

Both definitions are almost the same. But Merchant and Van der Stede emphasize the resources in respect of MC, while Anthony and Govindarajan put the impact of the manager central. In essence, MC is about the behavior of employees. If the manager can trust that the employees will always do what is best for the firm, then there is no need for a MC system. However, employees have not always desirable behavior and this has in general three kinds of causes: lack of direction, motivation problems and personal limitations (Merchant & Van der Stede, 2011). Anthony and Govindarajan emphasize the use of MC to implement an organization's strategy, but Merchant and Van der Stede also focus on influencing employees' behavior. Thus, this study assumes the definition of Merchant and Van der Stede.

Merchant and Van der Stede make a distinction between four types of MCs: result control, action control, personnel control and cultural control. Result control is an assessment based on achieved financial and/or non-financial results. Action control is based on the prescription or prohibition of certain acts. Personnel control is based on the nature of the

employee to control and to motivate himself and cultural control stimulates the firm to motivate each other and speak someone on his or her behavior (Merchant & Van der Stede, 2011).

2.2.3 Relations ERP and MC

Many researches focusing on ERP and accounting tend to ignore MC dimensions (Aernoudts, Boom, Pijl and Vosselman, 2005). According to Granlund and Mouritsen (2003), this is still an empirically underdeveloped area, but more and more case studies are conducted and show that ERP has several implications on MC. However, other studies find results that ERP has only limited effects on MC.

In general, ERP systems are seen as technologies for MC (Dechow and Mouritsen, 2005). Granlund and Mouritsen (2003) argue that there is a relation between ERP and MC. ERP enables the running of MC, but it may also limit the design and implementation of MC systems. ERP and MC cannot be seen apart from each other, because ERP systems are centrally managed and are built around business processes (Granlund and Mouritsen, 2003).

Chapman (2005) briefly outlines two papers (Dechow en Mouritsen; Quattrone and Hopper, 2005) which discusses ERP systems and its implications on the nature of MC. Dechow and Mouritsen point out that "MC in an ERP-environment is not a property of the accounting function but a collective affair were local control issues in different parts of the firm are used to create notions of global management" (p. 691). They assert that ERP has effects on MC, because ERP systems incur a techno-logic that conditions MC practice and it has the potential to inhibit traditional modes of MC. Further, Dechow and Mouritsen asked themselves whether MC improves from such integration when implementing an ERP system. The question is whether integration of firm's activities is always possible by an ERP system. Quattrone and Hopper are also wondering the assumption that there is a linear relation between integration, information and MC. They see the complexity of this relationship by the different results of their two conducted case studies.

2.3 Implications of ERP on MC from different research perspectives

On the basis of the three different research perspectives which are distinguished in the current accounting literature, a clear overview is provided regarding the research findings related to the topic what the influence of ERP systems is on MC. But prior to this, the three research perspectives (Chua, 1986) are explained separately and the theories most commonly used in each perspective are elaborated. These theories will help you to understand the assumptions of the concerning research perspective.

2.3.1 Positivistic Perspective

2.3.1.1 Introduction

Chua (1986) used the following classifications of assumptions regarding the three research perspectives: beliefs about knowledge (epistemological and methodological), beliefs about physical and social reality (ontological, human intention and rationality and social order/conflict) and relationship between theory and practice. The dominant assumption of positivistic accounting research regarding beliefs about knowledge is that theory is considered to be truth if it is repeatedly not falsifiable by empirical results. A deductive approach is

preferred and hypotheses are prepared to test a theory. Mainly quantitative methods of data collection and analysis, which makes generalization possible, are favored, despite the fact that this simplifies the context of the relevant research problem (Chua, 1986; Van der Meer-Kooistra and Vosselman, 2012).

Concerning the beliefs about physical and social reality, positivistic researchers assume that there is a world of reality that is independent of those who observe it. Researchers are not seen as active makers of reality (Chua, 1986). Further, positivistic researchers legitimize the conduct of the economic man and are dominated by neo-classical economic theory (Van der Meer-Kooistra and Vosselman, 2012). According to positivistic researchers, the assumption is that individuals and firms have a single goal of utility-maximization and means-end rationality. The last main assumption concerning the beliefs about physical and social reality is that societies and firms are in essence stable and conflicts may be managed through appropriate accounting. Accounting is seen as a tool which aims to provide information which is useful for effective decision making and control behavioral risks.

With respect to the relationship between theory and practice, positivistic researchers assume that accounting specifies the means and that there is an acceptance of current institutional structures (Chua, 1986).

2.3.1.2 Theories Used in Positivistic Studies

In general, positivistic research makes extensive use of theories. This has to do with the fact that positivistic researchers attempts explicitly to test theories by means of a deductive approach. Concerning relevant papers for this study, three theories are repeatedly come forward. These theories are economic theory, control theory and institutional theory.

Economic Theory (Agency Theory)

In multiple positivistic studies concerning this research topic, the economic theory is used to develop hypothesis (Poston and Grabski, 2001; Mauldin and Richtermeyer, 2004; Grabski and Leech, 2007; Wier, Hunton and HassabElnaby, 2007; Kallunki, Laitinen and Silvola, 2011) and in particular, the agency theory. The agency theory is about resolving problems which can exist between the principal and the agent (Eisenhardt, 1989). According to Jensen and Meckling (1976), the problem is that the goals of both parties are in conflict and that they will act in their self-interest, because this theory considers a number of neoclassical assumptions about human nature (Noreen, 1988). Furthermore, there is information asymmetry between the principal and the agent (Holmström, 1979).

For example, Poston and Grabski (2001) look at the impact of ERP systems to, among others, agency costs and decision information costs. Agency costs are the costs incurred due to a conflict between the goals of the principal and the agents and decision information costs occur because of the fact that employees, which are lower in the hierarchy, have better access to local information then top managers. Both concepts are also discussed in the paper of Wier et al. (2007). Mauldin and Richtermeyer (2004) review economic theory concerning the role of disclosure and suggest that information and incentive problems impede the efficient allocation of resources and that disclosure mitigates these problems. Kallunki et al. (2011) mention in their literature review the following: "some findings of previous research suggest that the use of non-financial performance measures improves firms' financial performance.

This is consistent with agency theory, because this suggests that when non-financial performance indicators become part of the managerial reward system, managers are motivated to implement information processes, procedures, systems and metrics that are focused on non-financial performance" (p. 26).

Control Theory (Cybernetics)

The cybernetic control theory is also referred in multiple positivistic studies. According to Wier, Hunton and HassabElnaby (2007), cybernetic control theory provides explanation about the way ERP systems offer the means concerning the effectively use of non-financial performance indicators for managers. Cybernetic controls provide measures that enable quantification of an underlying phenomenon, activity or system, set standards of performance or targets to be met, provide feedback processes that enables comparison of the outcome of the activities with the standard, assess variance between goals and performances and modify the system's behavior or underlying activities (Elbashir, Collier and Sutton, 2011). Furthermore, cybernetic control theory suggests that if a firm have to adapt and to survive in its environment, decision makers need to receive feedback on a timely basis to notice unexpected deviations and to act and to observe system responses. This theory asserts that the potential effectiveness of ERP systems depends on the ability to capture, process, disperse and analyze performance measures on a timely basis (Weir et al., 2007).

Institutional Theory (Transaction Cost Economics)

Institutional theory asserts that the development of formal structures in firms can significantly be influenced by the institutional environment (Scott, 2014). For example, Ugrin (2009) incorporates institutional theory into ERP systems adoption in his study. Ugrin mentions that institutional theory suggests that a firm deals with uncertainty, look beyond traditional cost-benefit analyses and look also to institutional factors to legitimize their decisions. Ugrin examines the role of institutional factors in addition to traditional decision variables in experienced managers' decisions whether or not to adopt ERP systems.

Transaction cost economics is an important concept of institutional theory and several studies pay attention to this concept. For example, Poston and Grabski (2001) use this theory to develop hypothesis regarding the examination of how ERP systems affect firm's transaction costs. According to them, "transaction cost economics posits that a firm is an economic entity created in an effort to economize on market transaction costs, for example searching and communicating market information, negotiating a deal, and preventing or dealing with contract default" (p. 278). Transaction costs are usually high when, for example, a firm has to deal with firm-specific assets and a long-term contract is necessary to prevent the opportunistic behavior of the other party (Williamson, 1981). Furthermore, Hyvönen (2003) mention that findings of previous studies indicate that ERP systems are effective with regard to transaction processing and thus lead to a reduction of the transaction costs of operations.

2.3.1.3 Overview Positivistic Studies

This section presents an overview of the results of positivistic studies concerning ERP systems and the influence on MC and firms performance. Booth, Matolcsy and Wieder (2000) have investigated, by means of a survey, the experiences of firms regarding the degree of information system integration and related benefits and the adoption of new MC practices that respondent firms believe that they have achieved in response to an ERP implementation. The findings indicate that the respondent firms have achieved a high level of integration, but that only a few have reached full integration. Further, the findings suggest that ERP systems provide higher quality information. Additionally, Booth et al. found that ERP systems lead only to small changes regarding the use of new MC practices. The most significant benefits are more integrated transaction-processing systems that provide higher-quality and more accessible information for reporting. Thus, it can be concluded, according to Booth et al., that ERP systems are capable of delivering significant benefits to firms, but "it is not a panacea for firms regarding to their information system concerns" (p. 17). O'Leary (2004) conducted an analysis of ERP system benefits which are distinguished between industries based and non-industry based benefits. O'Leary concluded that tangible benefits (e.g. inventory reduction) are largely industry based and intangible benefits (e.g. visibility) non-industry based. Matolcsy, Booth and Silvola (2005) did also investigation regarding the (economic) benefits of ERP systems. Their results indicate that the adoption of an ERP system leads to improved overall and liquidity sustained operational efficiencies. Additionally, they have found some support that the profitability increased two year after the ERP implementation and it leads to improvements concerning accounts receivable management.

Kanellou and Spathis (2013) have investigated the accounting benefits of an ERP system in relation to ERP user satisfaction. This study explored the impact of ERP systems on accounting information and practice. The results provide evidence and confirm a number of accounting benefits derived from ERP systems. The results confirm that ERP system provide support regarding easier and more quickly data gathering and processing of data and improved service time in accounting tasks. Further, the results show improvements regarding the time for closure of accounts and the time for issuing payroll and improvements regarding decision-making, integration and accurate financial statements. However, the earlier mentioned benefits of accounting are not always lead to a reduction of the accounting staff, because inter alia Granlund and Malmi (2002) have explained that the accounting staff spent more time for analyzing data and reports after an ERP implementation. Further, it seemed that accountants are more satisfied with the ERP system than IT professionals. This may be due to the fact that IT professionals are mostly key actors during the ERP implementation and customization process. Additionally, the results of this study indicate that IT accounting benefits, operational accounting benefits (time), and ERP costs are related positively and significantly with ERP user satisfaction. The overall conclusion of Kanellou and Spathis is that the benefits that result from ERP systems are great in number and mostly highly rated in the accounting department.

Bradford & Florin (2003) aimed to examine the success factors of ERP systems and tested the relationships between innovation, organizational, and environmental characteristics and two measures of systems success (perceived organizational performance and user

satisfaction). Their results reveal that top management support and training are positively associated with user satisfaction. On the other hand, complexity of the system and competitive pressure are significantly negative related to the user satisfaction of functional managers. Further, the results show that the degree of consensus in organizational objectives and competitive pressure are significantly positive related to perceived performance. Finally, they have proposed in a model that user satisfaction moderates the relation between the certain characteristics and perceived organizational performance.

Dorantes, Li, Peters & Richardson (2013) examined the relation between ERP implementations and improvements in the information environment of firms. ERP systems should improve this environment by enhancing transparency, but evidence is limited concerning the earlier mentioned relationship. This study did not only consider financial statement information, but also internal information, especially on management forecast information quality for operation management decisions. ERP implementations are associated with higher management forecast quality and the results of this study are consistent with this argument. So, according to Dorantes et al., ERP systems improve firm's internal information environment and this will lead to improvements regarding to management forecasts.

Poston & Grabski (2001) have investigated what the financial impacts are of ERP implementations in firms. This investigation shows that there is no significant improvement related with residual income and the ratio of selling, general, and administrative expenses in each of the 3 years following the implementation of the ERP system. But on the other hand, there is a significant decrease in the ratio of cost of goods sold to revenues 3 years after the ERP implementation and in the ratio of employees to revenues for each of the 3 years examined following the ERP implementation. Hunton, Lippincott & Reck (2003) have also investigated the financial impact of ERP systems on the performance of a firm and compared ERP adopters with non-ERP adopters. The results of their study indicate that return on assets, return on investment and asset turnover are significantly better over a three year period for adopters and this is consistent with the results of Poston and Grabski (2001). They have also studied the interactive effect of financial health and firm size on the performance of ERP adopters and they have found a significant interaction between size and health for three of the financial measures. Furthermore, they have found that financial health is positively associated with the performance or small firms. Finally, they suggested that generally ERP adoption give firms a competitive advantage relative to non-adopters.

Based on cybernetic control theory and agency theory, Wier, Hunton and HassabElnaby (2007) aimed to investigate whether the adoption of both an ERP system and inclusion of non-financial performance indicators (NFPI) in compensation contracts improves corporate performance in comparison with a firm who use only ERP or NFPI. The results indicated that the use of both ERP and NFPI is associated to enhance corporate performance.

Hyvönen (2003) compared, by means of a survey, the use of ERP systems and best of breed (BoB) standalone systems in practice. First, Hyvönen made a distinction between strategic reasons and technical reasons for the implementation of an ERP system. According to Hyvönen, "a technologically reasoned implementation is only intended to provide a firm with core information systems functionality while occasioning as little business change as possible and a strategic reasoned implementation attempts to maximize positive business change and business value" (p. 158). By comparing ERP and BoB, the results indicate that

financial departments have been more interested in BoB systems, while the other departments have concentrated more on ERP systems. Further, when the articulated motives behind the project were strategic and also technical, the solution was ERP in most cases. But in cases in which the motives were either strategic or technical, the preference was BoB. Further, there were no statistically significant differences between ERP or BoB adopters with regards to the problems perceived in MA or the adoption of advanced MA techniques.

