What happens with control when fundamentals change?

A study of how an ERP implementation may affect management control by causing changes among supporting roles and activities

Master thesis within Business Administration
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Abstract

As the society becomes more internationalized and companies spread operations to multiple locations in different countries, there is a growing need for systems that can link information between different company departments and make it available for users at any time. Over the years, companies have used several information systems for different business activities and purposes, but due to complexity and high costs, a need for an integrated platform has emerged. A system that can connect different business functions within a company, and at the same time link systems owned by customers and suppliers through modern technology is an Enterprise Resource Planning (ERP) system.

Today, management control may be regarded as an information intensive company process where managers can improve control by working with relevant and accurate information. An ERP system represents a natural bearer of that information, and because of that, it becomes interesting to analyze the effects on management control when its fundamentals (the ERP system) change. As previous publications mostly have examined organizational changes and effects of ERP implementations from a more general perspective, the authors realize a need for addressing ERP systems in relation to management control. Though prior research indicates that implementation of ERP systems have affect on management control, there is still uncertainty how it may be affected. The aim for this study is therefore to create understanding of how a major change such as an ERP implementation may affect management control by causing changes among supporting roles and activities.

In order to achieve the purpose for this work, the authors have exemplified an ERP implementation through a case study of a manufacturing company implementing Electronic Invoice Processing (EIP) as a part of a larger ERP change. By using a scientific research approach characterized by an iterative process that moves between theory and empiricism, some valuable outcomes can be drawn from the analyzed case material. These outcomes become in the end target for a broad interpretation of roles, activities, and how changes among them may affect management control on a more generalized ERP level.

Analyzing the case, the authors have been able to identify three distinctive roles that may be affected by an ERP implementation; the Executor, the Supervisor, and the Supporter. These three roles have been found to carry out five prime activities; Information Assembling, Information Verification, Information Registration, Information Presentation, and Information Storing. Finally, the changes and altering of focus between these roles and activities were found to potentially affect management control positively through five prime aspects; Timeliness, Accuracy, Accessibility, Richness, and Control.

Keywords: Roles, Activities, Changes, Effects, Management Control, Enterprise Resource Planning Systems, Electronic Invoice Processing.
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Pleasant reading!

Jönköping May 2011

Tobias Ahlstrand

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1 Introduction

This introductory chapter intends to provide the reader with a general background to this thesis. The Background will be followed by Problem discussion, Problem statement, and the Purpose. The authors will thereafter clarify delimitations of the thesis and introduce some basic definitions. Finally, there will be a section regarding for whom this thesis is directed, and also a brief overview of how the thesis is structured.

1.1 Background

What do we mean by the term organizational change? From a general standpoint, we could formulate a definition of organizational change that encompasses all aspects of change within any form of organization (Dawson, 2003). Using such a broad definition on organizational change tells us little about the notion of change in question. For example, should we differentiate between new routines or way of doing things on an individual level to major changes that affects a company’s worldwide operations? One clear type of organizational change is the process of adjusting company activities after a changing environment. The term is called strategic change and can be defined as a difference in form, quality or state over time in an organization’s alignment with its external environment (Van de Ven & Poole, 1995). Working with strategic change is central for all companies as the environment becomes more internationalized and the market competition is increasing. Nowadays, modern technology makes it possible to share and connect with people from all over the world any time of the day, and companies use technology to spread and ease operations in different countries and locations. The international business climate raises demand for a solid system that can link information between a company’s different departments and make it available for users at any time. A system like this is called an Enterprise Resource Planning (ERP) system and can be described as an integrated software package composed by a set of standard functional modules such as production, sales, human resources, and finance (Botta-Genoulaz & Millet, 2006). For managers who have struggled with different legacy systems for different purposes, an ERP system not only connects standard business functions within a company, it also enables linkages to systems owned by suppliers and customers (Motiwalla & Thompson, 2009). In order to link them, a company may use a method called Electronic Data Interchange (EDI), which is a method for electronic transmission of data between different systems. Developed in the United States during the 1960’s, the concept of EDI originates from a group of railroad companies that realized a need for standardized documents. The concept was later introduced to other industrial sectors which developed own standards of data elements and messages to meet its particular needs, with the result that the various sectors were not able to exchange messages (edi-guide.com, 2011). Overcoming this, several industries decided to sponsor a common EDI system in order to reach a shared standard for transmission of data between companies of different industries. Because of this, a number of companies have since early 1970’s experienced the benefits of fast, efficient and precise information flow and have since used the technology to purchase orders and exchange invoices (edi-guide.com, 2011). Following the developments of EDI, companies have over the years been using systems for sending and receiving invoices but due to major set up costs and lack of common standards, the idea has mainly been adopted by larger companies (Dykert & Fredholm, 2006). Nowadays, modern technology together with improved standardization has increased the relevance of Electronic Invoice Processing (EIP), as an accessible solution for any company seeking to rationalize the invoice process (Dykert & Fredholm, 2006).
1.2 Problem discussion

The interest for ERP is not without reason, since ERP systems most often correspond to some of the largest investments that organizations make, both regarding time and money (Hedman et al., 2009). Therefore, the generally accepted and underlying truth that a majority of ERP implementations do fail or do not meet preset expectations intensifies the topic even more (e.g. Davenport, 1998; Law & Ngai, 2007; Yen & Sheu, 2004; Ehie & Madsen, 2005; Motwani et al., 2005; Hong & Kim, 2002; Ke & Wei, 2008; Kwahk & Ahn, 2009).

Failures with implementations have shown to cause severe consequences in past years. For instance, the failure with implementing an ERP solution offered by SAP at one time (1993) largest distributor of pharmaceuticals in the world, FoxMeyer Drugs, resulted in one very well-known bankruptcy (Motiwalla & Thompson, 2009). The list of similar cases can be made long, even if not all of them end up as FoxMeyer Drugs, in bankruptcy. Another very recent event was when the Swedish National Insurance Office (Försäkringskassan) during 2007-2010 tried implementing SAP to their business. Because of rapidly increasing costs, Försäkringskassan was forced to cancel the project resulting in a massive failure and to a cost of hundreds millions of SEK (Jerräng, 2009).

As can be easily understood, implementing an ERP system is not a simple task. It is like a project manager expressed it, “Undertaking an implementation project is like laying a great puzzle, you have to find the right pieces that will work together” (from initial meeting at manufacturing company). During recent years, research within ERP systems has therefore focused heavily on how to succeed with an ERP implementation, trying to point out critical success factors (e.g. Woo, 2007; Law & Ngai, 2007; Ehie & Madsen, 2005; Motwani et al., 2005; Hong & Kim, 2002). Often these studies conclude that implementing an ERP system is not just a technical issue, it should be treated as something concerned with the whole organization, a strategic matter (e.g. Yen & Sheu, 2004; Hong & Kim, 2002; Melin, 2009). Some of the most commonly recommended critical issues to consider in order increase the probability of a successful ERP implementation are:

- Top management support (e.g. Law & Ngai, 2004; Ehie & Madsen, 2005; Ke & Wei, 2008; Motiwalla & Thompson, 2009)
- Business process change (e.g. Law & Ngai, 2004; Ehie & Madsen, 2005; Motwani et al, 2005; Motiwalla & Thompson, 2009)
- Competitive strategy alignment (e.g. Yen & Sheu, 2004)
- Project management (e.g. Ehie & Madsen, 2005; Motiwalla & Thompson, 2009; Loh & Koh, 2004)
- Change management (e.g. Motwani et al, 2005; Hong & Kim, 2002; Kemp & Low, 2008; Motiwalla & Thompson, 2009; Loh & Koh, 2004)
- Planning (e.g. Motwani et al, 2005)
- Change resistance/Readiness to change (e.g. Motwani et al, 2005; Ke & Wei, 2008; Kwahk & Ahn, 2010; Kwahk & Lee, 2008; Motiwalla & Thompson, 2009)
- Communication (e.g. Motiwalla & Thompson, 2009; Loh & Koh, 2004)
- Training (e.g. Koh et al., 2009; Motiwalla & Thompson, 2009)

As can be interpreted from all the suggested critical success factors, the implementation of an ERP system involves a delicate work with change in several forms. It is thus crucial to understand that implementing an ERP system will affect and change the organization in multiple ways (Gäre, 2003). Accordingly, Hall (2002: 264) claims that “ERP
implementations often have massive organizational effects”. However, as research by Rikhardsson and Kraemmergaard (2006) demonstrates, these organizational changes associated with ERP implementations are often unforeseen by the organizations pursuing them, resulting in unexpected and sometimes, unpleasant surprises. Therefore, previous research has focused on analyzing what these organizational changes and effects related to a complete ERP systems involve, although from more general perspectives (Hall, 2002; Rikhardsson & Kraemmergaard, 2006) or primarily focusing organizational performance (Kallunki et al., 2011). However, the authors of this thesis claim the importance of understanding the affect and implications of ERP implementations specifically for management control. Especially since Granlund (2007) stresses that ERP systems will affect management control, but there is ambiguity about how it may affect (cited in Kallunki et al., 2011).

Focusing on management control becomes even more interesting when considering the discussion brought about by Olve (2009) and Nilsson et al. (2010) regarding how ERP systems nowadays constitutes the most crucial instrument for management control and its practitioners. This because management control may be defined as “formalized informational routines, structures and processes that an organization’s management uses in order to formulate strategies and to execute them by affecting organizational behavior” (Nilsson et al., 2010: 13). Management control can thus be seen as an organizational process that involves the collection of relevant information and later control with the help of that information. In relation to management control, the ERP system becomes the enabler for and bearer of that information (Nilsson et al., 2010). These statements further raise the need for some critical considerations when there are awaiting ERP changes on the agenda, regarding what will happen with management control when the prerequisites for information (the ERP system) change. More specifically: How will those supporting roles and activities that underpin the process of management control be affected by the ERP change? And, what will the implications be for the process of management control specifically? Figure 1 illustrates these questions and considerations by pointing out management control as an information intensive process moving forward towards the goals and vision of an organization, furthermore underpinned by supporting roles and activities. As the discussion emphasizes, figure 1 further illustrates vagueness regarding what will happen with management control, and supporting roles and activities in an ERP implementation.

As previous research mainly have focused on ERP change and its effects on organizations more generally (Hall, 2002; Rikhardsson & Kraemmergaard, 2006; Schlichter & Kraemmergaard, 2010; Kallunki et al., 2011), the authors have not found sufficient answers

![Figure 1 – The effects of an ERP implementation on supporting roles and activities, and management control](image-url)
to questions like the latter in present research, especially when also considering roles and activities. The absence of relevant research becomes even more evident when narrowing the search keywords and additionally focusing specific parts and enabling possibilities of an ERP system such as Electronic Invoice Processing (EIP) or Electronic Data Interchange (EDI).

1.3 Problem statement

Having the introductory background and following problem discussion in mind this thesis will empirically try to investigate how an ERP implementation may affect management control by causing changes among supporting roles and activities. In order to do so, the authors have conducted an explorative case study. The case study involves a manufacturing company that is in the middle of an ERP implementation which considers the replacement of a current production system. Reflecting over figure 1, the authors have realized that in order to obtain any valuable findings regarding how management control may be affected, it is crucial to first identify those management control supporting roles and activities that are apparent in the ERP implementation. Besides, there is a need to identify the changes among these roles and activities. The first research question focuses therefore on the bottom part of figure 1 and sounds:

*What management control supporting roles and activities, and changes among them, can be identified in an ERP implementation?*

Hence, the first question will point out those underpinning roles and activities, which are crucial for the execution of management control, and the changes among them, that the ERP implementation will encompass and cause. The question will thus shed light on what happens with the underlying foundation of management control in an ERP implementation. Answering that first research question will enable a proceeding for answering the second, more prominent research question (focusing the main body in figure 1):

*What potential effects on management control can be observed?*

In order to answer these two questions the authors will compare a manufacturing company’s current state of a business area, with a desired state based on the manufacturing company’s expectations. Thereby the authors will be able to map out those activities and roles, and changes among them, that the ERP change will embrace and cause. These findings will then be interpreted and analyzed through an analytical framework aiming to point-out potential effects on management control.

1.4 Purpose

The purpose of this thesis is to create an understanding of how an ERP implementation may affect management control by causing changes among supporting roles and activities.
1.5 Delimitation

The study will rely on empirical data collected from one case solely, a company within the manufacturing industry. In order to deepen the analysis and due to the limited time frame and scope of this thesis, the study will be constraint to one smaller project within an ongoing ERP implementation at the manufacturing company. The authors have chosen to study implementation of Electronic Invoice Processing because of its close relation to ERP as an information system aiming to improve information flow, and to business administration, which is the main direction for this thesis. Electronic Invoice Processing emphasizes the invoice process, which is a crucial activity for a company and its accounting department in particular.

Important to clarify, this study does not aim to criticize or assess the way the company is implementing their ERP system, nor to evaluate the idea behind Electronic Invoice Processing. Instead, the authors will objectively try to focus and understand how changes related to the implementation may cause changes among supporting roles and activities and thereby affect management control. Finally, since this thesis will not be able to cover the complete time frame of Project X, the findings will therefore consider potential, rather than final effects.

1.6 Definitions

1.6.1 Management control

Management control is a central activity for all organizations. The concept of management control focuses on all those activities that are designed to make sure that overall operating coherence is maintained and that the organization retains a capability to survive in its uncertain environment (Otley, 1994). Because of that, Otley (1994) explains that management control both includes strategic decisions about positioning and operating decisions that ensure an effective implementation of such strategies. Anthony (1965) takes a similar standpoint when positioning management control between the processes of strategic planning and operational control. Strategic planning is concerned with defining goals and objectives for the entire organization over long term, whereas operational control is concerned with the activity of ensuring that immediate tasks are carried out. Management control is the process that links the two (Otley, 1994). During recent years the definition of management control has evolved to focus more on the specific means of management control, namely information flows (Olve, 2009; Nilsson et al., 2010). Today’s technology allows more efficient ways to both gather and integrate different kinds of business information, but also to analyze and present the information in a suitable manner (Nilsson et al., 2010). In addition of being the link between strategic planning and operational control as Otley (1994) emphasizes, management control involves the process of collecting, analyzing and presenting relevant business information (Olve, 2009). Accordingly, Nilsson et al. (2010: 13) defines management control as “formalized informational routines, structures and processes that an organization's management uses in order to formulate strategies and to execute them by affecting organizational behavior”. Hence, if previous definitions have focused “what” management control involves, later definitions focus “how” management control is executed. This thesis apprehends management control as the mentioned definition by Nilsson et al. suggest (2010).
1.6.2 Enterprise Resource Planning Systems

Enterprise Resource Planning (ERP) is an information system that manages, through integration, all aspects of a business including production planning, purchasing, manufacturing, sales, distribution, accounting, and customer service (Escala & Cotteleeer, 1999, in Yen & Sheu, 2004). ERP systems are useful in sharing common data and practices across the entire organization, and for producing and accessing information in a real-time environment (Nah et al., 2001). ERP systems may be constructed differently and managers have to select a solution that best matches the needs of the company. One can either choose to implement a “wall-to-wall” ERP system (one system for all processes) or a “best-of-breed” solution (the best modules from different ERP systems) (Rikhardsson & Kraemmergaard, 2006). A similar term to ERP systems is Enterprise Systems (ES), which is a convenient and general accepted term that may refer to a larger set of organization-wide applications with process orientation. Although Davenport (1998) has equated the terms two terms, enterprise systems are in this thesis referred to as ERP systems mainly because the term ERP has a clear and reasonable meaning and is commonly understood in the business world.

1.6.3 Electronic Data Interchange

Electronic Data Interchange (EDI) is a technique for exchanging data information between computer systems in a structured predetermined format over a secured network (edi-guide.com, 2011). As the information in an EDI document is sent in common electronic format, there is no need to re-keying data, which minimizes errors and makes it possible for a computer system to process the information immediately (edi-guide.com, 2011). If there is an agreement specifying content, format, communication, and safety two or more systems can be connected. In some cases, companies use a third party in order handle the EDI process, such as for translating information (Dyket & Fredholm 2008).

1.6.4 Electronic Invoice Processing

Through modern technology, Electronic Invoice Processing (EIP) is a solution for processing invoices electronically. EIP, which is a method aiming to handle all sorts of incoming invoices to a buying organization, such as traditional paper invoices and electronic invoices (Brodin, 2005). In the case of a paper invoice, the document needs to be scanned before it can be translated and further processed. An electronic invoice may skip the scanning procedure and proceed to translation, which is done through computer software. After translation, invoices are processed in a digital workflow involving steps such as, accounting, attestation, and payment. These steps are typical functions in an EIP system, and can to some extent replace the traditional way of processing invoices (Readsoft, 2011).

1.7 Target group

With respect to purpose and delimitations the authors suggest small and medium sized companies interested in ERP and EIP as the main target group for this thesis. The main target group includes both suppliers and customers as such system may involve many actors. Besides, the thesis may also be interesting for consultants, teachers and students interested in the particular topic or system implementations in general.
1.8 Thesis outline

Introduction

This opening chapter will introduce the reader to the topic in question, aiming to create some background and a brief history to ERP and why it is still important. Moreover, it seeks to build up the very foundation from where the authors take a stand and positioning them from earlier research, explaining and arguing why their subject is relevant to study. Finally, it raises some related questions and presents the purpose of the study. In addition it presents delimitations, relevant definitions and target group.

Method

The second chapter will explain how the authors will conduct the study, what tools they will work with in order to collect the empirical data and how they are going to analyze it through the Theoretical framework. This chapter will further discuss pros and cons with the selected methods and techniques, and also argue why the chosen method is more appropriate than others.

Theoretical framework

This third chapter will discuss the relevant theories and models that the authors will use in order to analyze the empirical findings. The relevance of chosen theories will be carefully argued for. The final part in this chapter will present an analytical framework derived from the different theories, which constitutes the ground for the analysis.

Empirical findings

The authors will during the fourth chapter present the findings from the interviews. The chapter will be logically structured by describing the manufacturing company in question, providing a background to the case, and finally in detail the specific case under examination.

Analysis

This chapter will describe and analyze the empirical findings through and in the light of the analytical framework derived from theory.

Conclusions

The last chapter will present what conclusions that may be drawn from the thesis and thus answer the initially stated research questions and discuss the fulfillment of purpose. Finally it will discuss how the findings may be applicable in other settings and suggest further research.
2 Method

This chapter will begin by clarifying the philosophical assumptions and scientific approach underpinning the thesis. Thereafter the chosen research strategy and method will be presented and argued for, followed by a description of the work process, arguing the relevance of chosen topic. The authors will thereafter state and argue for the techniques used in data gathering and further the approach to analyze the data. Finally, the authors will discuss ethical considerations and further bring about general criticism towards chosen method including a discussion regarding reliability, validity and generalizability.

According to Myers (2009) the term “research” involves the activity of creating new knowledge and understanding within a specific field. He furthermore conditions the implication of “new” in this setting by arguing that the interpretation of the facts, or the theories used to explain them, may not have been practiced in the same sense before (within that particular field). Even though this interpretation may appear as very straightforward, Saunders (2009) presents a somewhat more ambiguous meaning embedded in the term research as he exemplifies a wide use of the term in everyday speech. However, he moves on stating that the plain use of the term research not always corresponds to the meaning of research in the sense Myers (2009) puts it. By referring to Walliman (2005), Saunders emphasizes how the usage of the term may be faulty as it simply relates to a collection of facts or information that lacks both a clear purpose and any sort of interpretation, and sometimes used only to launch a new product or idea (cited in Saunders, 2009). Saunders (2009) further elaborates on these statements and suggests three distinct fundamentals of research; a systematic collection of data; a systematic interpretation of data; and a clear purpose to find things out. From these fundamentals Saunders (2009) defines research as the activity people undertake to find out things in a systematic way which will create new knowledge. In order to fulfill that definition of research, the authors will try to logically go through the related aspects of the methodology used when writing up this thesis. Therefore, the following sections will describe the authors’ underlying philosophical assumptions and how they chose to approach the problem in question. The sections will furthermore present and argue for the chosen strategies and methods used in order to collect and analyze the data. Besides, criticism towards chosen methods will be brought up. Finally, there will be a discussion regarding related ethical issues and also the validity, reliability, and generalizability of the thesis.

2.1 Philosophical assumptions

Conducting a research project of any kind, there will inevitably be underlying philosophical assumptions concerning the nature of reality and how knowledge may be acquired and developed in that reality, also referred to as epistemology (Myers, 2009). Such assumptions will constitute the foundation of any research project and be guiding in the choice of relevant research methods and techniques (Saunders, 2009). Even if these assumptions often is implicitly apparent, both Saunders (2009) and Myers (2009) argue the importance for researchers to explicitly explain and argue for their particular philosophical stands, as the choice will be crucial for the overall research structure and outcome.

The authors believe, as subscribers of interpretivism, that the reality we face and the knowledge available to us are social products, and hence accessible only through social constructions such as language, shared meanings, consciousness and instruments (Myers, 2009; Orlikowski & Baroudi, 1991). The reality is thus formed of and dependent upon the subjective values and meanings of the social actors themselves (the individuals, including researchers) (Orlikowski & Baroudi, 1991). As this philosophical stance assumes, an
organization (seen as a social product in a social world) are not predefined nor objectively given, rather being produced and reinforced by the actions and interactions of human beings (the social actors) (Orlikowski & Baroudi, 1991).

Moreover, as the introductory background and problem discussion of this thesis mediates, the authors believe that the nature of organizations are too complex and problematic to theorize in terms of definite laws for generalization and prediction as a positivist would suggest. Therefore, as Saunders (2009) argues, an interpretive approach may be appropriate. Myers (2009) furthermore explains the interpretive approach as a way of understanding the context of a phenomenon, where the context defines the situation and thus provides it with meaning. By drawing parallels to this thesis, it is possible to assume the context in question to be an organization, and the embraced phenomena to be an ERP change. The challenge for the authors is thus, according to Saunders (2009), to enter the social world of e.g. organizations, trying to understand it from the social actors’ point of view. Entering an organization and furthermore conducting interviews enforces the researchers to meet the subjects at the same level as them, speaking the very same “language” (Myers, 2009). In addition, it is crucial that the researchers recognize the interviews of not being objective, largely because of the researchers’ way of interpreting the information provided, but also since the information is influenced by and dependent upon the subjects’ interpretation of the asked questions and the reality they live in (Myers, 2009). Moreover, since the formulated purpose of this thesis is related to the understanding of how a phenomenon, such as an ERP change, may affect an organization’s management control, it is possible to distinguish both a dependent variable (management control) and an independent variable (ERP change). Building a thesis upon such variables, one could in accordance to Myers (2009) promote a positivistic approach. However, according to Orlikowski and Baroudi (1991) a positivistic approach requires not only the presence of dependent and independent variables, these variables should in addition be quantifiable in measurable terms.

Since the authors have chosen to employ theoretical frameworks such as the Balanced Scorecard and change theories in this thesis, it is according to Saunders (2009) possible to once again suggest a positivistic approach. However, arguments for the involvement of such frameworks (see 3.1 and 3.2) are to enrich the analysis and to create deeper and wider understanding of the phenomena under investigation. The involvement of positivistic methods is thus, as Orlikowski and Baroudi (1991) discusses, a way of complementing the interpretivistic methods. Saunders (2009) describes this philosophical ambiguousness between positivism and interpretivism as pragmatism. Hence, due to the purpose, methods used and the authors’ assumptions, the philosophical approach of this thesis can be said to be pragmatic with heavy weight on an interpretive point of view, although with some influences from positivism.

### 2.2 Scientific approach

Having declared the philosophical assumptions underpinning this thesis, the authors proceed to describe how they have chosen to confront and treat theory and empiricism in order to develop new knowledge (Saunders, 2009). This scientific approach will, as later on described, be guiding the choice of appropriate research strategy and techniques. According to Alvesson and Sköldberg (2009) there are generally two such methods, induction and deduction. Following an inductive method, the researcher starts with confronting the empiricism completely neutrally from any prejudice from earlier experience or knowledge (Alvesson & Sköldberg, 2009). The purpose, as Saunders (2009) expresses it, is to get “a feel” for what is going on to furthermore understand the nature of a specific phenomenon.
The data collection from the empiricism (e.g. from interviews or observations) will then constitute the ground for the modeling of theories. In contrast, the deductive approach begins in the theory and then move on to the empiricism (Alvesson & Sköldberg, 2009). The purpose is consequently not to build any theories from observations as the inductive approach suggests, instead the purpose is to test theory through hypothesizing, trying to explain relations between variables and predict their occurrences (Saunders, 2009). As can be interpreted from the two approaches, the deduction has much in common with positivism, and induction with interpretivism. Similarly to the described philosophical assumptions, the authors do have a quite ambiguous scientific approach as well, where there are indications of both deductive and inductive methods. The authors describe their scientific approach as being characterized by an iterative process moving between theory (deduction) and empiricism (induction). Moreover, reason for this approach is that the authors found it valuable for their interpretation and analysis of the empirical findings to continuously combine them with earlier research and other closely related literature. Alvesson and Sköldberg (2009) explain this approach of combining deduction and induction as abduction. The use of an abduction approach will be made very obvious when describing the working process in a coming (2.4) section.

2.3 Research strategy

The clarification of philosophical assumptions and scientific approaches enable a discussion regarding how the initially stated questions will be answered. That is, by which methods and strategies the authors will go about finding empirical data about the world to fulfill their purpose and thus answer the related questions (Myers, 2009). As Saunders (2009) argues, it is important that the main drivers and determinants of such appropriate research strategy are the specific research questions and objectives. Since the purpose of the thesis mainly seeks to create an understanding of a phenomenon within a context (see earlier discussion above), it should, according to Saunders (2009) be classified as an explorative study. Therefore, due to the nature of the explorative purpose, the authors, in accordance with others (Myers, 2009; Saunders, 2009), found the most valuable and appropriate research strategy to be a case study. The key defining feature of case studies is to investigate empirical findings from contemporary real-life situations (Saunders, 2009). Myers (2009: 76) proposes a business contextual definition of case study: “Case study research in business uses empirical evidence from one or more organizations where an attempt is made to study matter in context. Multiple sources of evidence are used, although most of the evidence comes from interviews and documents”. As the definition suggest, empirical findings of this thesis comes from an organization, a manufacturing company, and the matter in question is an ERP change. In line with the purpose of this thesis, a case study moreover seeks to answer “how” and “why” questions (Myers, 2009).

Based on two dimensions, Yin (2009) presents four possible case study strategies, namely single case vs. multiple cases; and holistic case vs. embedded case. The case study in this thesis was conducted as a single-holistic case (Yin, 2009). The authors preferred a single-holistic case study to embedded cases and multiple cases, since they believed it would enhance the possibilities to create a deeper understanding of the phenomenon in question. Further reasons were difficulties in finding appropriate and cooperative companies that undertook similar change projects, and finally, the limited time scope of the thesis. Yin (2009) argues a shortcoming with single case studies to be the impossibility to generalize out from the findings. However, as already clarified, the purpose of this thesis has never been to generalize, therefore this shortcoming is not considered relevant.
2 Method

The time horizon of the thesis is discussed by Saunders (2009) as an important issue to consider. Saunders (2009) distinguishes between two such approaches; cross-sectional studies, being a “snapshot” at a particular time, and longitudinal studies being a series of snapshots or events over a given period of time. Especially due to the time constrained of this thesis the authors found it most appropriate to conduct a cross-sectional study. In addition, as Saunders (2009) argues, the aim of this thesis is to study a phenomenon (ERP change) at a specific point in time (during the implementation stage), which justifies the decision even more.

Saunders (2009) discusses, in accordance with Myers (2009), that case studies involve several data collection techniques, used solely or as more usually, in combination. According to Saunders (2009) the more common techniques employed are interviews, observations, documentary analysis or, in some cases questionnaires. The empirical findings in this thesis rely on qualitative data, collected primarily through interviews and meetings with relevant people at the manufacturing company. The authors found case study with a qualitative approach most preferable since it provides a satisfying ground to understand and dig deep into a specific phenomenon that in addition, may be hard to separate from its context (Myers, 2009). Further discussion regarding the chosen data collection technique will be presented in a coming section (2.5).

2.4 Work process

The area of interest, ERP and its relation to management control, first appeared to the authors through the course Enterprise system – Audit and Control. The authors were during the course introduced to the complex nature embracing the topic and an idea of a potential research project took its form. The management control perspective was naturally given due to the direction of the authors’ education. At this point the authors did not have any formulated purpose nor research questions, only the particular area of interest. Therefore, the coming activities involved contacting companies, interviewing people and companies in order to find a relevant and interesting purpose, and finally research question(s). Consequently, it is possible to describe the thesis project in distinguishable stages, as a process influenced by the previously described assumptions and method decisions. The scientific approach of pragmatism will in the following section be very apparent as an iterative process moving between empiricism and theory. To further elaborate, the purpose of this thesis was formed from the empiricism, which led to the modeling of a framework based on acquirements of relevant theories and models. This framework functioned as an analytical model for the interpretation of the empirical findings.

2.4.1 Finding relevant problem area and research questions

Even though the main area to study was determined, ERP in relation to management control, there was no formulated problem. Therefore, the initial activities were heavy relied upon the networking with organizations. The main purpose with this was to formulate a problem that was tightly established in real-life, and also interesting and new (Myers, 2009). As discussed in earlier sections, this is one of the characteristics of an inductive approach. However, as Myers (2009) also argues, this task was very time-consuming and not easy to undertake. In total, approximately 30 different companies were contacted over telephone, only a handful of them (about 10) showed an interest to further investigate possibilities of a cooperation. Emails were sent to those showing interest, and three of them later replied that they wanted to meet for further discussion. The following meetings/interviews were aimed to pinpoint critical problem areas that could provide a possible ground for research,
suitable for the authors’ education and interests. However, only one of these appointments showed up to be fruitful, and thus became the very starting point for this thesis.

2.4.1.1 Interview with Management Consultant

The mentioned successful appointment was made with a management consultant from a well-known management consultancy firm. The consultant in question has long and wide experience working with for instance strategic change and ERP implementations. As described, the primary aim with the appointment was to find a critical area to direct the thesis towards. Therefore, the interview was held in an unstructured manner (see further discussion under Data collection techniques), where the authors’ sought to find those “hot spots” that the consultant found relevant. The two-hour interview became heavy focused on organizational changes during ERP implementations, an area that also caught the interest of the authors. The relevance of the area was thought to be high due to the consultants’ experience. Nevertheless did the consultant only provide an interesting input for the thesis, but also a valuable way-in to a manufacturing company that was in the middle of an ERP implementation.

After some telephone contact and emails, an initial appointment at the manufacturing company was settled, with the IT Manager and Project Manager.

2.4.1.2 Initial interview at manufacturing company, IT Manager and Project Manager

Since the problem area at this point was clearer, some preparation in form of a brief literature review was made to possibly enrich this first interview with the manufacturing company (again the pragmatic approach becomes obvious). The literature review was furthermore aimed to give a view of previous research in order to find unstudied areas (Myers, 2009). Objectives for this unstructured interview were mainly to introduce the authors and their idea of a thesis to the manufacturing company; introduce the manufacturing company to the authors; and find an interesting project within the manufacturing company that the authors could build their thesis upon. The outcome from the interview is moreover presented as case background under the coming empirical sections. Together with the IT Manager and Project Manager, the authors concluded to go further into a specific project, here named Project X. Project X concerned the implementation of a production module.

Next step in this working process was the setting of focus area and relevant research questions, and involved the Project Leader for Project X as well as the overall Project Manager.

2.4.1.3 Follow-up interview at manufacturing company, Project Manager and Project Leader

Since the research problem now was even clearer, a more intensive literature review was carried out, in order to increase the authors’ knowledge and skills within the specific critical area. The literature review led to a first thesis proposal that was presented to the Project Manager and Project Leader during this second, still unstructured, interview. In line with the objectives to find a focus area, the discussion during the one-hour interview concerned which part in Project X the authors preferably should focus. The decision fell on a somewhat problematic sub-project concerning the implementation of Electronic Invoice Processing. So far in Project X, the manufacturer company found it difficult to get a complete view of this particular change, and how it would affect the organization. Therefore the research questions were decided to “What management control supporting
roles and activities, and changes among them, can be identified in an ERP implementation?” and, “What potential effects on management control can be observed?”.

The following stage in this working process involved an in-depth, two-hour, semi-structured interview with the Project Leader providing a background to Project X and briefly to the sub-project of EIP. This interview was followed by a semi-structured interview with the, for the sub-project responsible, Accounting Manager. In addition, three semi-structured half-an-hour interviews were held with the people directly affected by the specific sub-project, together embracing the whole process of invoice handling. All interviews are presented as empirical findings in corresponding section.

2.5 Data collection technique

2.5.1 Interviews

The authors found interviews as the most valuable technique for collecting the primary data in this thesis. Choosing interviews as an appropriate collection technique is not surprising, since it corresponds to the most popular data collection techniques within qualitative research in business and management (Myers, 2009). Moreover, as Myers (2009) argues, conducting a research case study, interviews are almost mandatory, which justifies the decision even more. However, the main reason for choosing interviews as the way of gathering data was because the authors thought it would be the best way to provide answers to the purpose and research questions.

In accordance to Saunders (2009), the authors chose to primarily conduct unstructured and semi-structured interviews in this exploratory study. The interviews evolved from being unstructured in the beginning of the study, to be more semi-structured towards the end. This movement is not without logic. The unstructured form of interviews allows a more flexible approach, where there are only a few (if any) pre-determined questions or themes (Myers, 2009). The interview can be very informal and “free”, enabling the authors to explore an unknown area or subject by letting the interviewee guide the direction of the interview (Saunders, 2009). The features of unstructured interviews were well suitable during the initial activities (first three interviews) when searching for a research question and purpose, described in the section Work process. As the aim was to find a relevant and well-established problem area in real-life, the authors relied on the knowledge and experience of the interviewees. The unstructured interview was therefore pursued at that stage. However, as the direction of the study took its form and became clearer, so did the interview structure change towards semi-structured interviews. Semi-structured interviews are more structured in the sense that the researcher may have more formulated questions and themes to be covered, the researcher thus becomes the one guiding the direction of the interview instead of the interviewees (Saunders, 2009). Even though the semi-structured interviews may appear stricter in comparison to unstructured ones, the interview form still allows new questions to emerge during the interview and the direction of the interview may as well alter to some degree (Myers, 2009). The semi-structured interviews were chosen as appropriate from the fourth interview and forth, since the authors from there were more confident about what data that was needed.

Even though the chosen data collection technique may seem very appropriate for this particular thesis, still there is criticism towards interviews important to bring about. For instance, there are several factors influencing the interview that may be difficult to control and thus may bias the result. Saunders (2009) raises issues regarding how the interviewers’ comments, non-verbal behavior or tone may influence how the interviewee responds and
answers to the given questions. It is moreover important to recognize how the interviewers may interpret the answers they get differently. Due to the philosophical assumptions, these issues are mentioned in corresponding section as well.

In total the empirical material for this thesis comes from nine interviews. Of the first three unstructured interviews, two lasted for approximately two hours and one lasted one hour. One of them was conducted at Jönköping International Business School, while two were conducted at the manufacturing company. During these interviews the authors continuously took notes. Moreover, the subsequent two semi-structured interviews were all held at the manufacturing company, lasted for approximately two hours each and were in addition, audio recorded. The last three interviews were as well held at the manufacturing company and audio recorded, and lasted for only 30 minutes each.

2.5.2 Literature review

Especially during the very initial part of this thesis, the authors conducted an extensive literature review in order to find an interesting and relevant topic to base the study on and furthermore to extend their knowledge and understanding within chosen subject (Saunders, 2009). The literature review is mainly presented as the background and problem discussion of this thesis. However, some part of the review is apparent in the theoretical part. The search for relevant literature was mainly carried out by using several internet databases, available through the library at Jönköping International Business School. The databases used were: Business Source Premier, Emerald, ABI/Inform, ScienceDirect, JSTOR.org, uppsatser.se, avhandlingar.se and googlescholar.com.

The validity of articles and other literature was determined upon the year of publishing (articles published after 2005 were considered more preferable than others), number of cited references in other published articles (articles cited more than 10 times were considered more preferable than others) and, if the keywords search for were to be find at least in the abstract of the article, at best in the title. As Botta-Genoulaz and Millet (2005) argue the importance of staying updated and being informed with the most recent literature within the area of ERP systems, since new research is introduced constantly, the validity of such literature were mainly determined upon the year of publishing.

During the search for relevant literature, three distinguishable areas of keywords evolved:

- Organizational change, strategic change, and business processes.
- ERP implementation, Electronic Invoice Processing, Electronic Data Interchange and Elektronisk fakturahantering.
- Management control and Balanced Scorecard.

The aim was to, at least, find relevant and valid literature concerned with each area separately. However, most preferably was to find literature simultaneously concerned with all three areas.

2.6 Data analysis approach

For the first three interviews that were held during this study, the documentation consisted of notes taken by the authors. These notes were the coming day transcribed in a more extensive manner to ensure that no data were lost (Saunders, 2009). The subsequent semi-constructed interviews were all audio-recorded, and as with the written notes, transcribed to written text the coming day(s). These transcriptions were later categorized into appropriate themes, derived from both theory and the texts themselves, which enhanced
the analysis (Yin, 2009). This first stage of the data analysis thus involved a deductive approach, since themes were partly decided from theory (Saunders, 2009), in addition embraced by an open coding technique, due to the categorization (Myers, 2009). Even if the first analysis of the empirical findings was influenced by a deductive open coding, the overall data analysis approach would preferably be referred to as abductive and hermeneutic. Abductive, due to the iterative movements between the two scientific approaches deduction and induction (Alvesson & Sköldberg, 2009) (see earlier section 2.2). Hence, the first part of the analysis involved a categorization derived from theory and was thus deductive, the later part instead developed new more general categories out from the first deductive analysis, and was therefore inductive (Alvesson & Sköldberg, 2009). As hermeneutic constitute the philosophical grounding for interpretivism (Myers, 2009), this mode of analysis is well suited to this study considering the philosophical assumptions earlier argued for. Hermeneutic as data analysis method is described by Myers (2009) as a way of understanding the meaning of a text or a text-analogue (for instance an organization). As Myers (2009) furthermore discuss, an organization may have a very cloudy and vague view of an issue. Treating the organization as a text, the task then becomes to order the text (the organization) in a structured manner, trying to understand the issue in question and the hidden meaning behind. The task of this thesis is thus to analyze the organization and the ERP change, seeking to understand how the specific issue (the ERP change) may affect the organization by causing changes among roles and activities.

### 2.7 Ethics

Conducting a research, especially a qualitative research, ethical concerns will be relevant (Saunders, 2009). Research ethics is described by Myers (2009) as the application of moral principles in the planning, conducting, and reporting of research results. The authors have chosen to focus those principles suggested by Vetenskapsrådet (the Swedish Research Council) in their report *Forskningsetiska principer* (2009) (Research Ethical Principles). In the report Vetenskapsrådet (2009) presents four basic claims a researcher should comply with, namely the claim of information; claim of approval; claim of confidentiality; and finally, claim of utilization. The claim of information state that the researcher should inform all the research participants about the specific purpose and objectives of the research. The authors have therefore, before each interview shortly presented what the study concerns and stressed the objectives of the interview. The second claim regarding approval, relates to each participant’s right to decide upon participation in the study. This claim has been especially important within the large organization that the manufacturing company comprises. Only because one person within an organization agrees, on behalf of the organization, on being subject to a case study does not necessarily imply that the manager of that person shares the same opinion. In order to overcome this issue, the authors have always tried to move from the top and downwards in the organization’s hierarchy. The third claim of confidentiality, relates to issues regarding the treatment of delicate information that may be prevailed during the study. The authors brought this issue to discussion, and thereby, together with the manufacturing company decided to keep individual and company names confidential throughout the thesis. Finally, the fourth and last claim of utilization, concerns the use of the, during the study, gathered data and information. The claim emphasizes the importance of using the empirical findings with caution, not allowing any gathered information to be used in other non-research purposes.

As Vetenskapsrådet (2009) further suggests, in order to not unintentionally reveal delicate information about the investigated company or other participants, the manufacturing company has before the final handling in been given a copy of the thesis for proof-reading.
Myers (2009) presents some additional ethical issues that the authors found essential to emphasize and comply with; honesty and truthfulness about data, findings and research methods. In general, the ethical stances argued for have mainly served the purpose of not subjecting the research population to any embarrassment, harm, or other material disadvantages (Saunders, 2009).