Based on a survey with CFOs and internal auditors, Grabski and Leech (2007) obtained data on the MCs used during ERP implementations and they have found that complementary controls are necessary to be deployed to achieve a successful implementation. They made a list of MCs used by firms during an ERP implementation and argued that business process reengineering is both an outcome control as a behavior control and a clan control. From the results, it is concluded that the theory of complementary control is applicable to ERP implementations and that multiple controls are used for multiple purposes. Five control factors which are critical for success are extracted and these are related to project management, change management, alignment of the business with the new system, internal audit activities and consultant and planning activities. Thus, the hypothesis is supported and this supported the complementary nature of the earlier mentioned MC factors.

Nicolaou (2008) tried to integrate the knowledge regarding the implementation of ERP systems, the use within and across firms, and the potential effects of ERP systems on the design of complementary forms of inter-organizational governance. The author concluded from the results that "while the use of ERP systems and additional changes in organizational function may significantly impact organizational capabilities and the form of governance in inter-organizational relations, these systems still operate within firms and decisions about their adoption, extensions, and continued use often impact organizational effectiveness. The extent of managerial flexibility in making such decisions is, according to the author, a major component for the success of ERP systems and for their continued use in organizational settings" (Nicolaou, 2008, p. 224).

Nicolaou and Bhattacharya (2008) aimed to examine the nature and timing of post-implementation activities. Their results indicate that both factors are important. According to the authors, these activities assists to improved system implementation planning and business process effectiveness when undertaken soon after the ERP implementation. But system deployment-related activities which occur in a later stadium seemed to have a negative financial impact on the short-run profitability of a firm. Therefore, Nicolaou and Bhattacharya concluded that both the post-implementation change as the timing are not universally good.

The aim of the paper of Chapman and Kihn (2009) was to improve the understanding of how ERP system integration, in terms of data architecture, contributes managers in enhancing performance. Chapman and Kihn analyzed the associations, as well as whether ERP is associated with the four design characteristics of enabling control systems (repair, internal transparency, global transparency and flexibility), and whether these in turn are associated with perceived system success and performance. They found positive relations between ERP and perceived system success, between ERP and the four design characteristics of enabling control (except for flexibility) and between the four design characteristics of enabling control and perceived system success (except for flexibility). Further, the results indicate a partial support regarding the relationship between enabling control and business

unit performance.

Ugrin (2009) argued that institutions do not influence equally the decision regarding to adopt an ERP system and he investigated how system characteristics moderate the effects of institutional factors on adoption ERP systems. The results show that factors, such as mimicry of peers, coercion from powerful entities and compliance with industry norms, are incorporated and influenced decisions concerning ERP adoption. It also suggested that wanted information legitimize the decision when there is limited knowledge about the potential outcome. Further, in response to the results, it can be concluded that individuals are influenced by peers with regards to which benefits are difficult to quantify. For example, when integration is perceived to be beneficial, firms are more likely to adopt an ERP system if other firms in the supply chain do the same.

Elbashir, Collier & Sutton (2011) investigated how controls related to knowledge management and resource development and the role of absorptive capacity can influence the level of Business Intelligence (BI) assimilation. The authors argued in response to the results that increased absorptive capacity among managers is associated to an increasing level of BI assimilation and an increased level of sophistication in the underlying technology infrastructure that enables BI systems. Further, the results also revealed that operational absorptive capacity is related to management team's absorptive capacity and this provides evidence that cultural controls related to knowledge management and resource development are important. Further, Elbashir et al. (2011) also found evidence regarding the potential diffusion effect on the MA function as the scope of MC systems broadens and that firms with more absorptive capacity assimilate BI across business operations et cetera.

Kallunki, Laitinen and Silvola (2011) investigated whether formal and informal MC systems as mechanisms mediate the effect of ERP adoption on the performance of firms. The results of their survey indicate that formal types of MC control mediate the positive association between ERP systems and non-financial performance, despite of the fact that there was no significant direct relation between ERP systems and non-financial performance. The results also show that non-financial performance has a positive associated with financial performance. Furthermore, no support is found regarding the hypothesis that informal controls mediate the effect of ERP systems on the future performance.

2.3.2 Interpretive Perspective

2.3.2.1 Introduction

A second research perspective proposed by Chua (1986) is the interpretive perspective. According to Macintosh and Quattrone (2010), the aim of the interpretive perspective is "to produce rich and deep understandings of how managers and employees in firms understand, think about, interact with, and use management accounting and control systems" (p. 4). Dominant assumptions concerning the beliefs about knowledge is that interpretive researchers assume that knowledge production is oriented towards scientific explanations of how reality is subjectively created and how human interaction objectify this (Van der Meer-Kooistra and Vosselman, 2012). Interpretive research produces enactive knowledge (Chua and Mahama, 2012). This means that it produces contextualized knowledge of how change in accounting and control is an interactive effect of complex and unpredictable associations of multiple

entities (Van der Meer-Kooistra and Vosselman, 2012). During the research process and the interaction between researcher and the participants, findings are created. Further, consensus is sought in relation to findings and is reached through comparing and contrasting dialogues. Typically, the context is described extensively and qualitative methods are used, such as case studies, ethnographic work and observation (Chua, 1986).

Interpretive research searches for subjective meaning rather than the truth and believe that knowledge is contextual (Chua, 1986). Reality is continuously constructed and reconstructed and, thus, changing (Van der Meer-Kooistra and Vosselman, 2012). So, interpretive researchers believe that an objective reality does not exist and validity or truth cannot be grounded. Reality is created by individuals or groups through interaction with the social environment. Further, social order is assumed and conflicts are mediated through common schemes of social meaning (Chua, 1986).

In the point of view of interpretive researchers, the relationship between theory and practice is that "theory only seeks to explain action and to understand how social order is produced and reproduced" (Chua, 1986, p. 615).

2.3.2.2 Theories Used in Interpretive Studies

In interpretive studies regarding the topic of ERP implementation and the effects on MC, multiple theories are used. Beaubien (2013) mentions that "the use and outcomes of ERP as a component of control systems is examined in the academy through numerous theoretical positions that seek to balance the influence of individual action and social and technological structure, such as Actor-Network Theory (e.g. Quattrone and Hopper, 2005; Dechow and Mouritsen, 2005) and the Structuration Theory (e.g. Caglio, 2003)" (p. 50). Thus, both the Actor-Network Theory and the Structuration Theory are commonly used and therefore, both are explained briefly in this section.

Actor-Network Theory

Hyvönen, Järvinen and Pelliner (2008) argue that the actor-network theory (ANT) is a strong concept for understanding centralized control. French sociologists Callon and Latour are the initiators of the ANT in the early 90s. According to ANT, the network is constantly being created and modified. Both human actors as non-humans actors (e.g. ERP systems) have influence on the network in a certain moment. In principle, they are equal in a network. Therefore, the classical contradiction between the active human and the passive non-human is in doubt, because non-human elements in a network could also exert influence and can be seen as actant (Boedker, 2010; Latour, 2005). Thus, ANT assigns agency to both human as well as non-human actors.

ANT provides a good method to investigate what actually happens in a firm and defamiliarizes what we may otherwise take for granted. Further, researchers who use ANT will follow actants to better understand a complex phenomenon (Latour, 1999). According to Quattrone and Hopper (2005), it is required "to adapt a fluid, adaptive mode of investigation that follows trails revealed in the field to understand how a technology such as ERP acquires particular characteristics" (p. 744). ANT assumes that the world is neither completely social nor completely technical, but a mix of both (Latour, 1999). Dechow and Mouritsen (2005) mentioned that "it is important to study how human actors and ERP systems happen to each

other and influence each other in the course of exploring integration" (p. 695). Important is thus how actors are related to other actors.

Structuration Theory

The structuration theory implies that social life is more than random individual acts, but it is also not only determined by social forces. Thus, both micro- and macro-focused analysis merely are not sufficient according to structuration theory. Structuration theory is developed by Giddens, a British sociologist, and he suggests that human agency and social structure are in a relationship with each other (1984). Structuration theory asserts that structure and interaction are not separable. Structure and interaction should be considered as the medium and outcome of each other (Caglio, 2003). Further, he suggests that the repetition of the acts of individual agents reproduces the structure. This means that a social structure can be changed when people ignore, replace, or reproduce them differently. So, this theory assumes that social action cannot be fully explained by the structure or agency theories alone (Giddens, 1984). Giddens proposes three kinds of structure in a social system. These structures are signification (meaning), legitimation (norms) and domination (power) (Caglio, 2003). Caglio (2003) uses the structuration theory in her study to show the potential changes in accountants' practices and positions as a structuration process, and an ERP system as modality.

2.3.2.3 Overview Interpretive Studies

This section presents an overview of the results of interpretive studies concerning ERP systems and the influence on MC. By means of a field study at ten firms, Granlund and Malmi (2002) explored the effects of ERP systems on MC and management accountant's work. The main results of their study is that ERP implementations led to relatively small changes and in most cases, MA methods, such as Activity-Based Costing (ABC), are organized in separate systems. Concerning management accountant's work, these professionals spend less time to routine tasks and have more time for analytical work after the implementation. So, they have more time for value-adding activities associated with MC and decision-making. Another result is that every ERP project is unique and this implies that the effects of an ERP system are different across firms.

Furthermore, it seems that many results of ERP implementations are reached at a later stage. This has to do with the fact that role of an accountant do not change from 'bean-counting' towards business-oriented change agency from one day to another. Firms with longer experience of the ERP system have already been able to take more advantage of the new system. It is also concluded that employees do not always act in a proper way with the new ERP system, because they have only limited knowledge of the new system. Additionally, it appears that special software is more user-friendly and flexible than an ERP system concerning making of analysis and reports and there is also not enough time and capacity to integrate such an accounting system in a correct manner, causing that total integration is not always achieved.

The issue regarding the difference between strategic and technical implementation can be derived from the study of Granlund and Malmi. Their findings indicate that ERP systems have led to only small changes regarding MC. But this is not surprising, because only two out of ten firms connected the ERP implementation with a Business Process Reengineering (BPR)

initiative. One of the reasons that firms are not be occupied with BPR is that BPR and an ERP implementation at the same time is considered as too risky. This leads to that no strategic implementation is achieved, but only a technical implementation and then only an integration of the existing processes will take place. This results eventually to no or only a few changes in MC systems.

By drawing on the structuration theory, Caglio (2003) examined how an ERP system challenges the view with respect to the expertise and roles of accountants within a firm, that this leads to new, hybrid positions of accountants and it influences the direction of hybridization between accountants and other professional groups. In response to the ERP implementation, the related responsibilities and tasks have been reorganized and led to enlargement of accountants' expertise and roles in this case. Particularly, the chief accountant have experienced a phenomenon of hybridization, because this person was first only in charge of some financial accounting activities and after the implementation this person was in charge to the areas of management accounting, reporting, consolidated balance, fixed assets management and inventory management.

Caglio argues that "the ERP system occasioned social dynamics that led to a change in the roles and expertise of accountants through a process of consolidation of the embedded modalities of ERP systems and accountants structuration into new structures of signification, domination and legitimation. In so doing, it led to the creation of hybrid positions"(p. 135-136). In this case, accounting workers profited from the ERP system, because they were proactive creators of their own future within the firm. Accounting workers became increasingly involved in operations and helped line people, by means of information of the ERP system, to steer the firm. Further, it appeared in this case that there has taken place a greater degree of decentralization of, mainly, financial knowledge and skills. This resulted that accountants had less to deal with traditional accounting activities, but they became more in charge with advising and supporting line people.

This case concerns a strategic implementation, because "in this case it is not simply a change in the IT applications in use, but it was rather linked to a new vision of the firm and of its working practices" (Caglio, 2003, p. 135). This created a social dynamic within the firm, leading to new structures and this resulted that the traditional separation between functions and departments is gone, underlying processes are integrated into the system, responsibilities and duties are reorganized and allowed management accountants to become increasingly involved in interpreting the information and supporting managers. Thus, relatively many changes on MC are visible in response to the ERP implementation in this case.

Scapens and Jazayeri (2003) also investigated what the impact of an ERP implementation is on the features of MA and the work of management accountants. They concluded that ERP systems have four main characteristics: integration, standardization, routinization and centralization. In response to these characteristics, four changes in MC are observed. The first one is the elimination of routine jobs. Due to the integrated nature of the system, work previously done by, for example accountants, are now automated. Another observed change is that line managers are having more responsibility regarding financial activities. Managers became responsible for their own budgets, declare deviations and make forecasts. First, those were tasks for the accountant, but they became more in the role of internal consultant or analyst. Further, the use of MA information has been changed.

Particularly, forecasts getting more attention, so there is more emphasis on forward-looking accounting information. The last observed change in MA is a wider role for the management accountant. Due to, among others, routinization of accounting tasks, there is more time for accountants to provide more support to business managers. Further, they give support to managers regarding the financial aspects of their job. To provide advice, accountants have to broaden their knowledge about the business. Scapens and Jazayeri ended with the note that the characteristics of an ERP system can lead to opportunities and facilitated changes within the firm, but they did not claim that the ERP implementation was the driver of the earlier mentioned changes.

During the implementation, there arose a number of problems and issues in the case of Scapens and Jazayeri. The integration opportunities were overwhelming, because the data flowed so quickly that there was little opportunity to detect mistakes before they were visible for others. Further, accountants had the feeling of losing control about what was actually happening in the firm. There emerged also tensions regarding with the fact that the firm was function-oriented and the ERP system process-oriented and additionally problems were encountered regarding the alignment of the ERP system and the existing practices and procedures, because the system was not customized to the needs of the firm. The ERP system was too rigid and too complex for the unique environment of the firm. Finally, teamwork became more important, because the role of the managers has become more complex and the ERP system raises the possibility of more centralization of information processing activities.