2.8 Method criticism

As mentioned earlier, the research method of case studies are referred to as one of the most popular qualitative methods in business research (Myers, 2009). Myers (2009) especially advocates the method before others due to its “face-validity”. By face-validity he means that a case study relied on empirical findings from an organization often represents a contemporary, real-life story that others easily can identify with and further learn from, since the issues examined may be of current importance (Myers, 2009). This advantage is highly present in this thesis considering the background and problem discussion underpinning the research questions and purpose. Another advantage discussed by Myers (2009) and Saunders (2009), also apparent in this thesis, is that the method allows the researcher to get close to where “the action is”, enabling an exploration of messy real-life situations. However, there are also some disadvantages relevant to consider. As been experienced in this thesis (discussed under Work process), one of the main disadvantages is that it might be difficult to get in touch with an organization willing to participate in a case study (Myers, 2009). Reasons to not participate often involved skepticism towards the possible benefits to gain out of the research and worries that the project would be too consuming in time and resources for the organization. Another disadvantage relates to an overall risk that the organization may be tempted to suddenly withdraw from the research project due to increased workload or other factors hard to predict (Myers, 2009). Finally, conducting a research case study, especially with the primary gathering technique of interviews, is very time-consuming for the researchers in question (Myers, 2009; King, 1994). As mentioned, it takes time to gain organizational access, to conduct interviews, to analyze the interviews and lastly to write things up (Myers, 2009).

2.8.1 Reliability and Validity

In order to further evaluate the chosen methods and techniques one might suggest to reflect upon the research’s reliability and validity. However, as both Myers (2009) and King (1994) argue, these measures are primarily aimed to evaluate quantitative researches, while this study is of a pure qualitative sort, these measures will be less relevant. Nevertheless, King (1994) claims that some underlying issues of reliability and validity might be interesting to consider even for a qualitative research. Saunders (2009) explain reliability as to which the extent the data collection techniques or analysis procedures will yield consistent results. That is, if the research results and findings will be the same if other researchers applied the same measures to the same subjects (King, 1994). Saunders (2009) presents four issues that may impact the research reliability: participant error and bias, and observer error and bias. Participant error and bias concerns issues regarding how the interviewee may respond differently at different times due to motivational and emotional conditions, and furthermore, how the interviewee might influence the results (Saunders, 2009). The observer error and bias heavy depends on the researchers’ prior experiences and prejudices (King, 1994). The authors
have considered this issue during the study, however, as King (1994) argues it is impossible for qualitative researchers to objectively approach the interviewee. This because, as discussed in the section Philosophical assumptions, the interviewers’ subjective relationship with the interviewee is an essential part of the research process of creating knowledge (King, 1994). In order to avoid such non intended influences the authors have, as King (1994) suggests, tried to recognize presuppositions and further tried to set these aside during the analysis part. As King (1994) furthermore states, the authors have sought to allow themselves to be surprised by the research findings.

Lastly, validity concerns whether a study really examines the topic it claims to have examined (King, 1994). In qualitative research the validity primarily concerns the interpretations made and how valid they can be said to be. To overcome this issue, the authors have sought comments and consultation from supervisors and others experienced within the area of interest.

2.8.2 Generalizability

Generalizability concerns whether the research results would be applicable in another setting, such as in other organizations (Saunders, 2009). However, relevance of that issue highly depends upon the research purpose, and concerns most often quantitative studies (Myers, 2009; Saunders, 2009). As the purpose of this qualitative thesis do not intend to generalize, rather to explain and create understandings, the issues regarding generalizability have not been seen as relevant and thus not been considered. As Myers (2009) further claims, it is not better to use three or four cases instead of only one, still the sample size would be too small to generalize from. However, to some extent generalization is apparent in this thesis, even though not as discussed above. As the purpose of this thesis is to create understanding through a case study, the generalizability concerns whether or not the case study is exemplary (Yin, 2009). The act of generalization thus regards the claiming that findings from a smaller case may be applicable even in a larger setting, i.e. that a small setting findings (the case study of EIP) may be typical and representative even in a wider perspective (ERP implementations in general). Arguments for the case study’s representativeness are presented lastly in the ending chapter conclusions.
3 Theoretical framework

The authors will in this chapter present the theoretical framework underpinning Empirical findings (4) and Analysis (5). The aim is to present and discuss theories that may aid the answering and fulfillment of the research questions and purpose (see Introduction 1). The chapter is divided into four parts. Part one (3.1) introduces some different perspectives on organizational change in theory and thereby creating an understanding of the particular change in question. In part two (3.2), the authors will present the framework of Balanced Scorecard and strategy maps, and further argue and describe how they may be applicable when analyzing an organizational change in relation to management control. The third part (3.3) briefly describes the relation of Enterprise Resource Planning and Electronic Invoice Processing, and further provides a detailed description of the concept and related issues of Electronic Invoice Processing. Finally, the chapter will end with the fourth part (3.4) that presents a summarizing analytical framework derived from the presented theories, which the authors will use in order to analyze empirical findings.

3.1 Organizational change

According to Dawson (2003) a wide range of literature has been written within the topic how to manage change and organize work, and despite the large amount of knowledge, no lasting answers have been provided. He argues that one reason for this is that there can never be a universal theory of organizational change, as change contains a movement to a future state that comprises a framework and time that remains unknown. Although the search for a framework or a model that fully describe organizational change is not possible, much of the theories that have been produced over the years not only provide new insights and way of seeing things, it also helps us to better understand the complex nature of organizational change.

In order to understand the idea of organizational change, the authors find it relevant to introduce a few ideas that can help to clarify understanding of the subject in a wider perspective. By introducing different concepts on organizational change, the authors aim to form a theoretical ground that provides the reader with a deeper understanding of the subject. Besides, it will support the case analysis when analyzing and discussing change from the manufacturing company’s point of view.

3.1.1 The nature of organizational change

A starting point for considering the nature of organizational change is Grundy’s (1993) three “varieties of change” (cited in Senior & Swailes, 2010). The first, “smooth incremental change”, is a change that grow slowly in a systematic and predictable manner. Grundy (1993) exemplifies this by referring to the development of economies from the 1950s to 1970s, although it became less common in the 1990s. The second, “bumpy incremental change”, is depicted as a combination of relative stillness and acceleration in the pace of change. Triggers of this type of change can be derived from the external environment and changes within the organization such as periodic actions taken in order to improve efficiency (Grundy, 1993). The two types of incremental change may be viewed as the change that is associated more with the means by which organizations accomplish their goals instead of a change in the goals themselves (Senior & Swailes, 2010). Moreover, Grundy’s third type of change (cited in Senior & Swailes, 2010) is “discontinuous change”, which he describes as a change that is characterized by a fast change in strategy, structure, culture or all three of them. For example, one reason for “discontinuous change” could be
discovery of a new business opportunity that leads to new ways of communicating and new classes of medicine (Strebel, 1996, cited in Senior & Swailes, 2010).

### 3.1.2 Planned or emergent change

Considering organizational change, there are two main generally accepted approaches to the concept of change: The planned and the emergent approach (Meek et al., 2007). First, the planned approach is a process of moving from one fixed state to another through a series of predictable and pre-planned steps (Burnes, 1996). Second, the emergent approach starts from the assumption that change is a continuous, open-ended, and unpredictable process of aligning and realigning an organization to its changing environment. In addition, an emergent approach is also a process of change that evolves through the interaction of multiple variables such as, context, political processes, and consultation within an organization (Burnes, 1996).

### 3.1.3 Change paths

In Exploring Strategic Change (1999), authors Balogun and Hailey describe four main types of change. These types can be categorized in two dimensions: end result of change and the nature of change. The end result takes into account the extent of change desired, and the change can take the form of either a transformation or realignment. According to Johnson et al. (2008), transformation is explained as change that cannot be controlled within the existing paradigm and organizational routines. It involves a change in the taken-for-granted assumptions and the way of doing things, which can be considered as a fundamental change within the organization (Balogun & Hailey, 1999). On the contrary, realignment is change that does not include primary revision of the central assumptions and values of the organization. Still, it may include a substantial change like a major restructuring within the organization (Balogun & Hailey 1999). From Balogun and Hailey’s (1999) point of view, the second dimension nature of change is the way change is implemented. The change process can either take the form a big bang or an incremental approach. Combining the two dimensions provide an explanation for the four main types of change.

#### 3.1.3.1 Evolution

Evolution is transformational change implemented increasingly through different phases and interrelated initiatives (Balogun & Hailey, 1999). Balogun and Hailey further explain that evolution is likely to be planned and a proactive transformation, where managers undertake change in response to the anticipated need of future change. In addition, evolution can result from forced transformation. Although the external environment surrounding the organization requires rapid change, it could be other reasons for organizational change, such as the need to preserve some aspects of the organization’s culture, for example employee loyalty (Balogun & Hailey, 1999). According to Burke (2008), most organizational change consists of small incremental steps taken to solve a problem or change a part in a larger system. Furthermore, Burke (2008) makes a comparison to Japanese concept of kaizen, meaning continual improvement. For instance, changing the way a product is packed before final delivery, establishing new standards of commission on sales for how salespeople will be compensated, developing new products for new markets (Burke, 2008). Burke (2008) states that any of these changes could be considered as revolutionary changes, as they could be a part of a larger change effort. However, if the changes does not affect and modify the entire structure of the organization, then the changes should be considered as evolutionary (Burke, 2008).
3.1.3.2 Revolution
Balogun and Hailey (1999) state that revolution is a fundamental change that appears by using simultaneous actions on many fronts, and often in a short space of time. Due to changing competitive conditions that the organization is facing, Balogun and Hailey (1999) further state that revolution is likely to be a forced and reactive type of organizational transformation. For example, if an organization is rooted in routines that used to lead to success, then the mismatch between current strategies and the new strategies required may be a good reason for a fundamental change in a short space of time if the organization aims to be competitive in the long run. Burke (2008) raises the question how revolutions occur. First, a revolution may arise because of internal disruptions that put subsystems and activities out of alignment with each other or the environment. A second reason may be because of changes in the external environment, such as creation of new technologies or severe consolidation of an industry via huge mergers. Burke (2008) also notes that these internal and external changes do not themselves bring about revolution; they simply create the need for change.

3.1.3.3 Adaptation
Balogun and Hailey (1999) describe adaptation as a less fundamental change slowly implemented through more stages of initiatives. Adaptation can also be viewed as an incremental change that can be lodged within current organizational culture. Besides, adaptation is according to Johnson et al. (2008), the most common form of organizational change.

3.1.3.4 Reconstruction
According to Johnson et al. (2008), reconstruction is a rapid change that involves a good amount of disorder, although it does not fundamentally change the culture of an organization. For example, it could be a situation where there is a need for major structural changes or a major cost-cutting program to meet decreased financial performance or difficulties with changing market conditions (Johnson et al., 2008). From Balogun and Haileys’ (1999) point of view, reconstruction is change undertaken to realign the approach an organization operates, but in a more dramatic manner.

![Figure 2 – Change paths, inspired from Balogun and Hailey (1999)]](image-url)
3.1.4 Top-down vs. bottom-up change

Much of the organizational change literature has emphasized a top-down approach, meaning that direction, control and initiation of upcoming change comes from the top management of the organization (Balogun & Hailey, 1999). In most cases, the steps taken usually involve a program of change determined and implemented by the top management or their colleagues (Balogun & Hailey, 1999). Furthermore, Balogun and Hailey (1999) also argue that even though top management drives top-down change, it does not mean that this approach cannot be collaborative or participative, although people interpret and view it this way. In this approach, plans that are developed can be achieved with the cooperation of senior managers and a wider group of individuals within the organization. Balogun and Hailey (1999) suggest that the top-down approach may have to be imposed in a directive or strong way, since there may be no alternative but to impose the change throughout the organization in the case of a crisis or a turnaround situation. On the contrary, a bottom-up approach might result from an organization that wishes to increase their customer focus and invest customer-facing staff with the task of generating new ideas, processes, and behaviors in order to endorse the change (Green, 2007). Balogun and Hailey (1999) state that emergent or bottom-up change has a very different starting point but is logic to the top-down approach. A top-down approach may not encourage the needed ownership and commitment that is required for the change (Balogun & Hailey, 1999). However, according to Balogun and Hailey (1999), there are some drawbacks to a bottom-up approach: As a bottom-up change is an emergent process, it can be much slower to mature. The same approach is also much more unpredictable than the top-down approach as its consequences is subject to interpretation and conciliation by the employees implementing the change. Since the bottom-up change is a more participative and collaborative way of realizing change, top management has for that reason less control over the change process (Balogun & Hailey, 1999).

Although the two approaches have different starting point, it is possible to combine the two approaches (Beer et al., 1990). According to Balogun and Hailey (1999), advocates of this standpoint argue that related activities such as gaining support for change may be executed in a top-down manner, while creating a vision and inspiration for change can be more participative. In particular, creating revitalization in a business unit may be through a bottom-up and emergent process.

3.1.5 Summarizing

The part organizational change has clarified that much has been written in the topic of organizational change. Concluded is also that even though a search for a model that fully describe the topic is not possible, much of the theories written over the years not only give new perspectives on change, they also enhance the understanding of complex nature of organizational change.

A starting point for considering the topic is that change can come in different forms, and one of them is “smooth incremental change”, which is a change that grows slowly in a systematic and predictable manner. A second one is “bumpy incremental change” which is a combination of relative stillness and acceleration in the pace of change. A third type is “discontinuous change”, which is characterized by a fast change in strategy, structure, culture or all three of them.

The part organizational change has focused on describing different change paths, such as evolution, revolution, adaptation, and reconstruction.
3 Theoretical framework

- Evolution – a transformational change implemented increasingly through different phases and interrelated initiatives.
- Revolution – a fundamental change that appears by using simultaneous actions on many fronts, and often in a short space of time.
- Adaptation – a less fundamental change slowly implemented through more stages of initiatives.
- Reconstruction – a rapid change that involves a good amount of disorder, although it does not fundamentally change the culture of an organization.
3.2 Measuring change

Building on the premise that an organizational change will impact an organization’s management control, there is a need for an analytical framework that may aid the clarification of the question how it may impact.

The idea Kaplan and Norton (1992) had in mind when they developed and first presented their balanced scorecard (BSC) was to create a framework that combined both financial and operational, non-financial measures. They had observed that no short term oriented financial measures could guide organizations to achieve their long term vision and goals. Therefore, the BSC presents a set of critical measures from four important perspectives that should be emphasized in order to reach long term success. Hence, it goes beyond the financial measures that tell what has already happened to instead focus on measures that predict future financial performance (Kaplan & Norton, 1992).

Through the last two decades the BSC has become a well practiced tool for performance measurement among businesses around the world (Kaplan & Norton 2001). The framework has evolved to focus more and more on explaining the cause-and-effect logic behind the four perspectives first presented in 1992, and on describing the connection between an organization’s long term strategy and its short term actions (Kaplan & Norton, 1996). Kaplan & Norton (2001) chose to coin a new term out of this development of BSC, namely Strategy maps. Together with the Strategy maps, the BSC has proven to be a very useful approach in several contexts and disciplines, not the least when describing business processes (Harmon, 2007). In addition, several practitioners have realized another benefit of the BSC as a management control system (Kaplan & Norton, 1996).

As Scheer and Haberman (2000) among others (Davenport, 1998) argues about how the implementation of an ERP system are closely linked to business processes, the BSC may constitute an adequate framework for clarifying potential organizational impacts of an ERP implementation. This has been evidenced through several researchers that have used the BSC within the field of ERP systems for evaluation purposes (Donald et al., 2005; Fang & Lin, 2006; Rosemann & Wiese, 1999).

Given this background the authors find the BSC as a valuable tool for answering the specific purpose of explaining and clarifying potential effects of an ERP implementation on management control. The following sections will therefore describe the BSC and Strategy maps, and explain its close relationship to management control. Furthermore describe the usability of BSC and Strategy maps in the context of change, and more specifically, ERP change. The final sections will explain how the authors will make use of the framework of BSC and Strategy maps in order to fulfill their purpose.

3.2.1 Balanced Scorecard

The very basic idea of the BSC is quite simple, which, according to Olve et al. (1999) has led to a wide range of tailoring and different ways of using and utilizing it. As mentioned, the BSC was first invented as a framework for organizations to map and emphasize those measures and activities critical for reaching the goal and vision. Traditionally, organizations focused measures that were financial and mainly short term oriented (Kaplan & Norton, 1992). However, due to the more intensified and globalized competition, these traditional measures could no longer provide sufficient performance targets, nor focus attention to critical business activities. Therefore, by introducing three additional perspectives other than the financial, the BSC provides a comprehensive set of measures that gives managers a fast and concise strategic overview of the company, both short term and long term.
Theoretical framework

(Kaplan & Norton, 1992). Hence, the strategy and vision is translated into four perspectives that each raises and provides answer to some basic and relevant questions regarding appropriate actions to undertake in order to fulfill goals and vision (Kaplan & Norton, 1996). The four perspectives and questions are:

- Financial perspective (To succeed financially, how should we appear to our shareholders?)
- Customer perspective (To achieve our vision, how should we appear to our customers?)
- Internal business process perspective (To satisfy our shareholders and customers, what business processes must we excel at?)
- Learning and growth perspective (To achieve our vision, how will we sustain our ability to change and improve?)

Adapted from Kaplan & Norton (1996).

The BSC thus integrates these four perspectives, clarifying the linkages among them and their respective contribution to the corporate vision and goals. Olve et al. (1999) summarize the basic concepts behind the BSC as; a structure for enhancing communication regarding the direction of an organization; a forum raising concerns about the relation between factors of action and; a model incorporating operational measures with the raw financial measures. Hereafter follows a description of each perspective and the implications behind them.

3.2.1.1 Financial perspective

Kaplan and Norton (2001a) describe the main purpose and goal of for-profit organizations to be to increase shareholder and economic value, which is reached through three core elements, revenue growth and mix, cost reduction and productivity, and asset utilization. These objectives are all reflected in the financial perspective and are underpinned and affected by the three other perspectives. In addition, within the financial perspective many of the long term goals are set which therefore guides all the other perspectives even more (Olve et al., 1999). Even if an organization has a clear set of measures regarding customer satisfaction, internal business performance, and innovation and improvement that very well reflect that organization’s view of critical success factors, there is no guarantee for a winning strategy (Kaplan & Norton, 1992). Kaplan and Norton (1992) highlight the importance of that improved operational performance actually result in improved financial performance; otherwise the strategy should be redesigned. The financial perspective can therefore be seen as the economical consequences from pursuing an organization’s strategy. Other relevant issues to rise in this perspective are closely related to the owners, the shareholders of the business, such as the economical risks inherited in an organization, and required rate of return (Kaplan & Norton, 2001). In order to clarify the extra expectations from shareholders that may not be covered by an organization’s financial targets, Olve et al. (1999) prefer an alternative term for this perspective, “Shareholder and Finance perspective”.

3.2.1.2 Customer perspective

The customer perspective is pronounced by Kaplan and Norton (2001a) as one of the most crucial perspectives as they discuss the core of any business strategy to be the customer-value proposition (the unique mix of price, service relationship and image that a company offers). The importance of the customer perspective is even more stressed by
Olve et al. (1999) who define it as being the very heart of the BSC. These superlative expressions for describing the customer perspective are not unmotivated, as it defines how the company differentiates from its competitors to attract, retain and deepen the relationships with its customers (Kaplan & Norton, 2001a). Consequently, in order to improve outcomes with its customers, it is towards this perspective that an organization should direct its internal processes and development efforts (Kaplan & Norton, 2001a). If the flows of the right services and products are not held in a cost effective and adequate manner that responds to customer demand, an organization will lose revenues, and eventually run out of business (Olve et al., 1999). Therefore, substantial work is necessary to understand questions such as how the customer acts and respond to different actions or how to increase and ensure customer loyalty (Olve et al., 1999). Olve et al. (1999) furthermore discuss in detail the importance of truly realizing the customer behavior in relation to the products or services that are offered to them. This knowledge should make up the main determinants of choice regarding general market and customer strategies that an organization should pursue. Kaplan and Norton (2001a) present three different possible strategies: operational excellence, customer intimacy, and product leadership. The choice of strategy will then be guiding decisions regarding what customer segments and classes to prioritize, the main means of competition, and what norms and rules that shall be obeyed (Olve et al. 1999). Appropriate measures will depend upon chosen strategy (Kaplan & Norton, 2001a). For instance, companies that pursue operational excellence are likely to focus on competitive pricing, product quality, product selection, lead time, and on-time delivery. Customer intimacy instead entails attention to the quality of customer relationships and exceptional service, and the completeness and suitability of solutions offered to individual customers. Finally, product leadership stresses the functionality, features and performance of an organization’s products and services. At last, the customer perspective shall also monitor and identify the intended outcomes from pursuing a specific market strategy, which would include: market share on targeted customer segments, account share with targeted customers, acquisition and retention of customers in the targeted segments customer loyalty and customer profitability (Kaplan & Norton, 2001a).