Although Lodh and Gaffikin (2003) did not intend to provide a complete analysis of changes regarding MC, they have noted that the ERP implementation had multiple implications, particularly organizational behavioral implications. Lodh and Gaffikin categorized these implications as follows: "ownership of information and its behavioral implications, structural differences of the ERP system and its implications of integration, changes of terminologies due to integration, change of accountability and responsibilities and changes of focus of the roles of future accountants" (p. 113). Concerning the future role of accountants, the interviewees expected that "IT not only created new opportunities and pressures for management accountants, but also challenges their traditional roles as well as the boundaries of what can constitute the nature and scope of management accounting" (Lodh and Gaffikin, p. 114). The responses are summarized as follows by Lodh and Gaffikin: "Accountants became business process analysts who are more involved with process improvement at every level, have less calculation work and more analysis and reporting types of work, need to have a real-time basis attitude with respect to management systems, exercise more direct control and have new possibilities for managing systems" (p. 114-115).

Dechow and Mouritsen (2005) have analyzed how firms pursued integration of MC through ERP systems. The purpose of this paper is to study ERP systems as an actor on the question concerning ERP systems, integration and its influence on MC. They argued that ERP systems can act in multiple ways and that data become accurate and available and sharable to and between different departments, but it does seldom lead to panoptic visibility and action at a distance. According to Dechow and Mouritsen, ERP systems do not necessarily ensure the emergence of hybrid accounts, because MC is a collective affair that is performed between separate commercial entities that are interdependent when the separate local systems were replaced by ERP. ERP systems can enhance organizational visibility, but there is no case of

panoptic visibility, because there is an interplay between people and the ERP system. Further, they have argued that an ERP system do not automatically enhance MC. ERP systems reinforce the view that MC is not an exclusive task of the accounting function anymore. Dechow and Mouritsen mentioned that it is not surprising that an ERP system do not necessarily provide a substantial improvement in terms of MC, even though this is what was expected. By the configuration there are things that an ERP system can and cannot do and therefore, it is logical that supplements are developed that work outside the ERP system.

Quattrone and Hopper (2005) have analyzed the effects of implementing an ERP system on MC in two multinational firms. By means of this paper, it can be clearly concluded that the aim of the implementation (strategic or technical) have influence on the effects of an ERP system. They indicated it by the concepts of distance, space and time between the head office and the business unit. Quattrone and Hopper mean with these concepts the following: by the real-time character of ERP, the time-distance can be reduced and this can lead to a quicker displacement of information from A to B and the space-distance can be reduced by the integrated nature of ERP. This means that there are needed fewer translations to get information from A to B and to prevent possible short falls. The cases show that in one firm the ERP system is implemented according to old structures and that there are no changes are observed, because the ERP system reproduced existing structures and distance which permitted conventional MCs. On the other hand, the other firm used ERP to collapse distance by, among others, performing a reorganization. Further, it seems from this study that managers communicate with the firm that much will change. However, during the implementation, it appears that the integration runs differently than was expected. Consequently, other information systems are implemented for MC purposes and this led to no complete integration.

Rikhardsson and Kræmmergaard (2006) have reported about the impact and use of an ERP system. From the results, it seems that the impact of ERP implementation and use are seldom predictable by management. They argued that the implementation of an ERP system is an ongoing process and it is an actor which influences other actors in the firm. During the study, Rikhardsson and Kræmmergaard made a distinction between experiences and impact. The most important experiences are related to the justification for implementation, the determination of appropriate functionality, determining the type of ERP to implement, the development of a business case, the interruption of other projects, the frustration among employees and the dissolution of the project team. But more important for this research is what the interviewed managers responded regarding the impact and use of an ERP system. Concerning the IT department, the way they worked and their competencies needed to change and also the IT literacy was upgraded. Further, a better coordination of accounting processes was observable. Another important impact in multiple firms was the integration of business processes and the so-called 'integration effect', which means that employees have to think beyond their own department. The income effects of the ERP implementation were difficult to evaluate, but the managers of multiple firms mentioned different cost effects. Examples are a reduction in inventory costs and cost of capital. Finally, the system enabled linking customers and suppliers to the operations of the firm and decreased the dependency on customers and suppliers.

Rose and Kræmmergaard (2006) provide a theoretical explanation for how one dominant technological discourse in a firm can be replaced by another system. Their analysis shows how a classical IT project was challenged by major incongruence in its outcomes and replaced in the firm by a technology-driven change initiative. In the case, there were many problems regarding project management, because of the classical way of managing ERP projects. Rose and Kræmmergaard argued that an ERP implementation is totally different from a small scale IT technology implementation. In the alternative discourse, which became the dominant discourse within the case, the implementation is understood as an evolutionary process, which affected organizational life and should respond to changing objectives, conditions and circumstances. The implementation is complex and therefore, it is difficult to plan in advance, and the management of the implementation should therefore rely on evolving best guesses. According to Rose and Kræmmergaard, the success criteria for an ERP implementation are organizational learning and continual development.

Hyvönen, Järvinen and Pellinen (2008) suggested, in response to their case study, that "IT solutions virtually force accountants to study the logic of the solution and they challenge them to invent ways of combining accounting and management rationalities" (p. 59). The case showed also evidence that the virtual integration shrinks the distance between business units by gathering detailed data and combining them. Further, it appeared in the case study that the firm wanted to integrate a profitability management system (PMS) in the ERP system. But during the project, it seemed that this was impossible, because of the complexity and the limitations of the ERP system. This resulted to a separate system for management reports, which means that there was no case of complete system integration and the new reporting system was only a supplement to existing reports. It also revealed that several employees within the firm had different views concerning the ERP implementation. This led that despite the major plans of the firm, in reality, no changes arose in the existing structures.

Further, Hyvonen et al. mention panoptic control as expected impact of ERP implementations on control. Also Dechow and Mouritsen (2005) and Quattrone and Hopper (2005) give attention to this concept. According to Sia, Tang, Soh and Boh (2002), ERP implementation can be observed as a technology that can enable a much greater visibility of someone's behavior. ERP system is capable of offering new methods of work surveillance. But what do they mean with panoptic control? Panoptic control is defined as follows by Strub (1989): "systems of control causing that people will comply the prevailing norms and rules, because they know that they are being watched" (p. 40). This theory is named after the panopticon, a design for prisons, developed by Bentham early in the nineteenth century. The structure of this kind of prison is circular with a central tower that looks out at the periphery where the inmates are living. The effect of the panopticon is "to induce the inmate a state of conscious and permanent visibility that assures the automatic functioning of power" (Foucault, 1979, p.201). But an ERP system may also lead to empowerment of employees and greater control relaxation (Sia et al., 2002). Elmes, Strong and Volkoff (2005) defined empowerment as follows: "any increase in worker power that enables employees to achieve institutional objectives with greater efficiency and effectiveness" (p. 5).

From the case of the investigation of Wagner, Moll and Newell (2011), it seemed that modifications are dependent on the entanglement of users and technology. Further, they suggested that management accounting may not be easily captured by an ERP system. An

ERP may be customable, but only if there are experts who undertake customizations. Even then, firms will not be able to get the design that they request. In the case, the goal of the ERP implementation was to try and enforce a more sophisticated and professional form of accounting, but it results actually to the opposite. The legacy accounting systems continued to operate, because employees did not accept the new systems. The case showed also that it is important to examine how accounting is performed and this goes beyond the results of Scapens and Jazayeri (2003) and Hyvönen et al. (2008) who merely concluded that ERP systems leads to little changes in MC. From this case, it could be concluded that there were also little changes, but this would ignore that there are new ways of performing MA which were different in comparison to the legacy environment.

Teitinen, Pellinen and Järvenpää (2011) explored and theorized the main benefits, challenges and problems for MC after the implementation of an ERP system. The top management of the case used the ERP system for strategic control and the main benefits of an ERP system is that it enabled transparency and control for top managers. Another major benefit is the integration of several business units, so that there is only one system in use and routine tasks can be done by the system. ERP has a tentative impact on MC in this case and enabled both strategic and operative control.

The main challenges were related to making entries and understaffing. Challenges regarding the former were problems with internalizing of the process of the firm, the excessively burdensome entry process and problems with correcting incorrect entries. Further, there were not enough employees with the required experience and skills to use the ERP system. It was also observed that some employees were very critical and did not accept the ERP system as part of their job. Thus, it can be concluded that employees who have to entry the data into the ERP system, have a significant role in the usability of the ERP system for MC purposes. Teittinen et al. argued that there was certain connection between the benefits and the challenges. The expected benefits were impeded by several emerged challenges. Scarce resources play an important role in limiting the development and utilization of the ERP system and the main challenges regarding making entries further limited the possibilities to use MA information.

The case study of Beaubien (2013) demonstrates that the MC systems, which are described in the ERP system, are not discrete from individual practices. According to Beaubien, "the actions of individual in the work place evolve and adjust in response to changes in both ERP and MC systems and MC systems cannot be studied in the absence of the ERP which communicate their procedures and the individuals who enact and are subjected to their rules " (p. 68). Based on two cases, Beaubien concluded that ERP systems can be used as means to integrate the separate local systems and to provide a system which may be the originator of an integrated system of control. Furthermore, the effects on MC were not direct visible. But, according to Beaubien, ERP systems will influence the defining of MC and what the system in practice can and cannot "New practices emerge to compensate perceived failings of the old system and may produce invisible work that can create blind spots and these spots are created by path dependencies, which are, the residues of the past which turn out to set serious constraints to the future development of MC" (p. 63).

Additionally, Beaubien argued that new procedures are only successful implemented when it is accepted by individuals. The processes of change are not always clear and the taken-for-granted assumptions are difficult to identify, but Beaubien argued that by tracing the actions of individuals, it is perhaps possible to unravel how and why actions that impact the process of change in MC are taken. Furthermore, he argued that "the ERP system appear to function as the end goal is accomplished, but it is done so through the repurposing of action and the inclusion of invisible work that is not seen or framed by the ERP or MC systems" (p. 68).

2.3.3 Critical Perspective

2.3.3.1 Introduction

The critical perspective is the last perspective which Chua (1986) brought forward. The dominant assumption concerning beliefs about knowledge is that the criteria for judging theories are temporal and context-bound. Critical researchers assume that neither theory testing through observable, objective facts, nor understanding of subjective interpretations and sense-making does not lead to real knowledge. The emphasis is on detailed historical descriptions and ethnographic analyses of firms and practices. Also case studies are commonly used for evidence (Chua, 1986).

Regarding the beliefs about physical and social reality, it is believed that humans have potential for self-actualization and emancipation, but it is restricted by the existing societal structures of inequality, domination and control (Chua, 1986). To research this potentiality, there is a focus on historical development of entities in processes of becoming in the current state (Van der Meer-Kooistra and Vosselman, 2012). Further, this research perspective takes a holistic and dialectical view, because humans influences society and vice versa. Social structures are characterized as objectively existing, but simultaneously those are reproduced through subjective interpretation by humans (Chua, 1986).

Additionally, concerning the relationship between theory and practice, critical researchers pursue that theory should support human potentialities for self-actualization and emancipation and have to be critical relative to the dominant and ideological practices. Basically, critical researchers are critical against the existing social order that hinder these inner potentialities (Chua, 1986).

2.3.3.2 Theories Used in Critical Studies

From the papers which are used for this study regarding research with a critical perspective, one theory has to be explained, because this theory is mentioned and/or used in these papers. This is the critical theory.

Critical theory

For example, Dillard, Ruchala and Yuthas (2005) use a critical theory framework in their study regarding the implications of ERP systems. Critical theory provides criteria for evaluating the dominant ideology and exposing the underlying assumptions upon which ERPs are legitimized (Dillard et al., 2005). Critical theory is a sort of social theory oriented toward examination of the structures of control in society and of the political implications of

academic work (Jermier, 1998). This is different compared to traditional theory, because traditional theory focuses only to explaining or understanding a model. On the other hand, critical theory aims to investigate social life and uncover the assumptions concerning a full understanding of how the world works (Johnson, 2000). Critical theory is developed by the Frankfurt School which emphasizes that all knowledge is historical and biased, and that objective knowledge is impossible (Jermier, 1998).

Critical theory consists of two main concepts. These are that it should be directed at the whole society in its historical specific features, thus, how it is created at a specific point in time, and that it should improve the understanding of society by integrating other important social sciences. A critical theory is adequate if it meets the following three criteria: explanatory, practical and normative. So, it should explain what is wrong with the social reality of today, identify the actors which have to change it and provide both norms for criticism and achievable practical objectives for social transformation (Johnson, 2000).

2.3.3.3 Overview Critical Studies

Dillard, Ruchala and Yuthas (2005) aimed to enlighten the negative potential of instrumental rationality acting within and through IT, such as ERP systems. They argued that ERP systems can lead to administrative evil, because they have the ability to change organizational climate, structures and roles. The authors mentioned that administrative evil is inherent within hierarchically controlled firms which have wealth maximization of the shareholders as its main goal and define administrative evil as following: "Administrative behavior which deprives innocent people of their humanity" (p. 109). According to Dillard et al., ERP systems can inflict organizational violence on members of society and employees lose the ability to make ethical evaluations, because acts of violence are legitimized and hidden by ERP systems. Further, they stated that instrumental rationality restricts constructs such as ethics and morality, because ERP systems are implemented through administrative hierarchies, expertise and the accompanying physical systems which are disassociated from these constructs. Factors, such as instrumental rationality, technological determinism and capital market demands, justify the management to implement an ERP system. So, Dillard et al. stated that ERP systems replace morality by instrumentally rationalized rules and the reason behind it is that the distance between the object and the action increases in response to an ERP implementation.

Dillard and Yuthas (2006) aimed to explore the forces that lead to the adoption of ERP systems by firms and try to examine the consequences. According to Dillard and Yuthas, by implementing an ERP system, managers lose control over the processes and models of the firm and ultimately their actions, because ERP systems are mostly developed by a software vendor and best-practices are embedded in these standardized software packages. The authors stated that firms experience constantly pressure to maximize wealth in a capitalist environment and multiple other factors and promises combined ensure that more and more firms adopting an ERP system. Dillard and Yuthas argued that ERP systems are viewed as politically neutral and therefore, the effects on the background knowledge and communal interests of the other involved parties are frequently overlooked. ERP vendors promise that these systems lead to integrating systems, standardizing processes et cetera and the consequence is that unique processes are being replaced by standard processes. Subsequently,

Dillard and Yuthas stated the following: "The background knowledge and patterns of interaction taken for granted by organizational participants are disrupted and replaced through system-oriented changes. The implementation of an ERP system involves significantly changes regarding the work of employees, the interaction between employees and among stakeholders, the nature of social integration and work objectives and subordinating objectives and through these developments, organizational participants lose the capacity to engage in cooperative social action and future evolution of the life world is obstructed." (p. 220).

How and Alawattage (2012) analyzed, by means of a case study, "how an accounting regime was changed to overcome an instance of decoupling that the management of the firm perceived to be problematic and, despite of certain technological (an ERP system) and managerial improvements, why the accounting regime yet remained decoupled from the control of the operational core (p. 403). How and Alawattage concluded from their case that accounting remained decoupled from operational processes, because of "the particular manner in which the accounting is constructed and enabled, the ostensive characteristics of accounting objects around which performativity of accounting is defined and the organizational context, which involves certain 'political imperfections' that cannot be narrated within organizational apparatus of modernity" (p. 404).

2.4 Conclusion Literature Overview

In this thesis, a distinction is made between the three different research perspectives in the accounting and control literature (positivistic, interpretive and critical), to gain different insights regarding which effects can be expected on the MC of a firm in response to an ERP implementation. In this section, a summary is provided and further, it is indicated when there are similarities or differences between the research perspectives and in which way these perspectives complement each other, so that present knowledge gaps can be detected.

Positivistic perspective

Positivistic researchers argued that the adoption of an ERP implementation have only a limited impact on the firm performance compared to firms that have not adopted an ERP system (Poston & Grabski, 2001; Hunton, Lippincott & Reck, 2003; Matolcsy, Booth and Wieder, 2005). Wier, Hunton and HassabElnaby (2007) added thereto that the performance of firms is higher when these firms both adopt an ERP system and use non-financial performance incentives. Kallunki, Latinen and Silvola's (2011) and Chapman and Kihn (2009) results show that the adoption of an ERP system has a positive impact on firm performance.

Hyvönen (2003) found that the major part of implementations are technologically focused, which involves only little business change, that there was no correlation between ERP and BPR and no correlation between the adoption of ERP and the use of modern management accounting techniques

According to Bradford and Florin (2003) is the user satisfaction of the ERP system the moderator of a successful implementation which leads to enhanced organizational performance. They argued that management support and training influence positively and complexity and competitive pressure influence negatively the user satisfaction. Additionally, a consensus between organizational objectives and competitive pressures leads to perceived performance. O'Leary (2004) analyzed different ERP system benefits and states that tangible

benefits are largely industry-independent and on the other hand, non-intangible benefits do not vary across industries.

Also Kanellou and Spathis (2013) conducted research regarding the accounting benefits in an ERP environment and they argued that these systems provide support for data gathering and processing, improved service time in accounting tasks, reduction of time for closure of accounts and time for issuing payroll, improvements of decision-making process, integration and accurate financial information. But these benefits will not always lead to a reduction of accounting staff, because of the changing job characteristics of the accounting staff (Kanellou and Spathis, 2013). ERP users believe that these systems have little effect on the use of new accounting practices. They think that ERP systems are achieving high levels of information integration, but, meanwhile, non-ERP users reported a similar pattern of information integration. So, this suggests that an ERP system deliver only a few benefits regarding information integration (Booth, Matolcsy and Wider, 2000). Concerning the impact on information system quality, positivistic researchers state that an ERP implementation leads to higher quality information systems and an improved internal information environment (Booth et al.; Dorantes, Li, Peters and Richardson 2013).

Further, it is concluded by positivistic researchers that groups of complementary controls need to be employed during the implementation (Grabski and Leech, 2007) and that different institutional factors influence the ERP adoption decision when participants have not already adopted an ERP system, the benefits of the system are difficult to quantify, and the system enhances organizational interaction throughout the supply chain (Ugrin, 2009).

Interpretive perspective

In interpretive research comes different expected effects of ERP implementations in MC forward. These changes are, among others, more advanced techniques used on both the management accounting methods and MCs used (e.g. Granlund and Malmi, 2002), a different role of the management accountant (e.g. Caglio, 2003; Scapens and Jazayeri, 2002), centralization or decentralization of information (Caglio), enabled transparency and control for top managers (e.g. Teittinen, Pellinen and Järvenpää, 2012; Dechow & Mouritsen, 2005), integration of several business units (e.g. Teitinnen et al.) and panopticon or empowerment (e.g. Hyvönen, Järvinen and Pellinen, 2008).

But from different interpretive case studies can be concluded that these expected effects will not always be achieved. This is caused by the fact that an ERP implementation is a complex process and have a significant impact on the firm (e.g. Hyvönen et al.), scarce resources (e.g. Teitinnen et al.), functional limitations of the system (e.g. Scapens and Jazayeri), different visions between employees in different hierarchical levels (Hyvönen et al.), firms implement the ERP system as a classical IT project (Rose and Kræmmergaard, 2006) and many results of ERP implementations are achieved in a later stadium because of the growing experience with these systems (Granlund and Malmi)

In accordance with positivistic research of Booth et al. and Kanellou and Spathis, some interpretive case studies found corresponding results with regards to the job characteristics of management accountants and the use of new accounting practices. In response to several case studies, it seemed that accountant became business process analysts instead of 'bean-counters' after the implementation of an ERP system (e.g. Lodh and Gaffikin, 2003; Caglio). Furthermore, it is observable from many case studies that these

implementations have little consequences on the accounting methods and MC practices used (e.g. Wagner, Moll and Newell, 2011). But the results of the various case studies are not consistent (see, for example, the papers of Scapens and Jazayeri and Caglio) and the reason behind it is inter alia the difference between a strategic and a technical implementation, which is not mentioned explicitly in current literature. This phenomenon is evident, among others, in the study of Quattrone and Hopper (2005). In their study, they investigated two firms which have both a totally different goal concerning the implementation of the ERP system and consequently, this leads to different results of the implementation of both firms.

Finally, Rikhardsson and Kræmmergaard (2006) argued that an ERP implementation is a complex, evolutionary and ongoing journey which is influenced by others actors and "the residues of the past which turn out to set serious constraints to the future development of managerial control" (Beaubien, 2013, p. 64).

Critical perspective

Critical researchers argued that ERP systems can lead to administrative evil, because of their influence in constituting organizational climate, structures, and roles. According to Dillard, Ruchala and Yuthas (2005), instrumental rationality is embedded within ERP systems and therefore, morality will be recast by instrumentally rationalized and legitimized rules. The implementation of a ERP system facilitates the process that moral responsibility will be replaced by technical responsibility and individual responsibility reduced, because of an increase in distance between object and action. (Dillard, Ruchala and Yuthas, 2005). Further, Dillard and Yuthas (2006) argued that managers lose control, because the pre-defined ERP systems are designed and developed by vendors and replace firm's unique processes which evolved over time by new best practice processes. These new processes do not embody the beliefs and interest of the firm and this has the consequence that "organizational actors lose the capacity to engage in cooperative social action and future evolution of the life world is obstructed" (Dillard an Yuthas, 2006, p. 220). Additionally, critical researchers state that accounting mostly remained decoupled from the control of core operations, despite of certain technological improvements such as an implementation of an ERP system (How and Alawattage, 2012).

Conclusions from the three different research perspectives

This section discusses how the three different perspectives (positivistic, interpretive and critical) can complement each other and which conclusions can be drawn from the review. Positivistic studies mainly used surveys or databases, both quantitative research methods, to find multiple (financial) benefits and changes concerning MC in response to an ERP implementation (e.g. O'Leary, 2004). Different interpretive researchers use mostly a case study, a qualitative research method, to investigate, among others, the effects of ERP on MC and these case studies indicates limited that the objective underlying the implementation of the ERP system determines significantly the extent of changes on the MC of a firm (e.g. Caglio, 2003; Quattrone and Hopper, 2005). Different strategies regarding the ERP implementation will result in different configurations, implementations, and usages of the system (Quattrone and Hopper). Technical and strategic implementations have different outcomes on MC. The pre-set objective of the firm to implement the ERP system is technical when the objective is simply to replace the current system. MC will probably not change in

case of a technical implementation. However, with a strategic implementation, the expectation is that MC will change. By a strategic implementation people need to adapt and processes need to change. Business process reengineering takes place simultaneously with the ERP implementation. The ERP implementation is linked to a new vision of the organization and its working practices in these cases (Caglio).

But this is only mentioned briefly in a few conclusions in response to the results of some interpretive case studies (e.g. Quattrone and Hopper). Furthermore, positivistic studies did not use or did not take into account these insights of interpretive studies in their quantitative studies concerning to find, among others, the (financial) benefits of ERP systems and the effects on MC (e.g. Poston and Grabski, 2001). Therefore, the results do not give a reliable and clear impression and explanation why in most studies no significant changes are found with regards to MC in firms. In this way, interpretive studies can complement positivistic studies. Subsequently, positivistic studies can complement interpretive studies, because of the research method. Positivistic studies use data (quantitative methods) from a great number of firms in contrast to interpretive studies in which mostly only one or a few firms are investigated for a longer period. In general, the results of positivistic studies have thus a greater extent of generalizability. In current literature, similarities are found between both research perspectives. Both research perspectives found, for example, that ERP systems provide general benefits such as increased transaction-processing efficiency, higher information quality and accessibility and greater support for ad hoc reporting (e.g. Booth, Matolcsy and Wieder, 2000). Further similarities are found regarding, among others, increased transparency and standardization created by ERP systems (O'Leary, 2004; Teitinnen, Pellinen and Järvenpää, 2012). Multiple positivistic studies (e.g. Poston and Grabski, 2001) found that ERP systems have a positive, but limited, impact on the firm performance in response to, for example, the earlier mentioned benefits on the firm's performance compared to non-adopters. This has partly to do that ERP systems are not a panacea for an organization's information system concerns and there are multiple challenges founded by interpretive researchers which influence the limited benefits of adopting an ERP system (e.g. Teitinnen, et al., 2012). Furthermore, both positivistic and interpretive researchers have similar conclusions regarding the job characteristics of especially management accountants (e.g. Kanellou and Spathis, 2013; Scapens and Jazayeri, 2003). After an ERP implementation, routine tasks for management accountants are eliminated. Instead of routine tasks, accountants have more time for analytical work and other activities related to, for example, decision-making. Employees, for example line managers, have more access to information and therefore, there can be the case of decentralized accounting knowledge and expertise. Additionally, positivistic research (Hyvönen, 2003) and interpretive research (e.g. Granlund and Malmi, 2002) found that the major part of implementations are technologically focused which involves only little business change, no BPR and no use of modern management accounting techniques as a consequence of an ERP implementation.

In contrast to positivistic and interpretive studies, critical studies offer insights to overcome the dominated view regarding the effects of ERP systems and uncover the often unheard voices about ERP systems. These studies try to uncover the assumptions concerning a full understanding of how ERP systems work. Critical researchers question conclusions in order to improve the quality of knowledge in the field by disproving incorrect claims or

uncovering new truths. In principle, positivistic and interpretive researchers are not very critical towards ERP systems and the impact of these systems within organizations. They found different factors which challenge the expected benefits or changes of an ERP implementation. On the other hand, critical researchers criticize ERP systems in general and sometimes try to prove some negative effects of ERP systems by means of a case study. In this way, critical studies complement the other two research perspectives. According to critical researchers, ERP systems have the potential to occur administrative evil and instrumental rationality within the firm. Further, they have argued that managers lose control of the processes and models that frame the MC system and ultimately their actions, because ERP systems are designed and developed by the software vendor, the best-practices are embedded in these standardized systems and also those who are responsible for it give little attention to social aspects (Dillard an Yuthas, 2006; Dillard, Ruchala and Yuthas, 2005).

However, this thesis will pay attention to the theoretical gap concerning that the objective of the ERP implementation can explain possibly why in some cases there are many changes on MC and improvements in performance and in some cases not.

3. Research Method

This chapter discusses the methods which are used for this thesis. Much relevant literature is available about ERP implementations and the benefits of these systems, but the relationship between ERP implementation, the effects on MC and the actual objective of the ERP implementation remains untreated. Thus, the aim of this study is to provide more insights with regard to how MC changes in response to an ERP implementation, in which also the pre-set objectives of the company concerning the ERP implementation are taken into account. In section 3.1, the chosen methodology is discussed and it is argued why this choice is the most obvious. Thereafter, the case is briefly discussed in which the data collection took place, followed by an operationalization of the main concepts of this investigation and an explanation of the process of data collection and analysis. In the last section of this chapter, a discussion regarding factors, such as reliability and validity, that needs to be taken into account during the empirical part of this study, is elaborated.

3.1 Methodology

When conducting an investigation, a choice has to be made between two research methods: qualitative and quantitative research. Qualitative research is interpretative and subjective. It is not about facts and figures, but about the 'why' and 'how' question (Baarda, 2009). Further, it concerns all types of research aimed at collecting and interpreting multilingual material on the basis of statements to a social phenomenon in reality (Bleijenbergh, 2015). Qualitative research focuses on the opinions of people or the meaning that these people give to something (Baarda, De Goede and Teunisen, 2009). Quantitative research is objective and is focused on numbers, also known as numeric data (Baarda, 2009). Through Mahama, Elbashir, Sutton and Arnold (2016), who propose a reinterpretation of the agency of ERP systems as relational, and the goal of this research, to provide more insights with regard to how MC changes in response to an ERP implementation, in which also is the pre-set objectives of the firm concerning the ERP implementation are taken into account, it is chosen to collect data by means of qualitative research.

In the past, several studies have been conducted regarding the extent to which the expected effects of ERP implementations are achieved in MA and MC. Both quantitative (e.g. Poston and Grabski, 2001) and qualitative (e.g. Dechow and Mouritsen, 2005) investigations are conducted. But it is chosen for qualitative research, because this is the most suitable way to gain insight in complex phenomena (Quanttrone and Hopper, 2005). In this way, deeper insights are becoming available in specific areas concerning the effects that ERP implementations on MC. Further, qualitative research is suitable for research areas where little research has been done (Granlund and Malmi, 2002), because it offers insights for new areas of research and case studies. For this study, the abovementioned also applies, because current literature does not take into account the purpose of ERP implementations for a firm. When it was chosen for quantitative research, the obtained information would contain too little depth to draw conclusions regarding this topic and this would lead to that different implementation options and the expected and actual changes in MC would not be fully illuminated.