3.2.1.3 Internal business process perspective

The internal business process perspective defines what the company has to do internally in order to achieve the objectives of the customer and financial perspective. It is important to recognize that an outstanding customer performance has its grounds in excellent internal processes and activities throughout an organization (Kaplan & Norton, 2001a). An organization should therefore put heavy efforts in the analysis of their current processes; seek to focus those critical processes that have direct impact on the customer or financial performance, i.e. those that create value. According to Olve et al. (1999), examples of such value creating processes could be production and supply processes, service related processes and product development processes. Kaplan and Norton (2004) extend this discussion by distinguishing four different “clusters” of processes within the internal processes perspective. First, the operation management processes represent those basic day-to-day processes by which a company produce and deliver their existing products to their customers. In a manufacturing company such processes could involve the acquiring of raw materials, converting raw materials to finished goods, distribution of finished goods to customers and risk management (Kaplan & Norton, 2004). The second cluster, customer management process, seeks to expand and deepen the relationships with targeted customers (relates to the customer perspective). Kaplan and Norton (2004) suggest four such processes: selection of targeted customers, acquiring the targeted customers, retaining customers, and growing business with customers. The third cluster, innovation process aims to develop new products, processes and services (relates to the learning and growth
Theoretical framework

3.2.1.4 Learning and growth perspective

The final perspective of the BSC should be considered as the very foundation of the strategy, which defines all the supportive elements needed to pursue the strategy such as the employee capabilities and skills, technology and corporate climate (Kaplan & Norton, 2001a). An organization should within this perspective verify and monitor that these elements are capable to satisfy customer needs and to maintain the productivity and efficiency within processes that underpin customer values (Olve et al., 1999). According to Kaplan and Norton (1992) the global competition forces companies to constantly improve their existing products, services and processes, and have the ability to regularly launch completely new products with new extended properties. They furthermore argue that a company’s value is directly tied to its ability to innovate, improve and learn. In order to grow and increase shareholder value in long term, a company needs to penetrate new markets, increase revenues and margins in short term. This can only be achieved through the launching of new products, creation of customer value and improved operation efficiencies (Kaplan & Norton, 1992). Hence, it is vital, as Olve et al. (1999), for any organization to steadily review and develop the three elements that constitute the
foundation of the overall strategy: the employee capabilities, technology and corporate climate.

3.2.2 Strategy maps

Have gone through all four perspectives within the BSC, it is appropriate to move on to describe how to visualize the strategy. A strategy map is described by Kaplan and Norton (2001b) as a logical and comprehensive framework for describing and implementing strategy. As mentioned, the Strategy map clarifies the linkages and critical factors within and between the four perspectives in the BSC that together constitute an organization’s strategy (Kaplan & Norton, 2004). By using a strategy map, organizations are able to translate their strategies into understandable language, making it communicable to all of an organization’s units and employees.

As a visualization framework, a strategy map shows how the several different measures in the BSC, related or not, together describe and build up one single strategy (Kaplan & Norton, 2004). The Strategy can be said to interpret the objectives of the BSC into a chain of embedded cause-and-effect relations that links the desired outcomes from the strategy with drivers that lead to the strategic outcomes (Kaplan & Norton, 2001b). Kaplan and Norton (2001b) continue explaining Strategy map as a model portraying the process of transforming intangible assets and objectives into tangible customer and financial outcomes. The aim of the Strategy map is to provide organizations with a consistent, integrated and systematic view of their strategy that with ease can enlighten how specific day-to-day tasks and activities can contribute to and be aligned with a strategy and thus its vision and goals (Kaplan & Norton, 2004). In turn, this will bring meaningfulness to the employees as they may recognize their individual contribution to the organization as a whole.

3.2.3 BSC and management control

Relying on the definition by Nilsson et al. (2010) the process of management control can be said to involve the collection of relevant business information, the analysis and interpretation of that information, and finally the presentation of the information in a suitable and understandable manner. The purpose of management control is thus to, with the help of information, influence behavior and thereby ensure that organizational actions correspond, and are in line with organizational long term objectives. Staying within that definition of management control and consider the concept of BSC and Strategy maps a clear relation becomes obvious. As Kaplan and Norton (1992) explain, the BSC is a framework for mapping and emphasizing those measures and activities critical for the realization of goal and vision. It furthermore highlights how different measures and activities affect each other and finally relates to long term objectives. The BSC may thus be seen as a tool for fulfilling the purpose of management control, which has been discussed by several (Otley, 1994; Nilsson et al., 2010; Kaplan & Norton, 2008). This is even more evidenced as Kaplan and Norton (1996) conclude how the use of BSC and Strategy maps end up in the emergence of four important management processes:

- Translating the vision – explaining how day-to-day actions can contribute to realizing a company’s vision. Clarifying the interpretation and meaning of the strategy statement, allowing for more consistency ensuring that business units and employees receive it as intended.
- Communicating and linking – linking individual actions to corporate goals. Aligning individual and departmental performances to overall strategy. BSC is
communicating to everyone within an organization what their organization intend to achieve for the shareholders and customers.

- Business planning – enabling organizations’ business plan and financial planning to be integrated. A way of highlighting and thus undertaking only the business initiatives which are in line with long-term strategic objectives.
- Feedback and learning – corresponds to the learning outcome from the different management processes just described and how the cause-and-effect properties create a strategic feedback system.

3.2.4 Making BSC applicable

In order to utilize the concept of the BSC and Strategy maps to the fullest degree within the topic of management control and ERP implementation, it may be appropriate to modify the tools in question to the specific circumstances. As Kaplan and Norton (2001c) argue, the BSC is most effective when being practiced as a part of a greater change process within an organization. This is not without reason since the major methodology behind the BSC is very similar to general recommendations (eg. Kotter, 1995) regarding organizational change; to communicate the vision and empower business units and employees to realize how new ways of doing day-to-day activities may help an organization to accomplish strategic objectives (Kaplan & Norton, 2001c). The following sections will describe how the authors have chosen to employ the BSC and Strategy maps to ERP change and management control through a slightly different approach.

3.2.4.1 Strategic themes

As described, the BSC is often perceived as a tool for formulating and building organizational strategy. In addition, Kaplan and Norton (2001b) claim that these strategies most often are separated in strategic themes. Kaplan and Norton (2001b) argue that these strategic themes reflect what the management team believes crucial to do in order to succeed. For instance, an insurance company’s strategy may comprise the following strategic themes: improving operating efficiency; growing profitable premiums in core segments; and developing a new fee-based solutions business (Kaplan & Norton, 2001b). Strategic themes does not necessarily imply goal setting in form of financial outcomes, rather a view of what that has to be done internally in order to accomplish the strategic outcomes (which may be financial) (Kaplan & Norton, 2001b). Therefore, strategic themes often relate to an organization’s internal business processes. Olve et al. (2003) additionally discuss how the strategic themes are integrated with each other and together form the complete strategy of an organization. Hence, even if themes are possibly separated and analyzed from each other in their own BSC, they still, together make up the strategy (Olve et al., 2003).

When considering strategic themes, Kaplan and Norton (2001b) identify four distinctive categories of themes: Build the franchise; Increase customer value; Achieve operational excellence; and Be a good corporate citizen. Build the franchise are described to involve the long term creation of value through development of new services and products, and penetration of new markets and customer segments. As it sounds, increasing customer value aims to expand, deepen or redefine customer relationships. If Build the franchise considered long term value creation, Achieving operational excellence corresponds to the short term value creation. The Achievement of operational excellence is described as a comprehensive category involving internal productivity management, supply chain management, asset utilization management and resource capacity management. In turn, these activities will enable an organization to provide efficient, zero-defect, and timely
production and delivery of services and products. Finally, the fourth category, mainly concerning industries subject to regulation or safety and environmental risk, involves the management of relationships with external, legitimizing stakeholders. Kaplan and Norton (2001b) furthermore discuss how all these categories of themes constitute the pillars to the strategy, containing their own strategic hypothesis, their own cause-and-effect relationships, and possibly, even their own balanced scorecards.

Accordingly, an ERP change may be regarded as a strategic theme within an organization’s overall strategy, especially since it clearly relates to internal business processes. It may furthermore be relevant to develop a separate strategy map for that specific theme. Again, it is important to note is that these themes should not be treated as something completely separate from an organization strategy, instead as a fragment of it. Kaplan and Norton (2001b) argue the need for an organization to manage these strategic themes over time when introducing new technologies and products (for instance ERP). They describe how a company initially may focus productivity and process improvement in order to deliver short term cost savings. The focus may then over time shift to revenue growth, with introductions of new products and new customer relationships. Finally, the strategy may culminate as the company occupies a new strategic niche, providing its customers with new and value-added products and services (Kaplan & Norton, 2001b).

Kaplan & Norton (2001b) furthermore exemplifies the use of time-sequenced strategic themes trough an American manufacturer of agricultural chemicals, AgriChem. AgriChem practiced the concept of strategic themes as they transformed and redesigned their value chain to its end customers. Their strategy, which was to improve return on net assets (RONA), comprised five overlapping strategic themes; Reengineer manufacturing; Redesign interface with distributors; Improve distributor operations; Invent new distributor-farmer interface; and pioneer precision agriculture. To better illustrate, the strategic theme of reengineering manufacturing will be further examined and explained. The reengineering of manufacturing mainly emphasized the implementation of a new production planning software from SAP, a change with its grounds in the learning and growth perspective in the BSC. The effort was aimed to generate efficiencies in supply and distribution, within the BSC’s internal process perspective. These efficiencies would then result in reduced delivered prices to distributors, within the customer perspective and finally, enable AgriChem to increase their operating margins and thus improve RONA, within the financial perspective. Even though the strategic theme, reengineering of manufacturing, easily can be described in its own BSC and strategy map, it is still closely integrated with the overall

![Strategy map from Kaplan and Norton (1996: 83)](image)
BSC of AgriChem, since it is to be found as an objective within the internal process perspective. Hence, strategic themes can be viewed in isolation from the overall strategy and BSC, nevertheless being a clear fragment of it.

In the described example of AgriChem from Kaplan and Norton (2001b) the BSC of strategic themes were mainly emphasizing what to be achieved (outcomes) within each perspective. Similarly, the authors will employ a BSC to a specific strategic theme, built on a technological change. However, instead of focusing specific outcomes, the authors will mainly highlight effects of a technological change by linking to other perspectives. Therefore, the methodology would more preferable be referred to as strategy mapping of a strategic theme. This idea of focusing cause-and-effects (both positive and negative) from an event is very well illustrated in a figure by Kaplan and Norton (1996), see figure 3.
3.3 ERP and EIP

As technology has developed rapidly during recent decades, more cost effective solutions has increased the possibility to use modern technology to strengthen an organization’s business activities (Magnusson & Olsson, 2008). In early years, companies used several information systems for different business activities, but due to high costs and complexity, the need for an integrated platform began to emerge (Magnusson & Olsson, 2008). Magnusson and Olsson (2008) state that suppliers of information systems adjusted for the new demand and began developing systems that were built upon separate modules and functionalities that the user could choose from. For example, if the user needed a module for production, a production module was added to the system, and if the user did not need the e-commerce module, it was removed from the system. Such systems, aiming to incorporate data across and be comprehensive in supporting all the important functions of an organization is called Enterprise Resource Planning (ERP) systems (Motiwalla & Thompson, 2009).

As the invoice is an important document between a buyer and a seller, a function such as an invoice processing system may become an essential part of a company’s ERP system. As offer, accept, and delivery are some of the usual steps before final payment, the invoice transaction appears late in the business process (Dykert & Fredholm, 2006). Dykert and Fredholm (2006) further state that an invoice is an important document because it specifies price and quantity of delivered goods by the seller, and the invoice verifies that the buyer is liable to the seller. Besides, if the buyer does not pay for delivered goods, the seller can use the invoice in order to legally claim his right to payment.

Moreover, an invoice is an important record for every company’s bookkeeping, so holding a good structure for storing invoices becomes crucial for every company. This is as important in internal systems, and in the communication between suppliers and customers (Dykert & Fredholm, 2006). In order to save time and gain better control, Electronic Invoice Processing (EIP) is a solution that may support companies in handling big amounts of invoices. In a report from 2005, Anders Brodin states that EIP systems are designed to process a company’s incoming invoices when buying from another part, for instance a supplier. Brodin (2005) further states that EIP systems can process different types of invoices, and one of them is the traditional paper invoice that needs to be scanned into the EIP system.

Invoices may also be received electronically and one method to use Electronic Data Interchange (EDI), which is a solution that transfers invoices electronically between linked ERP and EIP systems with minimal amount of work (Dykert & Fredholm, 2006). By keeping invoices in an EIP system, the company can easily track their invoices, and stay away from reminder to pay notices (Brodin, 2005).
### 3.3.1 Roles

According to Dykert and Fredholm (2008), these roles may be involved in the invoice process.

<table>
<thead>
<tr>
<th>Role</th>
<th>Role description</th>
<th>Task description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Seller</strong></td>
<td>Supplier of goods or services to the buyer.</td>
<td>Makes agreement, keeps information regarding price, order, and delivery status updated in the ERP system so that accurate invoices can be printed.</td>
</tr>
<tr>
<td><strong>Invoice Issuer</strong></td>
<td>Usually the seller issues the invoice, but it can be outsourced to another part. Still, the seller is the one responsible.</td>
<td>Based on information in the agreement, order and delivery specification, the issuer creates the invoice.</td>
</tr>
<tr>
<td><strong>Payment Receiver</strong></td>
<td>Usually the seller, but another part may handle accounts ledger and overlook payments.</td>
<td>Overlooks information from the bank. The payment receiver also handles reminder to pay notices.</td>
</tr>
<tr>
<td><strong>Buyer</strong></td>
<td>Buyer of goods or services from the seller.</td>
<td>Makes agreement, keeps information regarding price, order, and delivery status updated in the ERP system so that accurate information is available for automatic reconciliation.</td>
</tr>
<tr>
<td><strong>Invoice Receiver</strong></td>
<td>Usually the buyer, but the work of receiving, handling, and paying invoices can be outsourced to another part.</td>
<td>The invoice receiver collects invoice information and checks it with agreement, order, and delivery information before moving on to accounting, payment and storing.</td>
</tr>
<tr>
<td><strong>Third Party Supplier</strong></td>
<td>Supplier of IT-services.</td>
<td>Receives invoice information, converts it, and sends it in the way the buyer and the seller have agreed upon.</td>
</tr>
</tbody>
</table>

### 3.3.2 Invoice forms

#### 3.3.2.1 EDI

A common form of sending invoices electronically is through the technology of EDI, meaning that the invoice is sent electronically as a standard message between ERP systems of the issuer and the receiver (Dykert & Fredholm, 2008). An EDI system, which is an internal electronic communication system or an external service provided by a third party, can be connected with EIP systems with the purpose of translating, sending and receiving invoices (Dykert & Fredholm, 2008).

Dykert and Fredholm (2008) give a simplified view of how an organization uses EDI. Based on information from the business agreement with the invoice receiver, the invoice issuer starts the process by creating the invoice. The issuer's EIP system creates an electronic file, which is translated into agreed format in the EDI system. The EDI system
of the issuer sends the electronic file to the receiver’s, or the third party’s EDI system. Having controlled the validity of the electronic file, the receiver translates and stores it into the EIP system for further processing, such as attestation, accounting and bookkeeping (Dykert & Fredholm, 2008).

### 3.3.2.2 Web EDI

For the reason that many large organizations put pressure on small suppliers to handle invoices electronically, a mix of a web solution and EDI has emerged (Dykert & Fredholm, 2008). If the invoice issuer does not have an EIP system with EDI function, the web EDI is a suitable solution (Dykert & Fredholm, 2008). According to Dykert and Fredholm (2008), the issuer accesses a web portal in order to create an invoice. Having created the invoice, the web portal sends the invoice to the receiver’s EDI system, which translates the message into receiver’s EIP system. A drawback for issuers using web EDI, is that different receivers may have different web portal for creating invoices, so the best solution is an EIP system with EDI function (Dykert & Fredholm, 2008).

### 3.3.2.3 Other alternatives

According to Dykert and Fredholm (2008), EDI and web EDI are common ways of sending invoice electronically, but there are other solutions. One of them is a reverse solution where the buyer sends the invoice to the seller. This method has been used in the contracting industry, but without a major success. Another method is a virtual printer, which is a software that converts the printed invoice and sends it as a picture to the receiver. This method is similar to invoice scanning, which is an appropriate method for dealing with invoices received sporadically (Dykert & Fredholm, 2008). For example, a traditional paper invoice that arrives to the company needs to be scanned before it can be translated and further processed in the system. The company may scan the invoice themselves, or they can buy the service from another company. Most times, companies can decrease costs by scanning their own invoices. However, many large organizations and authorities using EIP systems buy the service from another company in order to rationalize the scanning process (Brodin, 2005). Although the traditional paper invoice is scanned into the system, all companies need to save the original copy, as it constitutes an important document for the bookkeeping (Brodin, 2005).

Moreover, in order to reach a complete solution for EIP, Dykert and Fredholm (2008) suggest a mix between the different methods; an organization should use EDI as far as possible, web EDI for frequent suppliers, and invoice scanning for invoices received sporadically.
3 Theoretical framework

3.3.3 Technological platform

EIP systems may look differently, but according to Readsoft (2011) Electronic Invoice Processing involves some key steps. To begin with, the process starts when an issuer sends the receiver an invoice from his ERP system (step 1, figure 4). After the invoice has arrived the receiver may start to process the invoice in the step Data Collection (step 2, figure 4). In this step, a scanner is used for making paper invoices electronic while invoices received electronically may skip the scanning process. In addition to the scanner, a computer software may be used for translating invoices and making them useful for the receiver's ERP system. Thereafter, the invoice can now be processed in a digital workflow involving processes that to some extent replace the traditional method of invoice processing. These processes taking place in Control & workflow (step 3, figure 4) and ERP system (step 4, figure 4) are further explained in the section EIP workflow.

According to Readsoft (2011) steps 2-4 are key steps in an EIP system whereas steps 3-4 at the same time may be functions in a larger ERP system.

![Figure 4 – A Readsoft model describing a solution for EIP](image)

3.3.4 EIP workflow

In the report, *Granskning av elektronisk fakturabantering* (2009), auditor Niclas Carlsson evaluates current EIP system at Gothenburg University, a system that was implemented during spring 2008. The report focuses on describing new routines, workflow, and effects of the new EIP system. Provider of the system is Agresso, which is a major player on the market and one of two main suppliers of EIP systems to Swedish authorities (Agresso, 2011). Therefore, the authors will refer to Carlsson (2009) when in detail describing the workflow in an EIP system.
From an invoice receiver’s point of view, the process begins with an invoice arriving to the organization in Invoice Arrival (step 1, figure 5). Having integrated the invoice in the EIP system (either by scanning a traditional paper invoice or receiving it electronically) the organization may now start to process the invoice. The process continues with Matching (step 2, figure 5) (Carlsson, 2009). One important issue here is to make sure that the invoice matches with delivered goods and the original purchase order (Carlsson, 2009). Besides, one shall also check that error-free goods have been delivered to the expected price (Carlsson, 2009).