Furthermore, there is chosen for a deductive research approach. A deductive research approach approximates the research object from a clearly defined theoretical framework and the researcher determines clear expectations regarding what he or she intends to encounter in empirical reality (Bleijenburgh, 2015). Additionally, this study takes the form of a case study. Yin (2014) defined a case study as follows: "an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident and in which multiple sources of evidence are used"(p. 15). Case study research in business uses empirical evidence from one or more firms in which an attempt is made to study the subject matter in context. Case studies typically combine data collection methods such as archives, interviews, questionnaires, and observations. The evidence may be qualitative, quantitative, or both (Eisenhardt, 1989). Multiple sources of evidence are used, although most of the evidence comes from interviews and documents generally (Bleijenburgh, 2015). This research regards a single case study and thus, data is collected from one firm or one department merely.

According to the framework by Keating (1995), this investigation includes a theory discovery case. The objective of a theory discovery case is to map novel, dynamic, and/or complex phenomena ignored or inadequately explained by existing theories. A theory discovery investigation should establish how the findings complement, corroborate, or refute related research programs. Researchers should inform the reader about the present knowledge gaps and unresolved puzzles (Keating, 1995).

This thesis involves a positivistic case study, because a deductive approach is used and a theory which is determined in response to the literature overview is tested by means of a case study. In response to the case study, the developed theory is tested if it is not falsifiable by the empirical results.

Eisenhardt (1989) mentioned three main strengths of theory building from case studies. The first strength is its likelihood of generating novel theory. Creative insight often arises from the juxtaposition of contradictory or paradoxical evidence. A second strength is that the emergent theory is likely to be testable with constructs that can be readily measured and hypotheses that can be proven false. A third strength is that the resultant theory is likely to be empirically valid. The likelihood of valid theory is high, because the theory-building process is so intimately tied with the evidence that it is very likely that the resultant theory will be consistent with empirical observation. But Eisenhardt (1989) mentioned also two main weaknesses regarding case studies. The first weakness is that the intensive use of empirical evidence can yield theory which is too complex. Another weakness is that building theory from cases may result in narrow and idiosyncratic theory.

3.2 The Case

Many studies on the effects of ERP implementations on MC are focused on large multinationals and little research is done in small firms. Until the turn of the millennium, ERP was mainly meant for large firms, but since the saturation of the market of large multinationals, the focus of the vendors is increasingly shifted to the direction of SMEs (BDO, 2009). Thus, this case study is focused on a smaller firm and is hereinafter referred to as "BP". The intention was to investigate a relatively common case, insofar the opportunities allowed this, and a more holistic design have been used (Yin, 2014). In 2000, BP originated

from another firm, whose roots go back to the 1950s. BP is a Dutch design brand and this firm designs and produces furniture and eventually sells the products to home furniture shops in the Benelux or exports it to countries such as Germany, Switzerland, Austria and Great Britain. Furthermore, BP has manufacturing facilities in various locations in Europe in which their collection is produced in-house. The headquarters is established in the Netherlands and here are approximately 50 to 100 people employed. In 2004, the firm decided to implement an ERP system and the implementation is completed approximately in 2005.

3.3 Operationalization

The information needed to answer the main question is presented in a theoretical framework. This research is conducted from a deductive approach in which concepts are approached from a clear theoretical framework. The applicable concepts in this investigation are operationalized in figure 1. For obtaining information, semi-structured interviews with open questions with different respondents within the firm are conducted. Through various interviews and, if possible, on the basis of observations and internal documents is determined whether there was a case of a strategic or a technical implementation, and if there have been changes in MC and if so, how this can be explained. The respondents of the interviews are the logistics manager, the application administrator, two employees of the sales department and the assistant controller. All observations have been made around and during the interviews, insofar as it was possible. Relevant internal documents were unfortunately not available, simply because these are not there. On the basis of the theoretical framework, manual deductive coding has taken place. Then the respondents' answers are interpreted and processed in the results and afterwards, a conclusion is elaborated with regard to the main question: "how can changes in MC systems be explained in response to an implementation of an ERP system, considering the pre-set objectives? ". Below is the general theoretical framework which is the basis of the empirical part of this thesis.
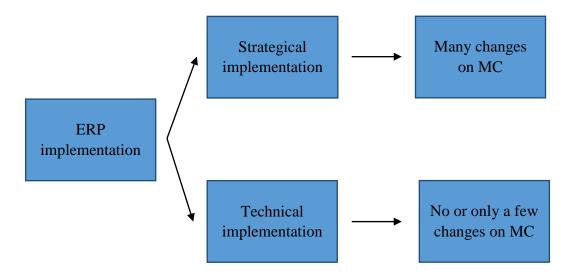

Figure 1: Global operationalization

3.4 Data collection and analysis

In several studies, the focus has been on data collection by (top) managers of firms. But the disadvantage is that (top) managers are mostly positive about the ERP system, because the new ERP system was their idea in many cases and they are perhaps reluctant to criticize their own decisions. Moreover, several studies (e.g. Hyvönen, Järvinen and Pelliner, 2008) showed that among different hierarchical levels within a firm there are different visions regarding the ERP system. Therefore, in this study the focus is not only on the management.

It is decided to interview only a few employees. This has mainly to do with some restrictions, such as time and availability of the employees. The choice is made to use semi-structured interviews with open questions which are structured on the basis of a pre-defined topic list. A questionnaire for the interviews is developed after the elaboration of the introduction and the theoretical overview, so that it was clear what information should be charted with the case study. Some of the questions are prepared, but in the course of the interviews there is room to deviate from the questionnaire. In this way, the author does not deviate from the ultimate goal of the interview, but there is still room to anticipate in response to the answers of the respondents and the way the conversation goes. Furthermore, it is also tried to analyze relevant internal documents, because documents have the advantage that it gives a direct reflection of what is decided or said at a particular time and how something actually have taken place in a firm (Bleijenbergh, 2015). But, unfortunately, within the relevant firm is nothing documented concerning the ERP system.

The semi-structured interviews were all audio-recorded and transcribed to written texts. The collection of elaborated interviews can be seen as the case study database. These elaborations were later categorized into appropriate themes, derived from both theory and the texts themselves. In response to the conducted and transcribed interviews, the elaborations of the interviews are manually coded. With manual coding you write the code itself to printed versions of the data that you have collected (Bleijenbergh, 2015) and this is preferred over computer-assisted coding, because of the limited amount of data in this research and the latter costs relatively less work to start. Because of the deductive research approach, the analysis is also theory driven. The coding has taken place on the basis of scientific literature and results of previous research. Furthermore, a theory-building structure has been used. In this approach, the sequence of sections will follow a theory-building logic which will depend on the specific topics and theory (Yin, 2014). Regarding this investigation, academics are the potential audience. So, the relationships among the case study, its findings, and previous theory or research are likely to be most important (Yin).

3.5 Validity and Reliability

The questionnaire is shared prior to the interview with the employees. This is done due to the fact that a number of questions goes back to the time of the implementation of the ERP system, what has been some time ago for the respondents. So, this give more time to think about the issues involved. All interviews are, with the permission of the interviewee, recorded which means that the interviews are transcribed afterwards based on the recordings. The anonymity of the respondents is taking into account, so that respondents give honest answers to the questions. A possibility exists that the other respondents do not share their honest and complete thoughts, because of the fear that, for example, managers read or hear their statements. The anonymous of the respondents makes the investigation socially more desirable. So, it is chosen to keep the whole case anonymously. Beyond interviewing

employees, it is also tried to analyze internal documents relating to the ERP implementation. The use of existing materials in firms is an indispensable source of knowledge for a researcher. The advantage is that documents are a direct reflection of what has been decided or said at one time and how something actually takes place in a firm (Bleijenbergh, 2015). Further, it is decided to take interviews with both employees who were already working before the ERP implementation, as well as employees who were employed after the time of the implementation. Also the role concerning the ERP system is different among the interviewed employees and the employees have different positions in the firm, so that the author can collect the different experiences with the ERP system within BP.

So, to increase the construct validity, it is tried to use multiple sources of evidence (data triangulation). Unfortunately, there were no relevant documents available related to the ERP system and there were hardly any possibilities to conduct observations. Further, the ideas behind pattern-matching and logic models are used to improve the internal validity of this investigation. The pattern-matching logic compares an empirically based pattern which is based on the findings from your case, with a predicted one which is made before the data collection. Logic models operationalized a chain of occurrences over a period of time (Yin, 2014). To address the external validity of this case study, appropriate theory or theoretical propositions are identified. Another aspect which is important is reliability. An investigation is reliable if another researcher find to a great extent the same results and conclusions when he or she follows the same procedures as described by an earlier research and conducts the same case study (Yin). To improve the reliability of the investigation, all the interviews are verbatim transcribed and disclosed separately in an digital document.

4. Results

In this chapter, the results of the case study are elaborated in response to the analysis of the transcribed interviews. The results are presented in three parts. First, the results regarding the implementation of the ERP system will be discussed. Second, the current situation and the reached effects concerning MC will be presented and afterwards, the future of the ERP system within BP will be discussed. In response to the elaboration of the results, these results will be linked with the literature, elaborated in Chapter 2, in Chapter 5.

4.1 The Implementation

In 2004, BP decided to implement the ERP system of ISP and in 2005, the implementation phase was finished. The ERP system came to replace the system of Exact which became obsolete in the eyes of the owner and it provided too few possibilities. In 2000, BP was created from another firm, whose roots go back to 1958. In the years prior to the acquisition, the previous owner had already the plan to sell the firm and therefore, he invested little in the firm and thus also in the area of IT. Since 2001 everything is rigorously changed with the construction of a new building, a new name and a main focus on the consumer market instead of the project market.

The current owner was previously an entrepreneur in the roller shutter and solar protection industry and therefore, he had experience with the ISP system, because this system was implemented in his previous firm and is specifically designed for the roller shutters and solar protection industry. To look at the options for a possible implementation of an ERP system, the application administrator said the following about it:

"The owner has employed me to see what was all possible for BP with regard to the implementation of an ERP system. When I was figuring out to see what is possible, he came up with the proposal to look to the ERP system of ISP, which he was familiar with it during his time by his previous firm. And everything seemed to fit within BP, so then we chose to purchase ISP.[...] What ISP then have done, because it was actually designed for the roller shutters and solar protection industry, they gave us an empty package and I started then, I think, with only two or three modules. [...] So, the functionality for setting up was already there, but just for the rest, I have to fill in everything by myself." (Application administrator, 03-06-2016).

The current ERP system is thus largely customized for BP and therefore, the application administrator worked for a longer period on the development of the ERP system. Subsequently, the entire system has converted in two phases from the previous system to ISP. First, during a holiday break, everything is converted regarding the chairs and tables to the new system, to see if everything works, and thereafter the data concerning the banks is converted to ISP.

There were different reasons mentioned to implement the new ERP system by the respondents who were already employed at the time of the ERP implementation:

"The previous system in use had no product configurator, and this is very important in an environment where customer requirements determine the specifications of the product. The flexibility within the previous system was very limited, and hence many operations had to take

place manually, such as the sales process in total. [...] So, the main reason to implement a new system was to automate and so, to banish manually operations as much as possible." (Application administrator, 03-06-2016).

"Almost all activities were not imported in the previous system and many operations were still being performed manually or did completely not run via the system. [...] Only the financial department worked with the previous system. [...] Constantly, we had to go searching among the papers to find some information. All necessary information was in forms, and that took a lot of time, increased errors and we had totally no overview of the situation and the activities undertaken by others. [...] When the current owner took the firm over, it seemed if there was still a typewriter era within the firm." (Sales clerk, 03-06-2016).

"At that time, we were focusing very much towards the project furniture. But the owner has changed the focus of the firm and decided to offer the assortment also to private consumers. [...] The ambition of him was that he always wanted to grow with the firm. Well, then you should also look for an ERP system which can mean something for you in the future." (Application administrator, 03-06-2016).

The main reasons for the firm to implement a new ERP system was thus that BP had to deal with certain major limitations with the previous system which could not be solved if they continue to work with the same IT system. Many activities of different departments were not integrated in the system causing that many transactions took place manually, and the ambition of the owner was to grow further and therefore, a system was needed that provides more opportunities on the area of IT for BP.

Because the owner had already experience with ISP, it was for the management clear what could approximately be expected of the new system within BP. But because it is a long time ago that the implementation has taken place, the respondents could not remember much regarding the expectations that were outlined by the owner of the new system. One of the respondents remembered the following:

"It was not formally communicated to the other employees by the management, what we could expect of the new system. But the people responsible for the ERP implementation gave me the impression that all the departments would work with this system and that all activities were going to be easier and quicker to carry out. [...]It would be the guiding principle within the organization." (Sales clerk, 03-06-2016).

The expectations of the employees, prior to the time that they making use of the new ERP system, were mixed among the respondents. Two respondents had already some experience with the system, because they worked also in the previous firm which was also owned by the current owner of BP. They have gone along with the owner of BP in a later stadium, after he sold his company which was in the shutters and solar protection industry. Two other respondents had expected that the system should have a positive impact on the firm:

"I really expected that everything would be easier running with the new system and also faster and less manual work. [...] At that time there was not invested in the firm by the previous owner in his final years, and then a catching up is made." (Sales clerk, 03-06-2016).

"The expectation I had, was, anyway, that we would be more flexible and that our people could be more customer focused" (Head sales office, 10-06-2016).

The other respondent had less expectations of the ERP system. He indicated during the interview that, during his work history, he did not have worked earlier with such a system. Thus, an ERP system was completely new for him, and he had no explicit expectations of the system. He went without expectations in the ERP implementation and found it difficult to formulate expectations during the interviews. This is because he came just out of school and had absolutely no idea of how it would work.

The period after the ERP implementation was experienced as follows by the application administrator:

"That went, I think, all pretty nice, in my opinion. There were obviously some things I had to solve interim, but there was not really a chaos after altering the system. This has absolutely to do, I think, with the size of the company at that time. […] People could keep working and I was just going to set up everything at that time and try things, entering test orders et cetera. So, when we moved to the new system, I have had a plenty of time to test everything if it works the way we wanted actually." (Application administrator, 03-06-2016).