Moreover, if the person who executes the matching is authorized he or she may also account the delivery in Accounting (step 3, figure 5) (Carlsson, 2009). In addition, this step also involves a formal control of the invoice, which means making sure that the invoice is sent to correct recipient (Carlsson, 2009). According to (Carlsson, 2009), the accountant may also check that the invoice includes necessary details, such as organizational or customer number, tax information, specification of delivered goods services, and the total amount of the payment.

In Attestation (step 4, figure 5), an authorized person of the division or business activity that incurred the cost must approve the invoice (Carlsson, 2009). Carlsson (2009) further states that no employee can approve an invoice concerning costs incurred by the employee himself. Cost such as phone bills, travel arrangements, and personal equipment that relates to an individual employee must be approved by his or her manager (Carlsson, 2009).

Prior payment of the invoice, the organization shall in Payment Proposal (step 5, figure 5), order a proposal of payment from the system (Carlsson, 2009). Normally, same person who accounted the invoice orders the proposal and sends it to an authorized person for final approval of the payment (Carlsson, 2009). In the final approval, the person making the decision must make sure that correct recipient receives right payment in the right time (Carlsson, 2009). After final approval, the organization makes the payment and stores the original invoice in Payment and Storing (step 6, figure 5) (Carlsson, 2009).

In addition, if an organization deals with large amounts, additional steps of control may be added to the process (Carlsson, 2009).
3.3.5 Benefits and drawbacks of EIP

Processing invoices the traditional way can be expensive for organizations. Routines for attestation, accounting, and payment are sometimes demanding and not cost effective steps of an invoice procedure. According to EIP provider Hogia (2011) the cost of processing a supplier invoice the traditional way is estimated to 150-500 SEK (depending on size of organization) and moving from a traditional method of handling invoices to EIP may provide organizations with several benefits. First, processing invoices the traditional way can be time consuming when invoices tend to fasten or get lost along the process (Hogia, 2011). This could lead to interest on overdue payment. According to Hogia (2011), organizations using EIP may increase control over the process as invoices become easier to track in the system. Because invoices are electronic, they also become easier to adjust in the case of a mistake, and the accountant no longer has to spend time searching for hard copies once invoices are stored in the system (Hogia, 2011). Secondly, many of the steps in traditional invoice processing that require substantial manual work may be replaced with automatized processes that both can save time and improve security. Besides, EIP systems are also simple to use (Hogia, 2011).

Moreover, organizations may also benefit from great cost saving when using EIP. According to Dykert and Fredholm (2008), organizations moving from traditional routines to EIP may actualize a cost saving up to 50-300 SEK per invoice. Savings are mainly due to reductions in work time. Hogia (2011) takes a similar standpoint when arguing that organizations moving to EIP may experience yearly cost savings of 25-50 %. Besides, most organizations investing in EIP could expect a payback time of a couple of months up to a year (Hogia, 2011). Dykert and Fredholm (2008) hold the invoice receiver as the part with the largest benefit of handling invoices electronically, but suggest all types of organizations to process invoices electronically due to the large benefits of an EIP system.

According to earlier research, these are some of the experienced benefits and drawbacks of EIP:

Benefits

- An organization may improve control and quality of accounting and invoice processes (Carlsson, 2009).
- Using EIP may lead to fewer errors, which can be time-consuming to correct (Dykert and Fredholm, 2006).
- Problems regarding fake invoices may be minimized as EIP offers better control along the process (Dykert and Fredholm, 2006).
- An organization may easier track and access their invoices. This means less paperwork and hardcopies, which is good for the environment (Carlsson, 2009).
- As invoices are stored in an EIP system, the risk of losing them may be minimized (Carlsson, 2009).
- Printing a copy of the invoice can be made easier than before (Ekengren & Hassan, 2004).
- An EIP system is time efficient (Ekengren & Hassan, 2004).
3 Theoretical framework

Drawbacks

- As collective invoices are complicated to handle, people tend to avoid them (Ekengren & Hassan, 2004).
- The correction of faulty attestation or bookkeeping might be problematic. (Ekengren & Hassan, 2004).
- Some users may have problem to adopt the new system (Ekengren & Hassan, 2004).
3.4 Summarizing framework

To facilitate the analysis of the empirical findings, which in turn will enable fulfillment of purpose and answering of research questions, it is appropriate to explain how the authors will make use of the described theories. The theories will be used in two main purposes, both to describe the case background and context, but especially to analyze the specific case of EIP in relation to research questions and purpose.

First, analyzing the case background with focus on the need for change, the authors believe that the initially mentioned theories and different perspectives on organizational change provide a sufficient foundation that creates the context to be analyzed. Moreover, in order to understand the context, namely Project X, that emerges from the change, the authors will utilize the balanced scorecard and strategy map in a similar approach as the example of AgriChem brought up by Kaplan & Norton (2001b) (see previous section “3.2.4 Making BSC applicable”). The AgriChem approach allows for a structuring and identifying of the whole Project X in a strategy map built up by several strategic themes, by this the authors will be able to clearly point out where the specific case of EIP is situated. Having the background, the need for change and Project X, structured and ordered in accordance to theories, the overall picture of the specific case will be easier to grasp.

Proceeding to the specific case of EIP, the analysis will be built around the two, initially stated research questions that closely link to figure 6 (also presented in Introduction as figure 1). The research questions will thus be answered from a case specific perspective at first, thereafter interpreted in a wider perspective applicable to ERP implementations more generally.

In order to answer the first question from a case specific perspective, representing the bottom of figure 6, “What management control supporting roles and activities, and changes among them, can be identified in an ERP implementation?”, the authors will make use of both Dykert and Fredholms’ (2008) theoretical framework of roles (see section 3.3.1), and Carlsson’s (2009) framework describing workflow and activities of EIP (see section 3.3.4). The theory of Dykert and Fredholms’ (2008), which is a framework describing roles involved in an invoice process will in this thesis serve as an overall frame to organize the empirical findings in a more logical structure, facilitating the analysis. More specifically, the authors will begin pointing out what role(s) the manufacturing company in the case study undertakes in an external invoice process perspective. Recognized roles will thereafter be examined in an internal company perspective where the authors on EIP level will identify potential sub-roles supporting management control. In order to recognize associated activities to the identified roles on the case specific level, the authors will in a similar
manner to the framework of roles, utilize Carlsson’s (2009) framework of workflow and activities of EIP. The changes among these roles and activities will be identified by comparing analysis of roles and activities in two states, As-Is state (current state) and To-Be state (desired state).

The answers from the first question will be crucial when seeking answer to the second research question, representing the body arrow in figure 6, “What potential effects on management control can be observed?”. The balanced scorecard and strategy maps will here make up the main framework through which the answers from the first question is analyzed, enabling the answering for the second research. As the case of EIP in the background analysis will be identified and described in an overall strategy map, it will now be exclusively focused. Moreover, the underlying implementation of EIP and the related business areas will be separately analyzed in a balanced scorecard and strategy map of its own (see figure 7). By isolating the change in the learning and growth perspective in form of EIP and the related business areas in an own balanced scorecard, the authors will be able to easier recognize cause-and-effect relationships grounded in the EIP implementation. Finally, the authors will relate the outcomes from this analysis to the definition and apprehending of management control as an information intensive process and thereby point out potential effects of EIP on management control.

Accordingly, the fulfillment of the purpose to “…create an understanding of how an ERP implementation may affect management control by causing changes among supporting roles and activities.” may be seen to involve a two-stage process where each research question constitutes one stage respectively (see figure 7). The first stage involves the mapping of the activities and roles supporting management control, which are affected by the ERP implementation. These roles and activities, and changes among them, are in the second stage analyzed in the framework of cause-and-effect relationships, which especially emphasizes and clarifies the affect on overall management control. Hence, the second stage helps answering the last question. Describing figure 6 as a model to illustrate how the authors apprehend the
background to their research purpose, the analytical framework (figure 7) constitute the tool for the fulfillment of that purpose. Hence, the first stage in figure 7 brings clearness to the bottom of figure 6 (roles and activities, and changes among them), and the second stage in figure 7 brings clearness to the body arrow in figure 6 (effects on management control). Thereby, the first relation will answer the first research question, while the second relation answers the second research question. These relations between figure 6 and figure 7 are illustrated below.
4 Empirical findings

This chapter will present the findings from the different interviews (excluding the interview with management consultant, see Method 2) and from the documents that the authors have received. The chapter can be divided into two parts. In the first part (4.1) the authors aim to give the reader an introduction to the case study in order to better understand the whole context involving the manufacturing company and how changes in the business environment brought a need for change. It begins with a description of the manufacturing company in question, which mainly results from the first interview at the company and from additional company documents. This is followed by a description of the underlying reasons for the change, and an overview how the manufacturing company chose to approach it with a mission named Project X. This material mainly comes from the first three interviews at the manufacturing company. However, most weight will be on the second part (4.2) that will begin discussing Electronic Invoice Processing as a part of the larger ERP implementation that the manufacturing company decided to carry out. This is followed by a comprehensive comparison of roles and activities of the manufacturing company’s invoice process in As-Is state (current state) and To-Be state (desired state). This comparison is summarized in form of expectations and described lastly (Changes in roles and activities when moving from As-Is state to To-Be state), that will form the ground for approaching the research questions (see Problem statement 1.3) in the Analysis (5).

Empirical findings in the second part (4.2) are mainly derived from interview five to eight, and some from the fourth. The information will be presented in a logical and chronological order.

4.1 Case background

The manufacturing company has a rich history of innovation that goes back to the early 1940’s. In a small village somewhere in Europe, the company began to operate from a minor location with only a few employees. Emphasizing innovation and entrepreneurship, the manufacturing company grew quickly in size and after nearly 20 years of business, the company expanded operations out of the country. Following decades was characterized by expansion as the company established new production plants, acquired companies, and extended their entire product portfolio. Since 2004, sales have grown at an exceptional rate and as of today, the manufacturing company accounts for a yearly turnover of approximately € 277 million. In addition, with nearly 2000 employees engaged in operations in multiple countries, the manufacturing company in this case study is one of Europe’s leading firms within its particular industry. Besides, the company is a stock listed company that applies a national corporate governance code, in accordance with the listing requirements of the specific stock market.

The business idea of the manufacturing company is to develop, manufacture, and promote their products on markets reaching a wide range of people. The company has over the years been symbolized with a culture of entrepreneurship, customer insight, and a strong passion for innovation. The manufacturing company’s operations can be divided into four geographical business areas. All of them engage in activities in the company’s three product areas. The company’s manufacturing activities are stationed to a couple of strategic locations around the world, such as Europe and Asia. With a number of acquisitions over the years, the manufacturing company’s product portfolio today consists of five large brands originating in four different markets. All brands have strong positions on respective markets, and the company strives for continuing providing smart and complete solutions with fine quality.
Despite of the financial crisis that led to rationalizations in organizational structure, the manufacturing company has due to acquisitions and organic expansion recent years, developed a strong position within their specific industry. In the future, the company strives for keeping position as one of the leading player within this industry. Achieving this, the manufacturing company aims for continuous growth and market leadership, increased internationalization, alongside a strong passion for innovation and entrepreneurship.

### 4.1.1 Need for change

Following recent years rapid expansion, company sales and profitability finally peaked under the boom period of 2007-2008. During these years, markets were growing fast and the manufacturing company adjusted production in order to meet market demand. Most of the time, the company produced as much as possible but due to current market pressure, new orders kept coming in. Overcrowded production units made the company to realize shortcomings of existing production system, which lacked the ability to measure the company’s full production capacity. As the market called for higher productivity, limitations in the company’s production planning system became now very clear. While this situation convinced the manufacturing company of the shortcomings in existing production system, the need for a new system that better could support company activities began to emerge in 2007. In 2007, it was recognized that existing system were both costly and did not meet current needs of the company. Something had to be done and a cost for system upgrade was reserved in the coming budget.

In 2008, the manufacturing company began analyzing current internal processes and decided to focus on the area of planning. Key activities the manufacturing company decided to focus on were closely related to production, such as purchase of material and production planning. An improved analysis the same year further examined these processes as well as future and desired processes of the company. An upgrade of existing system had proven to be a large investment, and while analyzing current processes the company decided to go along with a wider approach. From this point, the company decided not only to focus on a few primary activities, but the entire production cycle - a process that starts with an incoming order and ends with order delivery. Therefore, the improved analysis now involved more activities along the production process, such as manufacturing, planning, purchase of materials, economy, material stock, and order processing. Additionally, as the improved analysis took a wider outlook of the production process, a system upgrade was no longer the best solution. Therefore, the manufacturing company made the decision to replace the entire production system with a new system that would better suit current processes and future plans of expansion. The mission was titled Project X.

Moreover, the manufacturing company continued Project X by screening the market for potential system suppliers that could meet their needs and expectations. A detailed purchasing proposal describing the company’s needs and ambition with Project X was composed and sent out to a few suppliers. Next, suppliers were invited to the company for product demonstration and price presentation. In 2009, the company proceeded by collecting references and evaluating different alternatives by visiting other users of respective system. The manufacturing company claimed interest in one particular supplier and decided to take a closer look on this alternative. For one month, this supplier visited the company a number of times in order to further present the offerings. As Project X was a major project for the company, important activities such as workshops, interviews, and product testing were carried out. Having collected necessary information, the company was now persuaded that this alternative would very well match their needs. The company began
formulating a business case (a summary of this alternative including all necessary information) in order to obtain an investment decision from top management.

In 2010, the manufacturing company made a final revision of their business case, including a comparison with a similar product provided by one of their current system suppliers. The company chose to do so in order to eliminate all doubts regarding chosen alternative. In spring 2010, the manufacturing company finally decided for the business case alternative and top management accepted the proposal. Project X involving implementation of production system Jeeves could finally begin in fall 2010.

4.1.2 Project X

Project X is the plan for replacing current production system with a new better-suited system, Jeeves, and to oversee a number of company activities within the area of planning. Project X focuses on the manufacturing company’s production procedure, which involves a number advanced activities and processes that must function as good as possible in order to be effective.

Beginning in September 2010, the manufacturing company began working with the project that will take them approximately 18 months to complete. The first step was a pre-study. During a couple of months, the company arranged meetings with the supplier in order to structure coming work. Aside from meetings during the preparatory work, this pre-study was more advanced and involved more details of the implementation. For example, this pre-study further examined the new system, system structure, and work routines. In this step, the company set the scope and formulated a detailed plan of the 18 months long implementation process.

Next, a design phase is the second step in the implementation plan. The design phase is a detail-oriented step that involves structuring the system, setting parameters, and forming the system so that it fits with the company’s particular needs. Also, the design phase includes training of key employees related to the implementation. The manufacturing company is currently situated in the design phase as it lasts until May 2011. Following steps in the implementation plan are; formation of details, testing and education, system transition (Go-Live), and the post-implementation process, involving working with system support and closing down of old system. The final of the implementation is the system transition, which is scheduled to January/February 2012.

According to project leader, the production system Jeeves was mainly chosen because of its ability to support future processes of the company. Although the manufacturing company makes minor system adjustments under the design phase, the plan is not to modify the system after current company processes. The idea is rather to link and modify the way the company performs different processes in order to gain a better correlation with the new system. Furthermore, according to company project leader there are number of reasons behind the project implementation. The overall objective is to improve the company’s supply chain, which is a chain of activities along the production line that starts with an incoming order and ends with order delivery. Allowing for this, the new system and new work routines are crucial factors. The overall objective is expected to cause four primary improvements. First, better integration between different systems, which may improve workflow in the production process, allows for shortening of customer response time. Secondly, as the new system will in contrast to the old production system improve flow of material from material stock to production, the company may free capital from material stock. A third improvement regards the cost perspective. The company strives for reducing cost of systems and licenses and when comparing current system to the new system, the
new system will be a less costly solution. Fourth, a combination of new working routines and new possibilities in the system, enables the manufacturing company to reduce lead-times in production.

The new production system will affect the following activities:

- **Production preparation** – Before a product can be manufactured, workers need to know what to manufacture, what components to use, and what work processes to use in order to assemble it. Product preparation is an initial process of the production cycle where the manufacturing company formulates a detailed instruction for the production.

- **Manufacturing** – In the manufacturing process, workers use the instruction developed in the product preparation as a detailed map for assembling the product. During the manufacturing process, workers may use the system for reporting number of assembled products, amount of time used, and make additional orders of material.

- **Production planning** – The area of planning involves two levels, a tactical and an operative level. The tactical level (monthly based) plans and adjusts the production due to sales forecasts. The operative level (daily based) uses the information to structure production processes in correct order.

- **Purchase of materials** – The activity where the manufacturing company makes use of information from the production planning in order to purchase right amount of materials.

- **Material stock** – The manufacturing company’s stock of material includes both component stock and finished goods inventory.

- **Order processing** – The activity that processes the manufacturing company’s customer orders will to some extent be affected by the new production system.

- **Economy** – The accounting department handling a number of units within the manufacturing company will be affected as well.

### 4.2 The case - Electronic Invoice Processing

As described, the ERP system Jeeves offers a long range of new business process possibilities, enabling new, more efficient ways of working. One particular area is the process of handling supplier invoices. Today, this process is very obsolete and old-fashioned in its execution, heavy relied on manual activities and the people carrying them out. Since the manufacturing company receives approximately 40 000 invoices each year, the invoice process becomes a very time-consuming and critical task for the manufacturing company, solely engaging four full-timers at the accounting department. In addition, the process involves a chain of attestation, counting to almost 130 people. Current approach of handling the process is surrounded by troublesomeness and bottlenecks. For instance, invoices are sent back and forth through the company several of times in “small brown envelopes” in order to reach correct recipient; the accounting department often needs to seek for lost invoices and chase people for attestation; and, invoices are repeatedly printed out since everyone wants to keep their copy of the invoice. This traditional form of handling invoices do neither allow the manufacturing company to take advantage of
suppliers that actually send their invoices digitally via pdf. Even if the invoice is received in a digital form, still, the invoice is printed out and thus transformed to “hard-copy”.

As the nature of traditional invoice processing at the manufacturing company does appear, the company soon apprehended several possible benefits from moving towards Electronic Invoice Processing (EIP), which was facilitated by the production module in Jeeves and the function of Jeeves e-Attestation. However, since the initiative for EIP primarily was driven by the overall Project X, less attention was given to the change management in the particular area of invoicing. As a consequence the project team found itself in a situation where the planning regarding EIP was left behind, creating vagueness regarding what was needed to successfully pursue the change, what the change actually would imply, and who that would be affected and in what ways.

The following description of the invoice process today (As-Is – current state) and what it may look like electronically (To-Be – desired state) is primarily revealed from an interview with the Accounting Manager who is responsible for the sub-project (in Project X) of EIP. As Accounting Manager he is accountable for the activities carried out by the accounting department and salary department. Focusing the accounting department (since that is where the invoice process takes place), being a corporate function the general goal is to “serve external and internal stakeholders in a good manner” (Accounting Manager, email correspondence). Consisting of five people (excluding the Accounting Manager), the accounting department deals with both accounts receivable and accounts payable. As the accounts payable is an extensive process it engages four of the five employees and mainly involves the processing of supplier invoices. The activities within the accounts payable will, besides the Accounting Manager’s overview, more in detail be highlighted in three coming sections. Since these sections are based upon three interviews with the responsible accountants in question, they will thus reflect perspectives other than the Accounting Manager’s and provide a more deep view of the process. Due to the confidentiality, the three interviewed accountants are referred to as accountant 1, 2 and 3.

4.2.1 Roles and activities

4.2.1.1 Roles and activities in As-Is state (current state)

The traditional invoice process of today starts by the receiving of envelopes containing the invoices, which are opened and stamped with the arrival date. This task is carried out by an internal mail service at the manufacturing company. The invoices are then delivered to the accounting department where one individual does the assorting of the invoices according to which business unit the invoice concerns. However, as a couple of thousand invoices (each year) do arrive via email to a specific mailbox governed by the accounting department in the form of pdf, these are instead first printed out and then assorted accordingly. The manufacturing company comprises four business units, here called A, B, C and D, where there is one individual at the accounting department responsible for each unit respectively. Business unit A, B and partly C are primarily manufacturing units, while business unit D may be regarded as a common corporate unit. When the invoices have been assorted, they are then in the care of one of the four respectively responsible accountants.