The other respondents who were not responsible for the implementation at that time, but became users of the system, confirm this feeling of the application administrator and have positive experiences with the system:

"I think they have encountered some problems during and after the implementation, but I only have nothing to do with it. I could always just keep doing my job. If there were some problems, the application administrator then tried to contact the supplier for modifications.[…] After the implementation, the system was becoming extended step by step, new modules were added, other servers were bought.[…] Actually, I am just positive about the system. During my job as a sales clerk, I have hardly had any problems with the system. (Sales clerk, 03-06-2016).

"When I came to BP, the system was already in use for more than one year. But in my opinion, the employees were already well accustomed to work with this system. I have also experienced no resistance during my time here and I had the feeling that everybody was happier to work with this system than with the previous situation". (Logistic manager, 01-06-2016).

Further, the adoption of the ERP system was not linked to a new vision of the firm and of its working practices. At the time of the implementation, or before or after the implementation also no re-engineering of the business processes took place. The application administrator has mentioned the following about it:

"Actually, in principle, the business processes are not adapted for the benefit of the ERP system. […] The ERP system is actually more adapted to how we had designed our processes at that time, partly because we started with an empty system. But, for example, the sales department and purchase department were simply supported by this system. […] This took many advantages with it." (Application administrator, 03-06-2016).

An integration of the existing processes has only taken place. Despite of the fact it is mentioned by the respondents that the ISP system is the guidebook within the company. All work in the headquarters proceeds via the system. But there has been no case of fundamental rethinking and radical redesign of the business processes during, before or after the ERP implementation.

4.2 Changes Concerning MC

BP is now already twelve years working with this ERP system. While in the first years after the implementation several improvements have been taken place, the last years it is quiet concerning improvements on the current ERP system, despite of the fact that BP is constantly growing and more capabilities are needed in the area of IT. This was highlighted by all interviewed employees.

"No, it is not possible to improve the ERP system anymore. At least, we have tried to make left or right some improvements. [...] I think, we are now already actually on the maximum in terms of the optimum use of this ERP system." (Application administrator, 03-06-2016).

Many changes within the firm have occurred since the implementation of the ERP system in 2004. At that time, BP consisted of only 30 employees and most of them were working in the production. All of this took place at the location where now only the headquarters is located. At that time, there were only approximately four or five PCs in use in total. The ERP system was partly implemented, because of the ambition of the owner to grow considerably, and now it appears that the consequences are visible. Meanwhile, in comparison with the situation of BP in 2004, only the staff functions and the product development are located at the head office. Currently, at various locations in Europe, production facilities are located in which their own collection is produced in-house and a sales office has been opened in a strategic place in Germany. At these production locations, a total of around 250 employees are working. Further, in 2006, the sales market of BP has become too small in the Netherlands and the firm has deployed on exports. Meanwhile, the firm is also successfully operating in Germany, Belgium, Switzerland, United Kingdom and Austria, and is working to export also to countries such as France, Scandinavia and Russia. Also a new concept is implemented, whereby consumers can co-create their own unique piece of furniture and in 2013, different mood boards are introduced so that each customer can create a unique interior. At the time of the ERP implementation, BP offered only standard products. So, several changes have taken place after the ERP implementation within BP, but what changes may or may not be observable on MC following the ERP implementation?

First, the aspect of integration will be addressed. At the head office almost everyone is working with ISP and it has a great influence on the work of the employees, mainly on the employees of the back office:

"For what not, we do everything with ISP at BP? Well no, actually everything with the exception of extensive calculations. We do these calculations via Excel, but, for example, our entire order flow from order to invoice, the production management, the planning and the bookkeeping operate via ISP." (Logistic manager, 01-06-2016).

"Basically, we conducting all our operations standardized via the ERP system. We do so much with this system." (Application administrator, 03-06-2016).

But despite the new ERP system, the information systems of the different entities are not integrated. Also the bookkeeping of the head office is keeping separated, despite of the fact that this is also done in ISP. The other departments have no insight in this module. But why it is not tried to operate all locations via one integrated ERP system? The logistic manager gives several reasons why there is no integration of entities:

"It says enough that the package is only available in Dutch. [...]This system also offers no or limited abilities to integrate systems with each other or to work with one single system at different locations. [...]In Poland, they are working with an independent administration and they do not work with this system. All that they are doing, is that they scan there documents and send it to us, so that we can import the data in our ISP system in an easy and fast way. [...]In Bosnia, this system would not even be allowed by the government. [...]There are very different requirements from the tax legislation in comparison to the Netherlands and this package cannot meet these requirements. Basically no other small Dutch ERP vendor can meet these requirements. The requirements are very specific because, for example, the tax authorities should be able to look along exactly what your sales figures are as a company, as well as online. Only the big international ERP vendors can offer these opportunities. [...] In the Dutch production site, they use the same ERP system as in the head office, but they operate with their own version. This is designed completely for them and both systems are not linked with each other, because the systems should run completely parallel in the eyes of the management team of BP to communicate properly with each other. But the system of the Dutch production site is only designed and focused on production and at the head office, the ERP system is set up as a wholesale company." (Logistic manager, 01-06-2016).

Also with regards to integration with customers and suppliers there are still major possibilities to achieve and these are needed for BP. According to multiple respondents there are great opportunities in further integration with other firms within the chain:

"With this ERP system, it is simply not possible to make linkages with the other firms' systems. [...] With other software packages, there are opportunities for access to each other's systems, which leads to that many administrative activities would largely eliminate. [...]Furthermore, from customers, there are increasing demands. (Application administrator, 03-06-2016).

"Linking our ERP system with our customers, this is really needed in the near future. [...] If I compare this aspect with other companies, there are many great advantages possible to achieve for BP. (Head sales office, 10-06-2016).*"*

"I expect that in the future everything will go online and, for example, all inquiries and orders from customers go through the system and not via e-mail or telephonic". (Sales clerk, 03-06-2016).

Due to the implementation of the ERP system, everyone who is authorized has access to information. Information is shared across the firm and is no longer only available within a single department. In comparison with the time that BP working with Exact, it would then, for

example, impossible as a sales clerk, to get data from the purchase department. This is now surely the case, because all employees at the head office are connected on the same system and this promotes the coordination. But this also takes risks with it. To constrain these risks, the ERP system provides possibilities for administrative constraints. ISP offers the possibility by means of an authorization table in order to limit the possibilities of employees within the system to add or change data. Partly due to the capturing of authorizations in the system, the separation of duties between employees became clearer and it became more clear to employees what they may or may not in the system. Different segregation of duties has occurred due to the growth. The experiences concerning the implementation of the authorizations within the system are as follows:

"In general, it is well regulated. But herein there are various opportunities for improvements. For example, that you can give employees their rights more specific. Now it is so that I, for example, give someone the right to add orders, but then he or she get immediately an x-number of other authorizations. [...] I cannot release certain specific authorizations that he or she may or may not do in the system. But overall, I am satisfied with it, but sometimes I need to release more rights than I actually would really want ". (Application administrator, 03-06-2016).

"I do not have a lot of authorizations in the system, but this does usually not hamper me while performing my job. But sometimes I cannot continue with certain tasks and I have to ask someone with more rights to change something in the system. This has mainly to do with the production planning, because they have arranged it so that I cannot change anything in here, because they are afraid that there will be made mistakes. [...]I regret that I have no insight into the financial figures, because I am still wondering how we perform, both as company and as department." (Sales clerk, 03-06-2016).

With respect to reporting capabilities of the ERP system, the respondents experiences several limitations. The reason is because the reporting capabilities offered by ISP are limited and not as wished. While retrieving data from ISP goes well, the actual processing of these data into useful information and reports for users is difficult. They can turn tables from the system, for example, sales figures of certain customers or which products are sold in a certain timeframe. But currently the opportunities are not sufficient for BP. Therefore, in spite of an overarching ERP system, reports are not developed within the ERP system, but mainly on the basis of MS Excel. All three employees who have to deal with reports during their job confirm this:

"We can retrieve a lot of information from the system. [..] All information must be imported into Excel and then processed to get actually good reports that satisfies our desire and are useful for the management team. In some cases it is possible to do this via the ERP system, but that is very cumbersome. That is why we do it via Excel". (Logistic manager, 01-06-2016).

We can get a lot of information from ISP. But you will still have to do a lot in Excel, if you really would have something useful, then it costs me a lot of time. [...] For example, every Monday it cost me 2 to 2.5 hours to complete the weekly sales report. [...]Unfortunately, ISP does not offer us the opportunities to report smoothly via the system.

[…]It is still really hands and feet work and therefore, also more error sensitive than when this do not need to be done via Excel." (Assistant controller, 06-06-16).

If I have to make a report, I think that is very complicated in ISP. […] I usually have to export everything to Excel to make it clearer. (Head sales office, 10-06-2016).

Due to the limitations of the ERP system regarding reporting, there is no overarching system for all reports within BP. The consequence of this is that a lot of time is lost with making reports, because they have to use MS Excel for many reports to edit the reports as wished. But manually editing data, makes it more error prone than when reports can be directly generated from the system itself.

The information provision of a firm is aimed to meet the information needs of the firm. These needs exist generally of operational information (actual operations and management of business processes), accounting information (information regarding the results) and management information (performance indicators). According to the logistic manager much information can be produced from the ERP system for the benefit of the control of operations and the management of the business processes. However, as mentioned earlier, this is (direct) minimal: most potential information should first be exported and edited in Excel to actually get good information. But there are exceptions. For example, the planning, what is considered as business process management, and cost determination for existing products is integrated into the ERP system. But for example, for initial calculations the ERP system could be used, but it is much more laborious to calculate in Excel. Thus, all the accountability information is produced by ISP. However, in terms of performance indicators, this system provides limited possibilities.. Therefore, the management of BP does not use performance indicators to control the firm. Concerning accounting information, the assistant controller adds the following:

"The figures are truly enterprise-wide and are not defined for each department. For example, we do not work with cost centers. It is just a big jar and then they look what remain below the line and on the basis thereof decisions are made by the management." (Assistant controller, 06-06-16).

Furthermore, information which is needed to perform actual operations can often simply be extracted by employees from ISP. According to the respondents, everyone can see lots of information. But exchanging and communicating information with suppliers, customers and the other entities via the ERP system is nil. An example:

"All general questions, changes et cetera with respect to the orders; we receive now via the mail. In my mind, it should be able to do it much more via the ERP system." (Sales clerk, 03-06-2016).

According to the respondents, in the near future a further optimization should be possible concerning integration of information provision into the system. This may be replaced many e-mails by applications in the ERP system. One respondent may think, for example, about customer portals.

By implementing an ERP system, the possibilities for monitoring employees have increased. All operations performed by employees in the ERP system are recorded. This enables to monitor both employees reciprocally as managers who monitor an employee. The logistic manager mentioned the following about it:

"Theoretically, much can be done with respect to monitoring of operations. […] Our company is not so big, so my physical overview on the operations within my departments responsible is, I think, more important. […] We think that this is not an important part of the ERP system." (Logistic manager, 01-06-2016).

So, ISP does offer the opportunity for managers to monitor the employees. They can, for example, monitor exactly who, how many orders processed in the system, which services are added and how much. All changes are automatically tracked in the system. But, according to the respondents, it does not fit in the business mentality to monitor the employees as manager and furthermore, they do not work with indicators or specific objectives. Only sometimes it will be checked broadly if all goes well. The minimum use of the possibilities of the ERP system to monitor operations of employees is supported by the reaction of the other respondents:

"I think that this actually happened, because they have the possibilities. […] But I have never experienced that they make a comment towards an employee in response to the monitoring of his or her work." (Sales clerk, 03-06-2016).

"I do not know what possibilities the system offers regarding monitoring of employees. I have never had to deal with it. I think that I know that it does not happen, but if the system provides the opportunities, I do not know." (Head sales office, 10-06-2016).

Additionally, ISP gives partly the opportunity to employees to monitor each other reciprocally. For example, employees can verify if the incoming order of the customer matches with the entered order in ISP and when it is needed, the employee can correct it if he or she has the authorizations in the system. All changes that a person applying or removing in the system, are observable for the others. But why it is changed, is not observable within the system. This is due to the fact that much is checked physically. Hereby, it is sometimes difficult to figure out how it is originated and why it has changed.

According to the respondents, the ERP has led to an enhancing of transparency within BP. But this only applies for the head office, because the ERP system is not integrated with the other production locations and it is also not linked to the systems which are used there. Furthermore, there is also plenty of room for improvements regarding transparency within the head office, because of the multiple limitations which BP have to deal with the current ERP system in use and because of these restrictions, a lot is still be done in MS Excel. The respondents said the following about the transparency by the use of ISP at BP:

Transparency between departments at the head office is great as far as the authorizations allow it. But I cannot talk for the financial part within the system, because I have only little insight on it. (Logistic manager, 01-06-2016).

We as finance, for example, have access in the order module, but the others cannot in the accounting part of the system. […]We have no insight in the financial figures of the

production sites, because the systems are not linked with each other. We are now dependent on what they will provide us. We have no access to their bookkeeping. (Assistant controller, 06-06-16).

We are still using much paper. Everything is added on the paper version of the order and this is not visible to the rest who work in the system. Sometimes you cannot fill in a modification of the order in the ERP system, because it is too specific. […] I have only insight on everything here on the ground floor, so the sales department, planning and procurement. But not on the field sales, finance and so on. (Sales clerk, 03-06-2016).

Compared with the period before the ERP implementation, we have much more insight into the work of others. Before the ERP implementation, it should not be possible, for example, as sales clerk to get surfaced data of the purchasing department. […] The information systems on the production sites are a blind spot for us. We will send some information to them via Excel and after a while you will get some information back. […]But what you really want, is that you can exactly track everything continuously what happens there. (Application administrator, 03-06-2016).