Next step in the process is the preliminary booking of each invoice’s associated costs and thus booking consequences. Each of the accountants therefore reviews the invoices, recognizes what the costs concerns, and thereafter makes a booking at relevant accounts. Three classes of accounts become appropriate, namely cost of materials, cost of overheads and investments. Since the costs at this stage are referred to as preliminary (not yet verified and approved for) each booking will be made at a preliminary account within
corresponding class of account. In addition, the booking (debiting) of costs (or investments) is naturally interrelated to the booking (crediting) of accounts payable. Due to the nature of each business unit, unit A, B and partly C incur mainly costs classified as cost of materials, while business unit D mainly incurs investments and cost of overheads. In total, the accounting system of today registers (in the transaction code), which business unit the invoice relates to, what cost center it relates to and additional details if the invoice concerns separate projects.

Distinguishing the invoices according to their classes of account, the invoices incurring cost of materials will thereafter be matched towards corresponding purchase order and delivery order. This way of matching the invoice is primarily possible with cost of materials, since the grounds for those costs and invoices mostly often can be traced in the purchase system. However, in some exceptional cases there might be a possibility to match even the other two sorts of invoices. The matching part is a manual activity, where the responsible accountant verifies that the details provided in the invoice corresponds to the details in the underlying purchase order in the system. The accountant furthermore verifies that the quantities in the invoice correspond to what has been reported as delivered in the system. If all the data in the invoice matches the data in purchase order and delivery order, then the invoice can skip the fifth step in the process (see figure 8) of attestation and move directly to final booking (6a). Skipping the step of attestation is made possible since the underlying purchase order already has been approved in the sense that an individual authorized to do the purchase creates it. However, according to the Accounting Manager, approximately 10% of the matched invoices do mismatch. This may be due to variances in expected price (registered in the purchase order in the system) and actual price presented in the invoice. When this happens, the invoice will be sent to the one that made the purchase for further investigation and if needed, correction. When this person has investigated what caused the mismatch (maybe new prices were not updated in the purchase system), the invoice will then be sent to his or her manager for approval and final attestation.

Figure 8 – Current invoice process
In contrast, invoices both concerning cost of overheads and investments will directly be sent on a similar journey of attestation (step 5 in figure 8) since there is no underlying purchase or delivery order to be found and possibly matched against. In these cases, the invoice needs first to be verified by the one that made the purchase and thereafter sent to be approved by his or her manager through a final attestation. The need for final attestation depends upon the first person’s authorization to make approvals, which is determined by a certain level of cost that person can approve for. In addition, if it is the very same individual that incurred the cost of the invoice (e.g. travelling expenses) then it should be approved for by his or her manager.

The chain of attestation (step 5 in figure 8) is described both by the Project Leader and the Accounting Manager as the most time consuming step in the whole invoice process. First, it is important that the responsible accountant finds the right person for the verification and if required, that the invoice later is sent to the right person for approval and final attestation. Even if the invoice reaches the right persons, it is not given that the verification or approval is done immediately. This may be due to that the persons in question are busy with other things and does not prioritize the awaiting invoice. In addition, since the manufacturing company is located in several countries, it can also be due to the fact that many people may be out travelling, not able to make the verification or approval. As a result, invoices during the attestation do often get stuck somewhere in the organization. When this happens the responsible accountant needs to spend time tracing that invoice. This becomes especially cumbersome as some collective invoices involve a large amount people that shall verify and approve different parts of the invoice. Usually, the step of attestation may take as much time as 15 to 25 days.

When the invoice finally has been verified and approved for, either through matching or through the chain of attestation, the invoices go back to the responsible accountant who re-books the preliminary bookings (made initially) to final booking accounts (in step 6a, figure 8). The invoices are thereafter sorted in file folders and carried down to the basement for archiving; this is where the process ends for the physical invoice. Nevertheless, still the payment to the suppliers has to be made. After final booking, the payment will be waiting in the system to be included in a payment proposal (step 7, figure 8) that is sent electronically to the bank for final payment to the suppliers (step 8, figure 8). Hence, the invoice has to be finally booked in the system in order to be included in the payment proposal and further finally paid. As the invoices tend to get stuck in the chain of attestation and therefore not being finally booked, this rule can sometimes be necessary to skip. The accountant will in those cases instead pay the invoice manually, which concerns a couple of invoices each week.

4.2.1.1 Focusing preliminary booking, accountant 1

Accountant 1 describes how the work is divided between the four accountants according to business unit. She is responsible for business unit B, two other accountants share unit A and C, while unit D is solely carried out by a fourth accountant. The invoices reach her desk either through regular mail delivered by the internal service, or by email posted to her personal mailbox or to a general mailbox. The ones arriving by regular mail are first sorted out by one of the accountants and then given to the, for each unit responsible, accountant(s). Invoices that arrive by email are printed out by her herself. Having all the invoices for a day on her desk, the work can begin. First she goes through all the invoices, recognizes what sort of costs they incur and then stamps each one with a booking stamp. She further writes down a suggestion on booking accounts that she believes should be relevant for the final booking. In connection to this, she makes the preliminary booking in
Empirical findings

According accountant 1, approximately 70 % of the invoices concerns business unit A, while the remaining 30 % is equally divided between unit B, C and D. Even if 10 % might seem little for unit B, it still implies an extensive sending of invoices back and forth to that specific unit, resulting in many invoices being stuck or even lost somewhere in the process. Often the invoices get stuck at someone’s desk waiting to be attested or it might get stuck or lost during the mailing. These issues enforce accountant 1 to chase invoices, especially in relation to the monthly final accounts when all the final bookings have to be made. In general she spends about five to eight hours each month trying to get these invoices.

4.2.1.1.2 Focusing matching, accountant 2

As accountant 2 shares business unit A and C with another accountant, she is solely engaged with the step of matching the invoices, involving no booking at all. Although unit C only counts for 10 % of the received invoices, unit A corresponds to the single largest of all business units, counting to about 70 % of all received invoices, this step becomes a very burdensome activity. Burdensome, especially since approximately 80 % of all the invoices within these two units incur costs of materials and thus must be matched. All these invoices incurring cost of materials, reach accountant 2 after they have been preliminary booked by her colleague. In addition, she receives all the relevant physical delivery orders from the warehouse. The first task of hers is to verify that the reported amount of materials in the invoices matches the amount delivered according to delivery orders. This is done via the physical delivery orders although that the warehouse already has registered the deliveries in the system, as a precautionary action. Therefore when a delivery order is missing, she can simply enter the system and verify if the amount of materials has been reported as delivered. Besides verifying so that correct amount of materials has been delivered, she also verifies that the price reported in the purchase system corresponds to the price written in the invoice. Therefore, the matching involves three types of documents: the physical (and sometimes digital) delivery order; the digital purchase order; and the physical invoice itself. If all these documents and related values (price and amount) match, the invoice will directly go back to the colleague of accountant 2, who makes the final booking. However, in about one case out of four, the values do not match enforcing accountant 2 to find the purchaser for that invoice and send it to him or her. The purchaser will conduct an investigation in order to find out the reason for the mismatch, and then send the invoice forward to his or her manager for final attestation. Accountant 2 explains the most common reason for mismatch to be that the purchaser has not updated new prices in the purchase system. After the final attestation the invoice will be sent back to the colleague of accountant 2 that makes the final booking. Accountant 2 further explains how the work with finding the right persons and sending out invoices to those are time consuming tasks occupying approximately at least one working day each month. Sometimes, this problem solving tasks also involves the work of contacting suppliers, asking them to send new invoices since the originals have been lost.
4.2.1.1.3 Focusing final booking, accountant 3

Accountant 3 is primarily responsible for the financial accounting in business unit D, the parent company, and one of the sales companies. In addition, she is responsible for the annual accounts for these companies, while accountant 1 does it for business unit B and the accounting manager does it for all the other companies and business units. Since none of the companies or the business unit of accountant 3 involves any cost of materials there are neither any matching procedures. Instead, all of the invoices that she receives and the related preliminary bookings that she makes have to be verified and approved for (attested) from purchaser and respective manager before final booking and payment. For this thesis, the attention will be directed towards the invoices concerning business unit D and the parent company. This because the parent company lack any suppliers’ ledger of their own and therefore share the one owned by business unit D.

Similar to accountant 1, accountant 3 receives the invoices of her concern after the morning assortment. She thereafter stamps the invoices with a booking stamp, writes down those booking accounts which she believes would be relevant for the final booking, and then makes the preliminary bookings in the accounting system. After the invoices have been preliminary booked she sends them for attestation to those who shall verify the costs and later on, if appropriate, send them to their managers for approval and final attestation. Usually, the attestators may be positioned on other geographical locations than her office, implying a long time for mailing the invoices back and forth.

When the invoices have been attested by appropriate people, she receives them again and can thus proceed with the final booking. However not all invoices find their way back to her, occasionally they get stuck somewhere during the attestation round or even get lost somewhere during the mailing. Accountant 3 explains how she prefers not to hassle around after invoices, but also how she is forced to as reminder notices are sent from the awaiting suppliers.

4.2.1.2 Roles and activities in To-Be state (desired state)

So far in the process of implementing EIP, the manufacturing company has contracted Readsoft as the supplier of the EIP solution. The solution consists of a translation software and a hardware in the form of a "simple" scanner. Even though the details of the solution at this point are difficult to embrace, an expected general process mapping is possible to draw.

The first steps in the EIP process are very similar to the traditional way of handling invoices. Still invoices received by ordinary mail have to be opened, and delivered to the accounting department. The first task for the accounting department will still (at least initially) be the assortment of invoices. This time not according to business unit, instead according to what type of cost that the invoice incurs (cost of materials, cost of overheads or investments), since this task might be difficult for the software to recognize. To support the scanning procedure, the assorting also involves the separation of invoices that are one-side, double-sided, and multi-paged. For the scanning procedure, it can in addition become relevant to remove possible staples or paperclips. The subsequent step will be the first of involving Readsoft, namely the invoice scanning. This activity is manually carried by the accounting department and enables the invoices to begin their travel electronically through the organization. An accountant simply “feed” the small scanner with a bunch of around 30 invoices at a time until all the invoices for the day are scanned in. The physical invoices will as soon as this early in the process be archived, which can be done more simplistic then now since they will be reachable electronically in a database. Invoices received by e-
mail may skip all the first steps and instead move on directly to the invoice translation (step 4, figure 9). According to the accounting manager this is a great incentive for them to start working the suppliers to send their invoices via e-mail in form of pdf. Until now they have rather denied suppliers that have shown an interest in this way of sending invoices, since it created extra paper costs and more work in form of printing out the invoices.

Even if the invoices that arrive in form of pdf may skip the initial step of scanning, still they need to be translated in the Readsoft software. However if they instead arrived via EDI, they may be transferred directly to Jeeves without any involvement from Readsoft. According to the accounting manager, the manufacturing company themselves sends a handful of such invoices to their greater and thus more influential customers if they demand for it. Nevertheless, the accounting manager does not believe it would be beneficial for them to ask their suppliers for the same sort of EDI link, due to high set-up costs.

Moving forward, the invoice translation (step 4, figure 9) is where the software actually transforms the analogue information in the physical invoice, to digital information. It is crucial that the software makes a correct translation, therefore the step of translation is followed by a manual translation review, where the accountant checks so that the software has apprehended the analogue information correctly. These reviews are carried out in front of a computer screen where the accountant is presented to, at the one screen half, the original invoice, and at the other half, how the software has interpreted the invoice. It is

Figure 9 – Desired invoice process
furthermore in these reviews where the accountant registers (in the Readsoft software) what business unit the invoices relate to. The translation review is followed by a transfer to the enterprise system, which will be Jeeves. A manual review is again required, this time to assure that Jeeves suggests a correct booking of accounts and a correct attestation chain. Both these reviews are most extensive the first times when the “mapping” has to be done, i.e. when the software shall learn how to interpret the information. Due to the complexity and size of the organization, both reviews will be appropriate each time and especially if there is a new supplier, so that nothing goes wrong.

When the accountant has verified the information in Jeeves through the second review, the invoice will automatically be registered and preliminary booked. The preliminary booking will be followed by an automated matching, where Jeeves seeks after underlying purchase order and delivery registrations in order to verify that the information in the invoice corresponds to earlier registered information. If a matching is possible, i.e. there is both a related purchase order and delivery registration, and if there is a perfect match, i.e. all the information is correct, then the preliminary bookings will automatically be re-booked to final booking accounts. The invoice or payment in question, will then await payment proposal and final payment.

The invoices that are not possible to match for some reason (mostly incurred by cost of overheads and investments that lack purchase orders) will be transferred to the attestation solution from Jeeves, Jeeves e-Attestation. This is an electronically attestation function all executed in a web client, where each attestator has its own login and thus access to those invoices that awaits his or hers attestation. As the invoices have to be attested in a predetermined attestation chain depending on invoice total and sort of costs (see earlier discussion under “As-Is – current state”) there will be an extensive initial work to set up all those necessary attestation rules. However, once it has been set up correctly this process of attestation, involving about 130 attestators will most probably move on very smoothly. The web-client will for instance automatically recognize to whom (which manager or equivalent) a certain invoice shall proceed after it has been verified by the purchaser. In addition, Jeeves e-Attestation sends out emails to those attestators which have invoices to attest, and if someone is late with the attestation, email reminders will be sent out to those concerned. All the invoices that the attestators previously have attested will be electronically stored and all time accessible through the web client. When the invoice has reached all of its attestators for verification and approval, it returns to Jeeves where it automatically will be finally booked (step 10, figure 9). When the final booking has taken place and when the date for payment approaches the invoice (or payment) will be included in a payment proposal (step 11, figure 9) and transferred to the bank that makes the final payment to the supplier (step 12, figure 9).

4.2.1.3 Changes in roles and activities when moving from As-Is to To-Be state

According to the project leader the main expectations regarding the introduction of EIP are time savings and more efficient ways of performing specific daily work tasks. These expectations are furthermore apparent when observing a document from the project team regarding objectives for undertaking the EIP project. However, when discussing the very same subject with the accounting manager another point of view is brought to light. Instead of expecting great improvements regarding time savings within the accounting department, he believes that the time consumption will be unchanged since new working tasks will simply replace the old ones. The primary effects will rather be visible elsewhere in the organization than the accounting department. For instance, the new system will enable better and more detailed cost analyzes since it may then be possible to trace costs down to
one specific supplier or even one specific invoice. The accounting manager furthermore expects that EIP will enhance the way of handling invoices electronically in general in the organization; fewer invoices will get lost or stuck, attestation will be facilitated and finally, overall control over the invoice process will be eased.

Accountant 1 believes that EIP will facilitate and enhance her daily work tasks enormously. She would not be forced to chase and nag around after missing invoices each month. Also, the risk of invoices getting stuck or lost in the mailing process would be eliminated since they instead would be sent electronically. If the invoices get stuck in the attestation process, which would still be possible, they could easily be traced in Jeeves e-Attestation service. However, the risk for this to happen is lowered due to the reminder emails that are sent out to attestators that do not attest their invoices in time. Hence, accountant 1 expects a lot of positive effects of EIP. Nevertheless she notes that, even if the work tasks she carries out today would in the nearest be eliminated by EIP, instead new extensive work tasks will be introduced along with the new system.

Accountant 2 believes that the new system most probably will aid the daily work in several aspects, especially since she thinks that there are too many invoices to deal with in the traditional manner of today’s. She furthermore looks forward to work in a new user interface, more modern then the one offered by the legacy system used today. However, she claims that it hard to predict what sort of effects the new system will bring since they do not know so much about it yet.

Accountant 3 expects great improvements of the new system regarding aspects such as the attestation procedure since reminder emails will be sent out to those being slow to attest. She further believes that it will be easier to reach all those attestators that travel, since they will be able to make the attestation from a web client, independent of their presence at their offices. In addition, she apprehends possible time savings on the final bookings which most probably will be automated in the new system as the invoice has been finally attested. She also expects time savings when it comes to the assortment of invoices when they shall be archived. Now this is done in alphabetical order which take time to arrange. However, as the invoices in the new system will be accessible digitally, their assortment before archiving becomes less important and thus simplified. In the new system the accountants simply bunch up all invoices for a day, stamp the bunch with bunch number and date of the day, and place them in a box or file folder for the coming archiving. Accountant 3 further claims that, in order to make the fullest use of the new system all accountants engaged in the invoice process will be in the need for larger computer screens, so that they can observe each invoice at one half of the screen and other information on the other half. However, all in all, accountant 3 does not believe that the new EIP will bring so much of time savings to the accounting department. Even if many activities will be facilitated or completely eliminated, the procedure of invoice scanning, the related first assortment and corresponding reviews will be heavy time intensive. Therefore, the time saved in some areas will be required in new extended procedures and areas.
5 Analysis

This chapter will interpret the empirical findings in the light of the theories and relate to research questions and purpose. The general structure will be similar to the previous chapter Empirical findings (4), but can be divided in three main parts. The first part (5.1) will consider the background of the case study. The authors will begin and more generally analyze the change in question, create some clearness regarding the overall background and drivers for change, and how it could be regarded to in reference to relevant change theories (see 3.1). This will be followed by an interpretation and structuring of Project X in form of a strategy map and strategic themes (see 3.2), which will further clarify how the authors apprehend the whole picture and furthermore how and where the specific case is suited in this picture. The second part (5.2) begins by a short case analysis of the context of EIP where the authors will make use of Dykert and Fredhoms’ framework of roles (see 3.3.1) for pointing out what role(s) the manufacturing company in the case study undertakes in an external invoice process perspective. These roles will thereafter be interpreted in an internal company perspective where the authors will identify potential sub-roles supporting management control in both As-Is state and To-Be state. In addition, in order to recognize associated activities the authors will make use of Carlsson’s framework (see 3.3.4) for describing workflow of EIP. Thereafter, by screening for supporting roles and activities of management control, and changes among them, the authors will in this part (5.2) approach the first research question (see Problem statement 1.3). By relying on the answer from the first research question, the authors will continue to the second research question. By integrating identified roles and activities in an own isolated BSC (5.2.2), the authors will be able to point out potential effects on management control. Finally, the last part (5.3) will alter the focus from the specific case of EIP and more generally interpret the analytical findings from (5.2) and thereby relate to both the research questions and the overall purpose.

5.1 Case background

5.1.1 Need for change

The change process, replacement of current production system and more specifically implementation of EIP, was a need that came to evolve both because of external and internal reasons. As the empirical findings describes, the manufacturing company had experienced a tremendous expansion since 2004 as international operations started to benefit from rapid growing markets. What type of change that best describes the change in the external environment is difficult to determine as the rapid growing markets may have developed fast for several reasons. One of them could have been a technological breakthrough that rapidly increased the demand for the company’s products. Another reason could have been a beginning of a boom period that made companies to increase investments. However, if the external environment developed in a systematic and predictable manner, the markets may have developed incrementally (Grundy, 1993). As a result of fast growing market and increased market demand, the manufacturing company realized shortcomings in their production system, which was an internal reason for the change process. The growing need for change here was something that was discovered in the production line, which became a driver in this situation. Involving a wider group of individuals except top management may have increased the manufacturing company’s commitment and responsibility in order to generate new ideas and processes to endorse the change. This is defined as an implication of bottom-up change, which is further recognized by Green (2007).

Replacing current production system with a new system that would better suit current processes and future plans of expansion followed all along the implementation process a planned approach. As Burnes (1996) describes it, a planned approach is a process of
moving from one fixed state to another through a series of predictable and pre-planned steps. From the empirical findings we understand that the manufacturing company made a detailed implementation plan involving a number of important steps in order to succeed with their mission. Examples of those steps were, pre-study, design phase, formation of details, and system implementation.

Moreover, substituting a production system in a manufacturing company may be seen as major restructuring as production activities are core elements in a producing company’s daily operations. By substituting the production system the company realigned their operations according to new demands in the internal and external environment. The change process may therefore be understood as a form of realignment change, which is a change that does not include primary revision of the central values of the company although it may involve a major restructuring within the organization (Balogun & Hailey, 1999). In addition, a realignment change may either take the form of adaptation or reconstruction, and relevance can be found in both of them. The change process is comparable to adaptation because the change process is incremental (as the 18 month implementation process) and can be stored within the organizational culture. Reconstruction is also an appropriate description as Project X is a step towards realigning the way the company operates in a dramatic manner. However, although a transformation change means change of the core values of a company, the change process have some similarities to evolution as the company is proactive and undertakes change in response to the anticipated need of future change. Still, the change is best describes in the following model (figure 10) where the company’s change process may be projected as a combination of adaptation and reconstruction in a realignment change perspective.