I have insight on everything that happens within ISP, with the exception of the bookkeeping. […] Because we still use Excel often, I do not have much insight into some aspects that I want or would like to have more insight on it. For example, I do not have insights on the supplies, but I need this information to answer some questions of customers. I have no exact insight in the status of the order. […] I have no insight into what the situation exactly is of the product in production. […] When more will be processed by the ERP system, there will be more openness, visibility and accessibility of information between the production sites and the head office. (Head sales office, 10-06-2016).

4.3 The Future of ISP within BP

The growth of the firm and further developments that are taking place in the area of IT, are reasons that the management of BP is not fully satisfied anymore with the current ISP system. ISP is a tiny provider of business software, specific for the roller shutter and solar protection industry. But IT capabilities regarding, among others, ERP software are making rapid progress. So, the requirements of customers increasing in this area and the current version of the ISP system can no longer meet these requirements. The ISP system is outdated and for this version no updates or new features will be released anymore, partly because it is written in FoxPro. Therefore, they have begun to look for opportunities to implement a new ERP system at BP. One respondent mentioned the following:

"It is still an ERP system in the old style. […]The process from order to invoice runs well via this system, but all the other aspects are very limited." (Logistic manager, 01-06-2016).

So, at this moment there are different constraints where the respondents have to deal with and therefore, they have several needs with regards to improvements in the area of IT. These are partially already discussed in the previous section. First, by the significant growth of the customer base of BP, the requirements of the customers are various. But with the current ISP system, the respondents are missing the flexibility within the system in order to meet these requirements. This include, among others, the layout of documents or displaying

online what the status is of the order. Furthermore, issues like EDI (electronic data interchange) and API (application programming interface) are missing in the current ISP system and this ERP system has a lack of extensive capabilities with regards to business intelligence (BI). Everything related to the orders must go directly through the new ERP system, among others, in order to eliminate different manual activities. Therefore, BP wants also to make use of customer portals with the new system.

Because there is no direct data exchange with other parties, such as customers and suppliers, and ISP has not possibilities that two entities work within one overarching system, they are now much more concerned with adding data to the ERP system. Due to the fact that there is no link between the bookkeeping of the head office and production sites abroad, there is no question of complete transparency and up to date insight regarding the finances of the firm. This also applies for the production management, because customers want to know exactly the status of their order. This is something BP really wants in the near future, but because of the complexity of the firm´s environment, some respondents does not expect that this will happen quickly when the new system will come into operation.

Furthermore, BP also wants an ERP system that offers more possibilities with regard to reporting, so that reports can generated from the system with more or less one push on the button and that it is not necessary anymore to export data to Excel and to edit it as desired. Hereby, less will be done in Excel and this will also improve the transparency within the firm. When these shortcomings are eliminated and their wishes are fulfilled, the ultimate goal of BP is to become more a controlling organization.

5. Discussion and Conclusion

5.1 Discussion

In this section, the results of the interviews of this study are fed back to the literature elaborated in Chapter 2. Booth, Matolcsy and Wieder (2000) indicated that ERP users achieve a high level of integration for many functional areas. The integration of business processes was also mentioned often by the applicable firms in the study of Rikhardsson and Kræmmergaard. The findings of the study of Booth et al. also indicated that ERP systems are effective with regard to transaction processing, but less effective with regard to reporting and decision-making. Additionally, the implementation of ERP systems have little influence on the use of new accounting practices (Booth et al., 2000). Granlund and Malmi (2002) confirm this latter in their multiple case study. Kanellou and Spathis (2013) argue that ERP systems ensure more quickly data gathering and processing and improvement of the decision-making process. Further, it is argued that the implementation of ERP systems improve firm's information environment by enhancing the transparency of operations and this leads to related improvements in managerial decision making and better quality management forecasts (Dorantes et al., 2013). The study of Teitinnen, Pellinen and Järvenpää (2012) also shows that the transparency achieved was one of the main benefits of ERP.

It appears from the results of the case study that the implementation of ISP only led to integration among departments located at the head office. Here, all departments work only with the ERP system. In the production sites, both domestically as well as abroad, they do not use the same ERP system. This is mainly due to the limitations of ISP that does not provide options regarding linkages to other systems or use of the same system at different locations. So, the distance between the head office and the production locations is not collapsed by the use of ERP (Quattrone and Hopper, 2005). Dechow and Mouritsen (2005) concluded that data become accurate, shareable and available to many different parties, but it does hardly create the panoptic dream of visibility and action at a distance. This is also definitely the case at BP. Further, in response to the study, it can be concluded that the implementation of the ERP system is not used as a means to exercise panoptic control (Hyvönen, Järvinen and Pellinen, 2008).

The reactions of the respondents indicate, in accordance with abovementioned results, that in the case of BP the ERP system improve the transaction processing and the data gathering process compared to period before the implementation. Further, the improvements concerning decision-making are limited, among others, because of the lack of reporting opportunities. Due to partial integration, there is only transparency of operations at the head office. But because many operations are done outside the system, due to limited integration and other limitations of the system, there is an absence of total transparency in BP. Also it is chosen that almost everyone has not the authority to have insight into the finances of BP, because the management does not find it necessary that employees know the financial situation and that it only increases the risk with that it will be leaked. Further, regarding this case, it can be concluded that the implementation of the ERP did no influence the use of advanced accounting practices.

According to several researchers, ERP enables strategic and operative control. In the case of BP, the information provision of ISP is mainly used for operative control. Additionally, BP made only use of budgets concerning management accounting. These budgets are developed in MS Excel with data retrieved from ISP. This is done in Excel due to the limitations and/or complexity of the current ERP system and this is in accordance to the case study of Hyvönen, Järvinen and Pellinen (2008). So, there are no fundamental changes in the nature of the management accounting information and methods used compared to the situation before the ERP implementation.

Additionally, in contrast to the findings of other case studies, such as Scapens and Jazayeri (2003) and Caglio (2003), the role of the assistant controller and the financial administrator have not changed considerably in response to the ERP implementation. These employees are still busy with routine work (e.g. entering data into the system) and the reporting directed to the finance director and the management team. They are only concerned with the bookkeeping and together with the management team; they have only insight into the finances of BP.

Hyvönen (2003) made a distinction between strategic and technical motives with regard to an ERP implementation. A technologically motivated implementation is only intended to provide a firm with core information systems functionality while occasioning as little business change as possible. A strategic motivated implementation attempts to maximize positive business change and business value. He made a classification of seven strategic motives and three technical motives. It can be concluded that BP both a strategic motive (support changes in strategy of BP) as a technology motive (lack of accuracy or slowness of the previous system) had to implement an ERP system. This is in line with the statement of Hyvönen that when the motives are both strategic as technical in nature, the solution is in most cases an ERP system instead of a BoB system.

Institutions do not influence equally the decision regarding to adopt an ERP system (Ugrin, 2009). Regarding to BP, the customers have a significantly influence on the choice and the use of systems at the firm. By expanding the customer base the previous years, the customer requirements are becoming increasingly diverse. The customers in question have these requirements mainly because they see the opportunities that other firms offer related to IT. In this case, there is thus also a case of a kind of mimicry of peers. The limitations which BP experiences towards the customers, has led to a discussion which is carried out currently and an examination of the possibilities for a new ERP system that more comply with the demands of the customers. Important customers require, among others, electronic interfaces which are not possible with ISP currently.

With respect to the findings of the critical researchers (Dillard, Ruchala and Yuthas, 2005; Dillard and Yuthas, 2006), it is difficult to draw conclusions. Tenets of administrative evil are not directly observed at BP. Morality still seems to have an important role in the firm and there is no great extent of instrumentally and legitimized rules according to the respondents. They also mentioned that there is no case of standardized software which is developed by the vendor's system developers. The application administrator of BP has had a major impact on the implementation of the ERP system and the most is adapted by himself. In accordance with the findings of How and Alawattage (2012), accounting remains decoupled from operational processes in BP.

It can be concluded that not much has changed concerning MC in response to the implementation of the ERP system at BP. Within this study the definition of Merchant and Van der Stede (2011) is used and they make a distinction between result control, action control, personnel control and cultural control. Result controls are not used within the firm. Only company-wide budgets are established every year and these budgets will be evaluated monthly, only by the management team. Therefore, managers and employees have no defined budgets to achieve set targets. Also regarding personnel / cultural controls is little to report and little changes occurred in response to the ERP implementation. An internal informal training has taken place about how the users have to deal with the ERP system. At that time, the application administrator has explained to each user separately how he or she should carry out his or her job with the new ERP system. Concerning action control, there also not much has changed. By the use of an ERP system, it gave BP the possibilities to constrain employees administrative. The ERP system provides the firm possibilities to give each employee authorities concerning what an employee may or may not do within the system. Causing that the separation of duties is clearer within BP which was necessary by the significant growth in the past decade. Additionally, ISP provides opportunities for action accountability, but BP does not make use of these opportunities.

5.2 Conclusion

The aim of this study is, by means of a single case study, to provide more insights with regard to how MC changes in response to an ERP implementation, in which also is the pre-set objective of the firm concerning the ERP implementation is taken into account. Currently, little attention is paid on how MC systems are influenced by ERP systems and the current accounting and control literature does not take the firms' objective of the ERP implementation into account. The research question of this research will be answered in this section and is as follows:

"How can changes in MC systems be explained in response to an implementation of an ERP system, considering the pre-set objectives? "

The results of this study provide new insights in the research area of ERP implementations and changes on MC. In existing research comes forward that the results of several accounting literature, regarding the changes that ERP implementations may entail, are inconsistent. Compared to some equivalent studies, this study has set the focus on the objective of a firm with an ERP implementation. In response to the conducted literature overview, it is concluded that the absence of the distinction between a strategic and technical implementation of an ERP system can possibly explain the differences of those inconsistent findings. ERP systems have no predefined functionality and predictable effects and this has perhaps partly to do with the fact that the objective of the ERP implementation of firms can be different. Further, the data collection did not only take place by managers high up in the hierarchy. Finally, this study showed that many expected changes on MC, which are described in the literature, will not be reached due to, among others, the limitations and the complexity of an ERP system.

The results reveal that BP implemented an ERP system, because they had to deal with different limitations with the previous situation. Many operations were conducted manually and at that time, the system in use was not sufficient to achieve the envisaged growth which the owner had in mind. Only an integration of existing processes and practices is achieved with the implementation of the ERP system. Due to the fact that the processes did not change fundamentally during the ERP implementation, only limited effects on MC have been occurred. At that time there have been no fundamental redesign of business processes (business process reengineering) taken place. So, existing processes are not completely redesigned at the time of the ERP implementation and if this is the case, then there is a case of a technical implementation. Because they still continue to perform the same activities, but then just by using an integrated ERP system, only improvements, such as an improved information provision and greater transparency, have emerged. However, only minimal changes are visible with respect to MC. In the case of BP, only changes related to the increasing possibilities to use action controls are observed.

This is different when there is a case of a strategic implementation. Then processes will be fundamentally redesigned during the ERP implementation and this leads to changes in MC. This is because due to changes in business processes, these processes need to be controlled in a different manner and thus changes in MC will be visible.

Limitations

The results of the thesis should be regarded with some restrictions. First of all, this thesis is a qualitative study. The disadvantage of qualitative studies is that the results cannot be generalized. However, qualitative studies give deeper insights into complex phenomena such as the implementation of an ERP system and the effects on MC. Moreover, because of the time limit and the availability of the employees, the case study is only performed by one firm and only five employees are interviewed. So, it must be assumed that the respondents gave honest answers to the questions. This has the disadvantageous effect that the results of the investigation are less reliable and there is no material for comparison with other firms. A probability exists that when a similar investigation would be carried out with other employees in the same firms or in other firms, this will alter the conclusion of the thesis. To guarantee a degree of reliability, employees with different functions and from different departments and hierarchical levels are spoken. But certainly not all functions, departments and hierarchical levels are included in this study. Furthermore, both employees who were working before the implementation at BP and employees employed at BP in a later stage are spoken.

Because only one firm is included in the case study, the conclusion of this study has a restrictive meaning to the literature. Every company and ERP implementation is unique. Additionally, BP has a limited number in terms of employees and this influence also the establishment of the ERP system and the effects on MC. Emphasis should be on small firms, due to the fact that previous studies were mainly conducted in large enterprises and the market is, compared to the market for larger firms, not saturated yet. Also much previous research has largely focused on data collection in top management.

Finally, in this study there was the case of business software of a small and industry-specific vendor, while many firms have implemented a standardized ERP system of one of the major vendors, such as SAP and Oracle. These vendors generally offer more features and this

ensures that certain restrictions that applies for BP, do not apply for firms that have implemented an ERP system of a major vendor.

Avenues for future research

This thesis investigate what the objectives were to implement an ERP system and which effects are visible with regard to MC. For future research into the effects of ERP systems on the MC of firms, it would be advisable to especially look further into the relation between the objectives of the firm to implement an ERP system and the effects on MC. It would be interesting to study in other cases whether the same relationship is applicable. This can both in small or large firms, firms that implement an ERP system from a major vendor or a small vendor of ERP systems which, for example, especially provides software for a particular industry. Furthermore, in the case of BP, there has been a technical implementation. Therefore, it is interesting to do case research in firms in which there is a case of a strategic implementation. Compared to previous studies in this topic, the focus of the case study should not be only on the top management, because the vision of employees of different hierarchical levels may be different on the ERP system. Further, SMEs remain out of the picture in existing research, while these firms are certainly familiar with ERP systems.

Another suggestion for future research is to investigate more deeply the objectives for a firm to implement an ERP system. As indicated multiple times in this thesis, both a strategic and technical implementation is possible. Further research can investigate more detailed, among others, the differences and similarities between these two objectives of an ERP implementation.