![Figure 10](image_url)

**End result**

<table>
<thead>
<tr>
<th>Nature of change</th>
<th>Transformation</th>
<th>Realignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incremental</td>
<td><strong>Evolution</strong></td>
<td><strong>Adaptation</strong></td>
</tr>
<tr>
<td>Big bang</td>
<td><strong>Revolution</strong></td>
<td><strong>Reconstruction</strong></td>
</tr>
</tbody>
</table>

Figure 10 – Change paths for the manufacturing company, inspired from Balogun and Hailey (1999)

### 5.1.2 Project X

As the manufacturing company described, the background for change was a growing need recognized as crucial for them in order to survive in long term. Hence, the change itself is a strategy for survival and further business expansion. When the project leader furthermore describes this strategy in details, the arguments of Kaplan and Norton (2001b) regarding how strategy often can be divided in separate themes, become evidenced. The project leader states that the overall objective with the change is to improve the whole supply chain, involving activities from the incoming orders to order delivery. Besides, this overall objective is described by the project leader to comprise four underpinning drivers: Improve customer response time; Free capital from material stock; Reduce costs of systems; and
Improve lead-times. Keeping these drivers for change in mind and simultaneously consider the thoughts of Kaplan and Norton’s, it becomes obvious that the drivers can be interpreted as strategic themes within Project X and the strategy of improving the supply chain (see figure 11). In accordance with Olve et al. (2003) the project leader describes these four strategic themes, which together constitute the strategy of Project X, as crucial to undertake in order to succeed. Hence, they form the “pillars” or cornerstones of the strategy. Observable in figure 11 is that the perspective in the top has been renamed from “Financial” to “Goals”. This to illustrate and clarify what Kaplan and Norton (2001b) brings about when arguing that the goals for strategic themes not necessarily have to be financial, even though two of the themes in this particular case are.

The characteristics of these drivers enable even a further categorization as Kaplan and Norton suggest (2001b). The shortening of customer response time can be seen to improve the relationships with customers since the customers will be able to receive details regarding delivery faster. Therefore, the first strategic theme thus belongs to the category of “Increasing customer value”. Considering the remaining themes they can be said to involve internal productivity management and asset utilization, and therefore relate to the category “Achievement of operational excellence”. In addition this category is described by Kaplan and Norton (2001b) to involve supply chain management, which implies that all themes are embraced by this category, even the first. The four themes in Project X can thus be categorized in “Achievement of operational excellence”, while reaching this, the first theme also results in the creation of customer value and can therefore be categorized accordingly.

Figure 11 – Strategy map of Project X
Moreover, the project leader explains how the manufacturing company has recognized seven prime ‘activities’ that will be affected by the strategy of change. As the project leader discuss these activities, it becomes clear that all of them actually are internal processes of different kinds: Production preparation, involving the preparatory processes for manufacturing; Manufacturing, involving the processes of manufacturing goods; Production planning, the processes concerning what and how much to manufacture; Purchase of materials, involving the processes of purchasing; Material stock, involving processes of storing materials and finished goods; Order processing, the processes that handle customer orders; and Economy, the financial processes mainly governed by the accounting department. The activities can thus be recognized as internal processes situated in the corresponding perspective (see figure 11).

Since several of the internal processes and also the strategic themes, implicitly and explicitly relate and connect to the customer perspective these will not be further recognized and examined in the customer perspective (see figure 11). Still, the perspective is illustrated in the strategy map (figure 11) pointing out its crucial value for the overall strategy of change.

Moving on, the manufacturing company identified an implementation of the ERP system provided by Jeeves, as the enabler for the overall strategic change, its four strategic themes and the concerned internal processes. Furthermore, according to Rikhardsson and Kraemmergaard (2006) ERP systems may be constructed differently and managers need to select a solution that matches their needs. A company can either pick a “wall-to-wall” system (one ERP system for all processes) or a “best-of-breed” solution (best modules from different ERP systems). From the empirical findings it is discovered that that the new production system Jeeves is an example of the latter as the system was selected as a solution for a specific area, the production process, and not the whole manufacturing company.

The nature of the implementation and thereby change in technology inevitably positions it in the bottom perspective, learning and growth (see figure 11). This, since it serves one of the three core elements of that perspective, discussed by both Olve et al. (1999) and Kaplan and Norton (2001a): technology, corporate climate and employee capabilities. In addition, the implementation of Jeeves will enable an elimination of current legacy systems and also provide fine conditions for Electronic Invoice Processing (EIP), which made the manufacturing company to go along with such implementation as well (see figure 11). Preferably, the strategy map (figure 11) should be read from the bottom to the top, seeing the implementation of Jeeves as the starting point and foundation on which the whole strategy of change rests.

Even if the manufacturing company had planned the implementation and required change management of Jeeves well, less attention was given to the simultaneous implementation of EIP. The manufacturing company was thus, to some extent confident about how the strategy and strategic themes would affect the first six internal processes. However the seventh, economy, was quite vague in this regard. This vagueness regarding the implementation of EIP and the process of Economy is illustrated by the red markings in figure 11. When further reflecting over this particular area of Economy and implementation of EIP, and additionally considers the apprehending of management control, another relation becomes apparent. Since Economy is described to involve processes governed by the accounting department, and further that the goal for the accounting department is to serve internal and external stakeholders in a good manner, the accounting department may be regarded to as a supportive corporate function. If additionally identifying some of the main tasks carried out to be handling and processing of
business information in different aspects, it becomes apparent that it is not only a corporate supportive function, but also more specifically a management control supportive function. Therefore, if it is clear that EIP will affect Economy, it will further be true that management control will be affected. However, the only clearness in this issue was that the implementation of EIP mainly would impact the process of Economy. Still, questions such as how, in what ways, and to what extent were left unanswered, and more importantly the affect on management control.

In order to identify and better understand this vague area the authors will (in following section) first map out what roles and activities that will be affected by EIP. Thereafter lift EIP, Economy and the identified roles and activities, out of the strategy map (figure 11) and instead see them in an own, isolated strategy map (see 5.2.2). Finally, the findings will be reflected upon in the light of management control.
5.2 The Case – Electronic Invoice Processing

The manufacturing company’s production process involves a number of important activities and one them is economy, and more specifically the accounting department. As the manufacturing company implements the new production system Jeeves that offers a wide range of business process possibilities and new ways of working, the accounting department will mainly be affected by the new method of handling incoming invoices through Electronic Invoice Processing (EIP). Current invoice process that each year manages approximately 40,000 invoices is due to empirical findings a time-consuming job. The process is also viewed as critical and traditional with some apparent bottlenecks. One of them is the inability to take advantage of incoming electronic invoices.

By implementing EIP the manufacturing company may replace some of the tasks in traditional invoice processing. A main benefit with EIP is the ability of accepting and processing several forms of invoices, such as paper and pdf invoices. Additionally, EIP opens up possibilities for EDI, is a technology that sends the invoice as a standard message between linked ERP systems. Although the manufacturing company has no plans of implementing EDI the use of the technology could further automated the invoice process, which could result in a faster and more accurate information flow, reduced manual work, and closer business partnerships.

Derived from Dykert and Fredholm’s (2008) theoretical framework, an invoice process may involve a number of important roles. These roles work together in order to hold up the invoice process and each of them is assigned with a specific role and clear defined tasks. As this thesis highlights EIP as a system designed to process incoming invoices when buying from another part, two primarily roles emerge from the manufacturing company’s point of view. First, as the company buys goods and services from suppliers the manufacturing company undertakes the role of a Buyer. Secondly, when an invoice arrives the manufacturing company undertakes the role as invoice receiver. An invoice receiver is usually the same part as the buyer and related work such as receiving, handling, and paying the invoice may sometimes go through a third party supplier before reaching the invoice receiver. Additionally, although the third party supplier may be an external part that receives the invoice, converts information, and sends it to the invoice receiver, IT-services provided by a third party supplier may be found within the company. For instance, the company’s ERP system or computer software that translates scanned paper invoice are important components of the company’s EIP solution although a third party supplier provides the services. This reasoning is projected in Figure 4.

5.2.1 Roles and activities

This case specific analysis aims to describe and identify those supporting roles and activities of management control, and changes among them, which are visible in the EIP implementation (exemplified ERP implementation). The analysis therefore corresponds to the first stage in the analytical framework (figure 7) presented in Summarizing framework, section 3.4 (see also figure below). The roles and activities are identified both in the As-Is state (current state) and To-Be state (desired state), in order to easier identify the changes among them.
5.2.1.1 Roles and activities in As-Is state (current state)

As the authors claim, the manufacturing company today undertakes two of the specific roles in the invoice process suggested by Dykert and Fredholm (2008), both the Buyer and the Invoice Receiver. However, when examining the invoice process of today more in detail as in the Empirical findings, these roles can possibly further be distinguished in two sub-roles within the manufacturing company. The role of the Invoice Receiver can further be identified to the accounting department and its Accountants, and the role of Buyer is mainly identified to the Attestators in the invoice process (see section 4.3.1). Still, as the chapter of Empirical findings implies, the main weight of the invoice process is directed towards the accounting department and its Accountants. Having declared these two actors within the invoice process as the carrier of the two main roles (Invoice Receiver and Buyer) undertaken by the manufacturing company it is further preferable to identify the invoice processing activities that these actors and thus roles are involved in. Therefore, considering the activities in an EIP system suggested by Carlsson (2009) and additionally the evidences from the empirical findings, the model of Carlsson (2009) (see figure 12) appears appropriate as a distinct model presenting the relevant activities for the roles of Dykert and Fredholm (2008) in an EIP system, seen from the Invoice Receiving and Buying organization’s perspective.

Figure 12 – A model describing the workflow in an EIP system, inspired from Carlsson (2009).
The activities will thus be identified from the workflow model suggested by Carlsson (2009) (see figure 12) and in accordance to his description of them (see section 3.3.4), for each role respectively.

**Invoice Receiver – The Accountant**

According to Dykert and Fredholm (2008), the Invoice Receiver is the one that collects invoice information, matches it with agreement, the underlying purchase order, and delivery information, makes the accounting and storing, and finally pursues the payment to the supplier. Reflecting over that description and additionally considers the empirical findings and the activities carried out by the Accountants as in the manufacturing company presented in figure 8 (section 4.2.1.1), it is made clear that the role Invoice Receiver is undertaken by the Accountants. It becomes furthermore possible to categorize the activities undertaken by the Accountant according to Carlsson (2009) (see figure 12). First, the manufacturing company describes the first steps in their invoice process to be where the invoices are received and stamped by the mail service, pdf invoices are printed out, and the invoices are assorted according to business unit (step 1a, 1b and 2 in figure 8). All these steps can be identified to the activity of Invoice Arrival in Carlsson’s (2009) model (figure 12). The fourth step in the manufacturing company’s invoice process was Matching and simply relates to the activity of Matching Arrival in figure 12. Moreover, the manufacturing company’s invoice process also involved the steps “invoice review and preliminary booking” and Final booking (step 3 and 6a, figure 8), which can be categorized in the activity of Accounting (figure 12). As the manufacturing company describes, the step of Attestation (step 5, figure 8) involves their accountants as they have to find and deliver the invoices to the concerned attestators. Therefore, the fourth activity in figure 12, Attestation also becomes relevant for the Accountant, although to some limited degree. Finally, the seventh step in figure 8, Payment proposal obviously relates to the fifth activity in figure 12, while step 6b and 8, Archiving and Final payment may be categorized to the sixth activity in figure 12, Payment and Storing. To sum up, step 1a, 1b and 2 in figure 8 may be categorized as the Invoice Arrival activity; step 4 (figure 8) may categorized as the Matching activity; step 3 and 6a (figure 7) may be categorized as the Accounting activity; step 5 may be categorized as the Attestation activity; step 7 may be categorized as the Payment Proposal activity; and step 6b and 8 may be categorized as the Payment and Storing.

Dykert and Fredholm’s (2008) role of the Invoice Receiver, in this particular case, solely undertaken by the accountants at the manufacturing company, which furthermore are engaged in all the activities (even though partly in Attestation) suggested by Carlsson (2009), is illustrated in figure 12.

**Buyer – The Attestator**

When Dykert and Fredholm (2008) describe the role Buyer to involve the making of agreements, and the keeping of information regarding price, order and delivery status updated in the system, clear relations are found when considering the empirical findings. As earlier claimed this role is undertaken by the manufacturing company. However, as accountant 3 describes the matching step in the manufacturing company’s invoice process (figure 8), an even further identification of Dykert and Fredholm’s role Buyer becomes possible. Accountant 3 claims that one common reason for matching to fail is that the attestator (or responsible purchaser) has not updated the purchase information in the purchase system. Therefore, the role Buyer undertaken by the manufacturing company may thus be further identified to the Attestator in the manufacturing company’s invoice process.
As accountant 3 describes, Dykert and Fredholms’ description of the role Buyer has even more practical implications and consequences. The making of agreements and keeping of relevant updated information, additionally implies that the Buyer may be imposed to verify and assure that the information in the invoice is correct, which is done through the Attestation. As the empirical findings suggest, the attestation may in some occasions involve more than one Attestator, this for further approval of the actual purchase. The practical implications of the Buyer in form of attestation, clearly connects to the activity of Carlsson (2009), Attestation. Hence, the Attestator in the manufacturing company’s invoice process is defined as the Buyer, who further is engaged in the activity of Attestation, all illustrated in figure 13.

5.2.1.2 Roles and activities in To-Be state (desired state)

Building on expectations from the manufacturing company as presented in the Empirical findings, and furthermore on the presented theory regarding ERP and EIP, the forthcoming To-Be state may involve at least three additional sub-roles within the manufacturing company. Dykert and Fredholms’ role Invoice Receiver will instead of being solely undertaken by the Accountants, now be shared with the new ERP system Jeeves, the function Jeeves e-Attest and the invoice translating software, Readsoft. Since new roles will be introduced, the activities described in previous section of As-Is state will change accordingly. Moreover, if also considering the potentials regarding EDI that the EIP system will offer, even more of Dykert and Fredholms’ roles become apparent in the invoice process; both the Third Party Supplier and the Invoice Issuer. However, even though it is the manufacturing company’s invoice process that is considered, these two roles may not be undertaken by them themselves.

Invoice Receiver – The Accountant

As the manufacturing company moves towards an EIP system, they expect that the accountants mainly will be engaged in the activity of Invoice Arrival (Carlsson, 2009). On the other hand, the activity of Invoice Arrival will in the To-Be state be more extensive than in the As-Is state. As figure 9 (in section 4.2.1.2) show, the activity of Invoice Arrival may be said to involve all steps from 1a, “Invoices are received and stamped…” to 5, “Translation review”. As in As-Is state the invoices will still be received by the mail service that stamps them, they will similarly be assorted before further processing. However, now this assortment may not involve the first simpler assortment according to business unit, but also specific preparatory work facilitating the next coming scanning procedure of the invoices. As the accounting manager argues, receiving the invoices via email in pdf form

Figure 13 – As-Is state, roles and activities
instead, will allow them to skip this assortment and preparatory work, since no scanning procedure will be needed. Moreover, within the activity of Invoice Arrival, the Accountants will also carry out the scanning procedure of those invoices received by regular mail (step 3a, figure 9). This will enable Readsoft to translate the invoice information and thus make it digital. However, when Readsoft has translated the invoice information the Accountants have to verify that the translation is correct by comparing the digital invoice with the physical invoice (step 5, figure 9). Thereafter, as the invoice information is transferred to the ERP system Jeeves, the Accountants additionally have to verify that Jeeves has interpreted the information correctly, suggesting a correct attestation chain and booking. To some extent, the Accountants will, as in the As-Is state be involved in the activities of Payment Proposal and Payment and Storing. Although, the activity of storing in Payment and Storing, will be dealt with in the Invoice Arrival activity, after the invoices have gone through the scanning procedure, an activity that is completely carried out by the Accountants.

Worth noticing, even if step 1a to 3a (in figure 9) may be skipped when invoices arrive as pdf, all the steps from 1a to 5 (in figure 9) may be skipped if the manufacturing made use of the potentials in EDI linkages as Dykert and Fredholm (2008) discuss. Hence, the whole activity of Invoice Arrival would to some extent be eliminated by EDI, instead the invoice information would be transferred from the Invoice Issuer directly (could be through a Third Party Supplier) to the manufacturing company’s ERP system, Jeeves (Dykert & Fredholm, 2008).

The role of the Accountant in the To-Be state is illustrated in figure 14, which also illustrates the potentials of EDI. The roles of EDI will be further discussed under their roles respectively.

**Invoice Receiver – Readsoft**

Due to its characteristics, Readsoft will be identified as Dykert and Fredholms’ role, the Invoice Receiver. As previously mentioned, Readsoft will be involved in the first of Carlsson’s (2009) activities, Invoice Arrival (see figure 12). Even if the introduced sub-role of Readsoft may not solely take on any of the existing activities (presented in As-Is state), it will function as a crucial enabler for the whole EIP process (in the To-Be state). As the manufacturing company describes, the main part of their received invoices are delivered physically via regular mail. In order for these invoices to be processed electronically in the EIP system they must be transformed to digital format, which is done in Readsoft. However, since Readsoft may be seen as the one enabling the transformation of physical invoices to digital, the need for it would be limited if the potentials of EDI were realized.

**Invoice Receiver – Jeeves**

As the ERP system Jeeves is implemented, it will constitute one of the sub-roles undertaking Dykert and Fredholms’ Invoice Receiver. According to the manufacturing company’s expectations, Jeeves will be involved in many of the activities in the To-Be state and thus play a significant role in the coming EIP system. As it seems, Jeeves will be able to automatically match the invoices to underlying purchase and delivery order, and if there is a match it will just move on to the final booking (step 10, figure 9) that is found in the Accounting activity of Carlsson’s (2009). However, if there is a mismatch Jeeves will instead move it forward to the function (and role) Jeeves e-Attest that handles the Attestation activity (see coming discussion). As the accounting manager argues, the information that is registered today mainly involves the specific booking accounts and business units. However, as it seems Jeeves will be able to register more detailed
information than earlier (in the As-Is state) since the invoice information will be electronically processed.

The activity of Accounting will to some extent be automatized, however with some involvement from the accountants that check so that correct bookings are made. The Payment Proposal and Payment and Storing will further, as mentioned earlier, be shared with the Accountants, which in an earlier stage completely take care of the storing. The ERP system Jeeves as an Invoice Receiver is illustrated in figure 14.

**Invoice Receiver – Jeeves e-Attest**

The third new sub-role introduced when moving towards an EIP system in the To-Be state, is the function Jeeves e-Attest. Within the role Invoice Receiver it will replace the earlier accountant’s part in the activity of Attestation (see figure 13). As described, the accountant was the one that provided the Attestator (Buyer) with the invoice that should be attested. In contrast, Jeeves e-Attest will provide the Attestator with the invoice through a web client, where the Attestator also can perform the actual Attestation. In addition, all the invoices that an Attestator has attested will all the time be accessible to him or her through the web client, like storage. To some extent the Accountant will still be involved in this activity of Attestation, now though, to verify that Jeeves e-Attest suggests a correct chain of Attestators. After the Attestation has been done, Jeeves e-Attest will signal to Jeeves that performs the final booking and following steps as described.

**Buyer – The Attestator**

As in the As-Is state, the role Buyer will still be carried by the Attestator at the manufacturing company. Nevertheless, will there be some changes regarding how the Attestation is carried out. As mentioned earlier, instead of attesting a physical paper (the invoice) the Attestation will be performed in a web client at a computer. It is thus a new Attestation environment that the Attestator has to learn and become familiar with. Besides, there will be some practical reliefs since the Attestator no longer will be needed to post the invoices back to the Accountant after Attestation. Neither will the Attestator be needed to be present at his or her office to perform the Attestation since the web client will be reachable from any computer with internet connection. This will instead be handled by Jeeves e-Attest, which signals to the ERP system that an Attestation has been performed. The activity of Attestation being performed by both the Attestator and Jeeves e-Attest is illustrated in figure 14.