References

- Aernoudts, R.H.R.M., Boom, T. H. van der, Pijl, G.J. van der, & Vosselman, E. (2005). *Management Accounting Change and ERP, an Assessment of Research.* Erasmus University Rotterdam.
- Anthony, R., & Govindarajan, V. (2014). *Management Control Systems* (1st edition). New York City: McGraw-Hill.
- Baarda, D.B. (2009). *Dit is onderzoek!* Groningen/Houten: Noordhoff Uitgevers.
- Baarda, D.B., Goede, M.P.M. de, & Teunissen, J. (2013). *Basisboek kwalitatief onderzoek* (3rd edition). Groningen/Houten: Noordhoff Uitgevers.
- BDO CampsObers IT Auditors & Consultants B.V. (2009). *Kritieke succesfactoren bij ERP-implementaties in het MKB.* Retrieved on 19 May 2016, from http://www.softwarepakket.nl/upload/whitepapers/bdo/2009_4_White%20paper%20K ritieke%20succesfactoren%20ERP-implementaties.pdf
- Beaubien, L. (2013). Technology, change, and management control: a temporal perspective. *Accounting, Auditing & Accountability Journal, Vol. 26, No.1,* p. 48-74.
- Bleijenbergh, I. (2015). *Kwalitatief onderzoek in organisatie* (2nd edition). Den Haag: Boom Uitgevers.
- Boedker, C. (2010). Ostensive versus performative approaches for theorising accounting-strategy research *Accounting, Auditing and Accountability Journal, Vol. 23, Iss. 5,* p. 595-625.
- Booth, P., Matolcsy, Z., & Wieder, B. (2000). The impacts of Enterprise Resource Planning systems on accounting practice - the Australian experience. *Australian Accounting Review, Vol. 10, No. 3,* p. 4-18.
- Bradford, M., & Florin, J. (2003). Examining the role of innovation diffusion factors on the implementation success of enterprise resource planning systems. *International Journal of Accounting Information Systems, Vol. 4,* p. 205-225.
- Caglio, A. (2003). Enterprise Resource Planning systems and accountants: towards hybridization? *European Accounting Review, Vol. 12,* p. 123-153.
- Chapman, C., & Kihn, L. (2009). Information system integration, enabling control and performance. *Accounting Organizations & Society, Vol 34,* p. 151-169.
- Chapman, C.S. (2005). Not because they are new: developing the contribution of enterprise resource planning systems to MC research. *Accounting, Organizations and Society, Vol. 30,* p. 685-689.
- Chenhall, R. (2003). MC systems design within its organizational context: findings from contingency-based research and directions for the future. *Accounting, Organizations and Society, Vol. 28, No. 2-3,* 127-168.
- Chua, W.F., & Mahama, H. (2012). On theory as a 'deliverable' and its relevance in 'policy' arenas. *Critical Perspectives on Accounting, Vol. 23 No. 1,* p. 78-82.
- Chua, W.F. (1986). Radical developments in accounting thought. *The Accounting Review, Vol. 61 No. 4,* p. 601-632.
- Davenport, T.H. (1998). Putting the enterprise into the enterprise System. *Harvard Business Review, Vol. 76,* p. 121-131.

- Davenport, T.H. (2000). *Mission critical - realizing the promise of enterprise systems.* Harvard Business School Press.
- Dechow, N., & Mouritsen, J. (2005). Enterprise Resource Planning systems, MC and the quest for integration. *Accounting, Organizations & Society, Vol. 30,* p. 691-733.
- Dillard, J.F., & Yuthas, K. (2006). Enterprise resource planning systems and communicative action. *Critical Perspectives on Accounting, Vol. 17,* p. 202-223.
- Dillard, J.F., Ruchala, L., & Yuthas, K. (2005). Enterprise resource planning systems: a physical manifestation of administrative evil. *International Journal of Accounting Information Systems, Vol. 6,* p. 107-127.
- Dorantes, C-A., Li, C., Peters, G.F., & Richardson, V.J. (2013). The effect of enterprise systems implementation on the firm information environment. *Contemporary Accounting Research, Vol. 30, Iss. 4,* p. 1427-1461.
- Eisenhardt, K.M. (1989). Agency theory: an assessment and review. *Academy of Management Review, Vol.* 14, p. 57–74.
- Eisenhardt, K.M. (1989). Theories from case study research. *The Academy of Management Review, Vol. 14, No. 4,* p. 532-550.
- Elbashir, M.Z., Collier, P.A., & Sutton, S.G. (2011). The role of organizational absorptive capacity in strategic use of business intelligence to support integrated management control systems. *The Accounting Review, Vol. 86, No.1,* p. 155-184.
- Elmes, M. B., Strong, D.M., & Volkoff, O. (2005). Panoptic empowerment and reflective conformity in enterprise systems-enabled organizations. *Information and Organization, Vol. 15, Iss. 1,* p.1-37.
- Foucault, M. (1979). *Discipline and punish: the birth of the prison.* London: Peregrine Books.
- Giddens, A. (1984). *The Constitution of Society.* Berkeley, CA: University of California Press.
- Grabski, S.V., & Leech, S.A. (2007). Complementary controls and ERP implementation success. *International Journal of Accounting Information Systems, Vol. 8, Iss. 1,* p. 17-39.
- Granlund, M., & Malmi, T. (2002). Moderate impact of ERPS on management accounting: a lag or permanent outcome? *Management Accounting Research, Vol. 13,* p. 299-321.
- Granlund, M., & Mouritsen, J. (2003). Special section MC and new information technologies. *European Accounting Review, Vol. 12, No.1,* p. 77-83.
- Granlund, M. (2011). Extending AIS research to management accounting and control issues: a research note. *International Journal of Accounting Information Systems, Vol 12,* p. 3-19.
- Hayes, D.C., Hunton, J.E., & Reck, J.L. (2001). Market reaction to ERP implementation announcements. *Journal of Information Systems, Vol. 15, No. 1,* p. 3-18.
- Holmström, B. (1979). Moral hazard and observability. *Bell Journal of Economics, Vol. 10, No. 1,* p. 74–91.

- How, S., & Alawattage, C. (2012). Accounting decoupled: a case study of accounting regime change in a Malaysian company. Critical Perspective on Accounting, Vol. 23, p. 403-419.
- Hunton, J.E., Lippincott, B., & Reck, J.L. (2003). Enterprise resource planning systems: comparing firm performance of adopters and non-adopters. *International Journal of Accounting Information Systems, Vol. 4,* p. 165-184.
- Hyvönen, T. (2003). Management accounting and information systems: ERP versus BoB. *European Accounting Review, Vol. 12, Iss. 1,* p. 155-173.
- Hyvönen, T., Järvinen J., & Pellinen, J. (2008). A virtual integration – the MC system in a multinational enterprise. *Management Accounting Research, Vol. 19,* p. 45-61.
- Jensen, M.C., & Meckling, W.H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics, Vol. 3, Iss. 4,* p. 305-360.
- Jermier, J.J. (1998). Introduction: critical perspectives on control. *Administrative Science Quarterly, Vol. 43, No. 2,* p. 235-256.
- Johnson, A. (1995). *The Blackwell Dictionary of Sociology.* Oxford: Blackwell Publishers.
- Kallunki, J-P., Laitinen, E. K., & Silvola, H. (2011). Impact of enterprise resource planning systems on MC systems and firm performance. *International Journal of Accounting Information Systems, Vol. 12,* p. 20-39.
- Kanellou, A., & Spathis, C. (2013). Accounting benefits and satisfaction in an ERP environment. *International Journal of Accounting Information Systems, Vol. 14, Iss. 3,* p. 209-234.
- Keating, P.J. (1995). A framework for classifying and evaluating the theoretical contributions of case research in management accounting. *Journal of Management Accounting Research, Vol. 7,* p. 66-86.
- Latour, B. (1999). *Pandora's hope. Essays on the reality of science studies.* Cambridge, MA: Harvard University Press.
- Latour, B. (2005). *Reassembling the Social: An Introduction to Actor-Network Theory.* Oxford: Oxford University Press.
- Lodh, S.C., & Gaffikin, M.J.R. (2003). Implementation of an integrated accounting and cost management system using the SAP system: a field study. *European Accounting Review, Vol. 12, No. 1,* p. 85-121.
- Macintosh, N.B., & Quattrone, P. (2010). *Management accounting and control systems: an organizational and sociological approach.* Chichester: John Wiley & Sons.
- Madapusi A., & D'Souza, D. (2012). The influence of ERP system implementation on the operational performance of an organization (2nd edition). *International Journal of Information Management. Vol. 32, Iss. 1,* p.24-34.
- Mahama, H., Elbashir, M. Z., Sutton, S. G., & Arnold, V. (2016). A further interpretation of the relational agency of information systems: a research note. *International Journal of Accounting Information Systems, Vol. 20,* p. 16-25.

- Mauldin, E.G., & Richtermeyer, S.B. (2004). An analysis of ERP annual report disclosures. *International Journal of Accounting Information Systems, Vol. 5,* p. 395-416.
- Merchant, K.A., & Van der Stede W.A. (2011). *Management Control Systems* (3rd edition)*.* London: Prentice Hall.
- Nicolaou, A.I., & Bhattacharya, S. (2008). Sustainability of ERPS performance outcomes: the role of post-implementation review quality. *International Journal of Accounting Information Systems, Vol. 9,* p. 43-60.
- Nicolaou, A.I. (2008). Research issues on the use of ERPS in interorganizational relationships. *International Journal of Accounting Information Systems, Vol. 9, p. 216-226.*
- Noreen, E. (1988). The economics of ethics: A new perspective on agency theory. *Accounting, Organizations and Society, Vol. 13, Iss. 4,* p. 359-369.
- O'Leary, D.E. (2004). Enterprise resource planning (ERP) systems: an empirical analysis of benefits. *Journal of Emerging Technologies in Accounting, Vol. 1,* p. 63-72.
- Poston, R., & Grabski, S. V. (2001). Financial impacts of Enterprise Resource Planning implementations. *International Journal of Accounting Information Systems, Vol. 2,* p. 271-294.
- Quattrone, P., & Hopper, T. (2005). A 'time-space odyssey': MC systems in two multinational organisations. *Accounting, Organizations and Society, Vol.30,* p. 735-764.
- Rashid, M.A., Hossain, L., & Patrick, J. D. (2002). *The evolution of ERP systems: a historical perspective.* London: Idea Group Publishing.
- Rikhardsson, P., & Kræmmergaard, P. (2006). Identifying the impacts of enterprise system implementation and use: Examples from Denmark. *International Journal of Accounting Information Systems, Vol. 7,* p. 36-49.
- Rose, J., & Kræmmergaard, P. (2006). ERP systems and technological discourse shift: managing the implementation journey. *International Journal of Accounting Information Systems, Vol. 7,* p. 217-237.
- SAP. (2014). *2014 Annual report.* Retrieved March 3, 2016 from http://www.sap.com/bin/sapcom/en_us/downloadasset.2015-03-mar-20-01.sap-2014-annual-report-pdf.html.
- Scapens, R.W., & Jazayeri, M. (2003). ERP systems and management accounting change: opportunities or impacts? A research note. *European Accounting Review, Vol. 12,* p. 201-233.
- Scott, W.R. (2014) *Institutions and Organizations: Ideas and Interests* (4th edition)*.* Los Angeles: Sage Publications.
- Sia, S.K., Tang, M., Soh, C., & Boh W.F. (2002). Enterprise resource planning as a technology of power: empowerment or panoptic control? *The Database for Advances in Information Systems, Vol. 33,* p. 23-37.
- Strub, H. (1989). The theory of panoptic control: Bentham's panopticon and Orwell's nineteen eighty-four. *The Journal of the History of Behavioural Science, Vol. 25,* p. 40-59.

- Teitinnen, H., Pellinen, J., & Järvenpää, M. (2013). ERP in action - challenges and benefits for management control in SME context. *International Journal of Accounting Information Systems, Vol. 14, Iss. 4,* p. 278-296.
- Ugrin, J.C. (2009). The effect of system characteristics, stage of adoption, and experience on institutional explanations for ERP systems choice. *Accounting Horizons, Vol. 23, No.4,* p. 365-389.
- Meer-Kooistra, J. van der, & Vosselman, E.G.J. (2012). Research paradigms, theoretical pluralism and practical relevance. *Qualitative Research in Accounting and Management, Vol. 9, No. 3,* p. 245-264.
- Wagner, E.L., Moll, J., & Newell, S. (2011). Accounting logics, reconfiguration of ERP systems and the emergence of new accounting practices: a sociomaterial perspective. *Management Accounting Research, No. 22,* p. 181-197.
- Wier, B., Hunton, J., & HassabElnaby, H.R. Enterprise resource planning systems and non-financial performance incentives: the joint impact on corporate performance. *International Journal of Accounting Information Systems, Vol. 8,* p. 165-190.
- Williamson, O.E. (1981). The economics of organization: the transaction cost approach. *American Journal of Sociology, Vol. 87, Iss. 3,* p. 548-577.
- Yin, R.K. (2014). *Case study research: design and methods* (3rd edition). London: Sage Publications.

Appendix 1: The Questionnaire

Parts:	Questions:
Introduction	Can you tell something about yourself concerning your work history at BP, your current job, et cetera?
Implementation	Which role did you have at BP during the implementation of the ERP system? Did you have a specific role in the ERP project? What were the motives for the ERP implementation? What were the expectations that were outlined by the management? What expectations did you have of the ERP system and connect these expectations with the idea that you have now? How did go the ERP implementation phase and the phase after implementation?
Experiences	What were your experiences with the ERP system? For what do you use the ERP system? What is your opinion about the possibilities offered by the ERP system? To what extent enables the ERP system you to work with (financial) data?
Processes	To what extent are the work processes adapted for the purpose of the ERP system? To what extent are existing processes standardized? To what extent has this led to increased transparency between departments et cetera?
Changes	Does the ERP system changes the way you work? If so, how? To what extent has the ERP system led to changes within departments? (FTE, structure, et cetera) To what extent have the management accounting techniques changed in response to the ERP implementation? To what extent do you experience problems related to management accounting?
Possibilities	What possibilities do the ERP system offer with regards to reporting possibilities and information provision?

	To what extent have the reporting possibilities and information provision been changed as a result of the new ERP system? What possibilities does the ERP system provide for monitoring activities? To what extent have the possibilities with regard to monitoring employees been changed as a result of the new ERP system?
Performances	To what extent do you think that the ERP system has a positive impact on the performance of the organization? Why?
Communication	How is the communication between employees, departments, et cetera compared to the situation before the implementation?
Critical perspective	To what extent is the focus on numbers and will be chosen for the most efficient and cost-effective means to achieve a goal?
Future	What do you expect of the ERP system in the future?
Ending	Do you have additional information that can add something to this thesis? (For example, internal documents)