**Third Party Supplier**

As Dykert and Fredholm (2008) describe the role Third Party Supplier it refers to a supplier of IT-services, in relation to EIP, it furthermore considers a receiver of invoice information, that transforms the information to a specific standardized format and delivers it to a recipient (the Invoice Receiver). This role could have been relevant for the manufacturing company in the To-Be state. However, since they have chosen to run their systems from in-house, a third party supplier is not apparent more than in the initial set up of the systems. On the other hand, if the manufacturing company chose to move one step forward from EIP and implement EDI, the role “Third party supplier” could become appropriate to consider as well.

**Invoice Issuer**

As Dykert and Fredholm (2008) discuss, the role Invoice issuer commonly coincides with the role Seller, however this thesis will make use of Invoice issuer. Furthermore, the two
roles are described to usually be undertaken by the supplier of the goods or services that the Buyer has purchased. Similar to the role Third Party Supplier, the role Invoice Issuer would as well been highly relevant to consider if the manufacturing company chose to move along with EDI. To some extent this role becomes apparent even without an EDI link, since the manufacturing company, as they describe, in the To-Be state would try to persuade their suppliers (Invoice Issuer) to send their invoices in pdf form, via email. As earlier mentioned, receiving invoices as pdf allows the manufacturing company to skip some of the steps in the activity of Invoice Arrival. Finally, if an EDI link is to be set, it may be important to consider how the role Invoice Issuer may influence the information that is sent to the receiving company, and thus the affect on its corresponding EIP system.

5.2.1.3 Changes in roles and activities when moving from As-Is to To-Be state

When comparing the As-Is state (figure 13) with the To-Be state (figure 14) it is possible to distinguish several changes regarding roles and activities. Maybe most apparent is the Accountant’s role as Invoice Receiver. In the As-Is state, the Accountant was solely engaged in all invoice activities except the last Attestation that naturally also involved the Attestator. However, in the To-Be state, the Accountant now shares the role of Invoice Receiver with three others: Readsoft, Jeeves, and Jeeves e-Attest. Consequently, activities undertaken by the Accountant have been limited to mainly involve the activity of Invoice Arrival. The Accountant is only partly involved in the other activities, primarily though, in form of verifying that information is correct. Readsoft will share the activity of Invoice Arrival with the Accountant, where Readsoft will translate physical information to digital. However, if the potentials of EDI would be realized, the first activity would lose its importance. Accordingly, Readsoft would be eliminated as part in the role Invoice Receiver. The Accountant’s participation in the EIP system would be heavy limited as well, since its main activity Invoice Arrival, no longer would be needed. As figure 14 further illustrates, Jeeves will, as part of the role Invoice Receiver, take on the major part of the activities earlier carried out by the Accountant. In contrast to before (in As-Is state), the activities will thus be automatized, with the Accountant overseeing. The function Jeeves e-Attest will as part in the role Invoice Receiver, replace the Accountant’s earlier involvement and provide the role Buyer (the Attestator) with relevant material so that the activity Attestation may be finalized. The material provided will be in the form of a web-client from where the Attestator may perform the Attestation. In this sense, the activity Attestation will change as well, along with the introduction of Jeeves e-Attest. The only
role that will stay unchanged is the Buyer, still this role is undertaken by the Attestator. Finally, when discussing the potentials within EDI, two more of Dykert and Fredholms’ roles become relevant to consider, Third Party Supplier and Invoice Issuer. Even though these roles are external, situated outside the manufacturing company, they will be influential in the EIP system and affect the information that will be sent to the Invoice Receiver and Buyer.

5.2.2 Isolated BSC and Strategy Map

This analysis aims to investigate what potential effects the manufacturing company may expect from changes in roles and activities discovered in To-Be state. Changes in those activities and roles will in this part be evaluated in an own isolated BSC where potential effects of EIP will be analyzed in the different perspectives of the BSC as cause-and-effect relationships. Doing so, the authors aim to contribute with a detailed analysis that will be important for describing the affect on the manufacturing company’s management control. Hence, the following analysis and section corresponds to the second stage in the analytical framework (figure 7) presented in Summarizing framework, section 3.4 (see also figure below).

Instead of seeing the BSC from a regular company perspective the authors will accomplish the analysis from the accounting department’s point of view due to its close relation to EIP (see 5.1.2). Customers of the customer perspective will therefore be considered as the manufacturing company itself and external suppliers since they figure as important receivers and senders of information. In addition, the goal perspective will primarily consider goals of the accounting department although there is a close relation to the overall goals of the manufacturing company.

5.2.2.1 Learning and growth perspective

Positioned in the bottom of the BSC (see figure 15) is the learning and growth perspective, which is due to Kaplan and Norton (2001a) described as the foundation of a company’s strategy. The learning and growth perspective defines key elements needed to pursue the company’s strategy. Elements such as employee capabilities and technology may be seen as enablers for reaching goals higher up in the BSC hierarchy. In the manufacturing company, the authors have identified the important elements EIP and EDI.
EIP

One crucial element for reaching goals higher up in the BSC is the heart of this change process, the EIP system. The EIP system is the component that turns the traditional way of handling invoices into a modernized and electronic invoice process, which may help the company in handling big amounts of invoices. The most obvious result of the component EIP is the generation of a rationalized invoice process that involves new ways of working in automated tasks. These automated tasks are further described in the internal process perspective (see figure 15). Moreover, as implementation of a new EIP system can be a complex task that requires new knowledge and change behaviors, education is a likely side effect in the learning and growth perspective. By educating employees affected by the EIP system, the company may see effects such as increased responsibility, generation of new ideas, which may result in increased employee motivation.

EDI

Building on Brodin’s (2005) reasoning that EIP opens up for processing different forms of invoices, EDI becomes an interesting side element to EIP as the manufacturing company may improve the invoice process even more through this technology. A technology such as EDI that sends the invoice electronically as a standard message between connected ERP systems is a highly effective technology that could have a major impact on several levels in the BSC. The use of EDI could for instance lead to effects such as increased automation in the internal process perspective, better and closer business relations in the customer perspective and richer information in the goal perspective. Additionally, as earlier mentioned, if the manufacturing company can persuade suppliers to send invoices in pdf format, the manufacturing company may be able to further smooth the invoice process in the internal process perspective.

5.2.2.2 Internal process perspective

As Kaplan and Norton (2001a) view it, one must remember that excellent customer performance is grounded in outstanding internal processes and activities throughout the organization. As this isolated BSC aim to analyze potential effects of an EIP introduction, focus in the internal perspective will be roles and activities related to the manufacturing company’s invoice process. Therefore, the internal process the authors have chosen to focus upon is in this context identified as the Modernized Invoice Process.

Modernized Invoice Process

Aside from obvious tasks such as receiving invoices and making payments to invoice issuers, the invoice process is important for the manufacturing company as it creates value to the customer and goal perspectives. In this situation, implementing EIP and thereby making the invoice process electronic and more automatic, the manufacturing company may see effects such as better business relations in the customer perspective and timelier information in the goal perspective (see figure 15).

Moving from As-Is state to To-Be state, the authors have identified the following roles and activities as main generators of potential upcoming effects.

Invoice Receivers

In To-Be state the Accountant’s role as Invoice Receiver is shared with three others, namely Readsoft, Jeeves, and Jeeves e-Attest, which all of them are key components in the Modernized Invoice Process. To begin with, as Readsoft transforms paper invoices into
digital format it becomes crucial in the activity Invoice Arrival (see figure 12). The use of Readsoft in To-Be state may result in a shift of the Accountant's workload from a nice spread throughout the entire invoice process to the initial arrival activity (compare figure 13 and 14). In the activity Invoice Arrival the Accountant's task will mainly be focused on manual work such scanning and verifying paper invoices, which may be a time consuming task. A potential effect of using Readsoft is thereby increased manual work (see figure 15) in the internal process perspective. Another effect may be more accurate information in the goal perspective as Readsoft, which may minimize the risk of individual failure, automates information registration in the arrival process. However, as previously mentioned, implementation of EDI linkages and increased use of pdf invoices could minimize manual work in this particular activity and automate the invoice process even more.

Moreover, while studying figure 14 it becomes apparent that Jeeves has an important function as receiver of the invoice. Jeeves will undertake a number of activities that earlier was performed by the Accountant, which in To-Be state will have a role of overseeing the process. By using Jeeves the company may be able to digitally register and store big amounts of information in the system, which may enable for more detailed and richer information to the goal perspective. Due to increased automation in a more streamlined invoice process, the use of Jeeves may lead to a decrease of manual work in the internal process perspective (see figure 15).

Instead of sending invoices by regular mail in a time-consuming attestation activity, Jeeves e-Attest may improve the overall flow of the invoice process. Jeeves e-Attest will ease the Attestation activity in the sense that invoices are sent electronically to the correct Buyers (Attestators) for attestation. As the activity becomes electronic Attestators may be able to attest the invoices even though they are out of office. Attestation may be executed while these Attestators are at home or travelling due to the web-client that makes necessary information accessible anywhere. Due to Jeeves e-Attest, potential effects may be a timelier invoice process that improves the workflow and decreases manual work in the internal process perspective. Jeeves e-Attest may also open up for more timely information in the goal perspective (see figure 15).

Although the introduction of Invoice Receivers such as Readsoft, Jeeves, and Jeeves e-Attest that together can enhance the invoice process, decreased manual work for the accountant may result in negative side effects. Accountants of the company might become less stimulated and motivated to do a good job. Fear of losing their jobs is another negative side effect due to the improved invoice process.

### 5.2.2.3 Customer perspective

According to Kaplan and Norton (2001a) the customer perspective is one of the most crucial of the BSC. The customer perspective defines how the company differentiates from its competitors to attract, retain and deepen the relationships with its customers. Already being mentioned, this BSC is seen from the accounting department’s point of view and customers in this perspective are the manufacturing company itself and external suppliers.

Continuing the reasoning of EDI as an enabler for better business relationships, one possible effect could for instance be stronger relationships to external suppliers due to EDI linkages. EDI may therefore work as an enabler for the concept of virtual organizations, which is recognized by (Olve et al., 1999). By using approaches suggested by Dykert and Fredholm (2008) the manufacturing company may benefit from an even more automated invoice process as information is sent in a highly seamless and efficient way with minimal amount of work. EDI may also send information faster and more accurately. In a wider
5 Analysis

perspective, the use of EDI could create effects in other areas of the company as the technology greatly can reduce administrative tasks such as entry of data, manual controls, sorting, and copying. Although EDI is an expensive solution to implement, cost of labor could be reduced and time efficiency improved, which would have a positive effect on productivity and profitability in the goal perspective (see figure 15).

5.2.2.4 Goal perspective

As Kaplan and Norton (2001a) define it, the financial perspective (in this context mentioned the goal perspective) makes up the main goal for a profit seeking company as it aims for increasing shareholder and economic value. This may be reached through three core elements, revenue growth and mix, cost reduction and productivity, and asset utilization. The accounting department may support the manufacturing company to meet overall goals of the firm by reaching their own goal, which is to serve internal and external stakeholders in a good manner.

When analyzing the internal process perspective, it becomes apparent that the Modernized Invoice Process with improved automation and increased efficiency can provide effects higher up in the hierarchy. For instance, the Modernized Invoice Process may be understood as an information intense tool that can provide more accurate and timely information throughout the company. Having more accurate information, the manufacturing company may be able to carry out more detailed and precise cost analysis as the new system opens up for improved costs tracing. With this information the company may take better decisions and improve overall control, which can increase operating excellence. This may have a direct impact of the manufacturing company’s overall goal of profitability and at the same time increase satisfaction in the customer perspective (see figure 15).

Due to the fact that invoices can be processed electronically in an overall enhanced invoice process, the manufacturing company may minimize earlier difficulties such as invoices that get lost in the attestation round or errors that can be time consuming to correct. As EIP systems are time efficient (Ekengren & Hassan, 2004) the manufacturing company may also realize effects such as cost savings and improved profitability in the goal perspective.

Furthermore, as a consequence of the improved invoice process some negative effects may arise in the goal perspective since implementing a new EIP system is both a time consuming and a costly mission to undertake.
Figure 15 – Isolated BSC and Strategy map
5.3 Wider implications and interpretations

The analytical findings from the specific case study of EIP as an exemplified ERP change (see especially figure 14 and figure 15), allow for an even further and more general categorization of the identified roles, activities and effects. The roles that become recognizable are threesome and are coined according to their inherited characteristics drawn from the originally identified roles (see previous section 5.2). These roles are The Executor, The Supervisor, and The Supporter, which are recognized to carry out five distinct management control supporting activities that are visualized when observing the analytical findings. These activities are: Information Assembling, Information Verification, Information Registration, Information Presentation, and Information Storing. Besides observable movements and altering of focus between these roles and activities, the ERP change is found to potentially affect management control positively in five prime aspects: Timeliness, Accuracy, Accessibility, Richness and Control. The following part will go through each of these categories and aspects, justifying their importance and relevance, and further how they will be affected by the ERP change.

5.3.1 Roles

5.3.1.1 Executor

When observing the roles and activities in figure 14 it becomes obvious that it is always someone that is responsible for each activity to be carried out, thus one role is always specifically crucial for the execution of each activity. For instance, the Attestator undertaking the role Buyer is crucial for the activity of Attestation, without the Attestator the activity Attestation would become impossible to perform. Even if Jeeves e-Attest provides the Attestator with the right material and grounds for Attestation, it is the Attestator that makes the Attestation to happen. Similar patterns are apparent when considering the activity of Accounting as being primarily carried out by Jeeves, even though the Accountant may oversee the activity so that everything is correctly done. Moreover, the invoice translation in Invoice Arrival would not be possible without Readsoft, even though the Accountant is helping by preparing the invoices for the scanning and translation. The authors therefore find Executor as an appropriate term for the one crucial for the execution of each activity.

Moving from As-Is state to To-Be state, it becomes obvious that the Accountant that before undertook the role of Executor for the majority of activities, now mainly has been replaced by Jeeves and Readsoft. In the To-Be state Jeeves is the Executor of the activities Matching, Accounting, and partly Payment Proposal and Payment and Storing. The Executor for Invoice Arrival may be seen to be partly shared between the Accountant and Readsoft. As it appears, the Attestator keeps the role as Executor of the activity Attestation.

5.3.1.2 Supervisor

As Jeeves and Readsoft are introduced as new Executors for specific activities in the To-Be state, earlier Executor Accountant instead takes on a role to oversee and verify that these new Executors are performing and carrying out the activities correctly. Therefore, this role will be coined Supervisor. Even if the role is not present in the As-Is state, it becomes visible when moving to the To-Be state. The role is apparent both when considering the activities of Invoice Arrival and Accounting. In Invoice Arrival, the Accountant as the Supervisor will verify so that Readsoft (the Executor) has interpreted the invoice information correctly. Similarly, the Accountant will also verify that Jeeves (the Executor)
suggests correct bookings before the Accounting activity may take place. Additionally, as Jeeves e-Attest becomes the one providing the Attestator with material for Attestation, the Accountant becomes a Supervisor even in this activity. Although, in this case not verifying that the Executor (Attestator) is performing the activity correctly, but rather to verify that Jeeves e-Attest is suggesting a correct chain of attestation and thus is supporting the activity of Attestation correctly. This naturally leads to the third role, the Supporter.

5.3.1.3 Supporter

As previously discussed, the activity of Attestation in the To-Be state comprises an Executor (the Attestator), a Supervisor (the Accountant) and additionally, a Supporter (Jeeves e-Attest). The Supporter in this sense is the one that supports the execution of an activity. It is thus, one that helps the Executor to perform its activity, providing the needed means for it. The role Supporter is also apparent in the activity of Invoice Arrival where the Accountant functions as the Supporter, this time to Readsoft (the Executor) when preparing the invoices for the further processing. The Accountant also partly functions as the Supporter to the Executor Jeeves in the activities of Payment Proposal and Payment and Storing. As it seems, the role Supporter was only apparent in one of the activities in the As-Is state, in the Attestation where the Accountant undertook this role. However, when moving to the To-Be state the Supporter becomes a very apparent role in several activities. Considering the roles that additionally become appropriate when discussing EDI, the Third Party Supplier and the Invoice Issuer, these may be said to undertake the role Supporter as well. Even though it might be difficult to distinguish any specific activities, they instead may be seen to support and also affect the whole EIP system.

5.3.2 Activities

Viewing all the activities in the analytical findings and simultaneously consider the apprehending of management control as an information intensive process, the activities may be categorized regarding how they contribute to management control.

5.3.2.1 Information Assembling

Especially the first activity Invoice Arrival concerns the collection of information that later on will be processed. This sort of assembling is also apparent in some underlying activities such as the invoice transferring between Readsoft and Jeeves, and Jeeves and Jeeves e-Attest. The authors have chosen to coin this sort of activity as Information Assembling, and is related to those activities involving the assembling and preparation of business information that later constitute the grounds for forthcoming activities. The Information Assembling will be even more highlighted if considering the potentials in EDI linkages. As previously discussed, this may involve external Supporters in form of the roles Third Party Supplier and Invoice Issuer. Even though this activity is extended in the To-Be state with the underlying activities of Invoice Arrival, it would be highly facilitated if EDI was practiced.

5.3.2.2 Information Verification

Since the main purpose of the activities Matching and Attestation is to verify and check so that the assembled information is correct, they may be referred to as Information Verification. Importantly to not confuse with the role of the Supervisor that checks so that the Executor (and Supporter) is performing an activity correctly. The automated Matching and the heavy facilitated Attestation in the To-Be state will enhance the overall Information Verification activity.
5.3.2.3 Information Registration

Reflecting over the activity Accounting, it becomes clear that the main purpose of it is to create and register information with grounds in earlier assembled information. A third activity is therefore termed Information Registration. To some extent the Payment Proposal and “Payment” in Payment and Storing are included in this activity as well, since both of them actually involve the registration and creation of new information in form of payments. Moving to the To-Be state this activity was to a large extent completely automatized as the new Executor Jeeves entered.

5.3.2.4 Information Presentation

Even though there is no specific activity presented in figure 14 relating to the activity of Information Presentation, still there are reasons to argue for it. As the role Invoice Receiver was additionally undertaken by Readsoft, Jeeves and Jeeves e-Attest in the To-Be state, new interfaces from where the information is shown were introduced accordingly. For instance, when the Attestator shall perform the Attestation, the material will be presented to him or her in a new environment in form of a web-client. Moreover, the invoices will be accessible in a digital format, whereas no physical invoices will be needed (more than for archiving). Therefore, the activity of Information Presentation is apparently affected and changed.

5.3.2.5 Information Storing

Emphasizing the part “Storing” in Payment and Storing another activity may be developed in form of Information Storing. The reason for assigning an own activity for storing is that the storing of information will significantly change in different aspects when moving towards To-Be state and even more if the potentials in EDI linkages were to be realized. As the invoice information in the To-Be state will be electronically stored and reachable the actual archiving of the physical invoices may be simplified. If the invoices furthermore arrive as pdf or via EDI, they will be archived in electronic form as well (as mentioned, due to legislation), therefore the archiving of physical invoices may be completely eliminated.

5.3.3 Effects

Considering the outcome from the isolated Balanced scorecard and Strategy map (see section 5.2.2), the changes in the three roles and five activities described in this section, have several potential positive effects on management control as an information intensive process. The authors have found these effects to comprise five aspects of management control.

5.3.3.1 Timeliness

What has been evidenced in the case study is that EIP will enhance the overall flow of the invoice process. In contrast to As-Is state, where invoices commonly get stuck or lost during regular mailing, invoices will instead be sent electronically within the organization. Being the main enabler to this, Jeeves e-Attest (Supporter) additionally enhances the tracing of invoices that may be stuck awaiting someone’s attestation (during the Information Verification). Before (in As-Is state), this sort of tracing was a very time consuming activity. In addition, the automation of for instance Information Verification and Information Registration (enabled by Executor Jeeves) also affect the overall time consumption, even though the automation may imply more time spent on the role Supervisor. Hence, the ERP change has made the information flow timelier, smoother and minimized risks for interruptions.
5.3.3.2 Accuracy

As long as the Accountant succeeds in its role as Supervisor for several activities, the information will be more accurate and hopefully involve fewer errors than before due to the automation of many activities (especially Information Registration). For instance, earlier manual steps of data entry will be automated which will decrease risk of individual failure. Therefore, management control will rely on information that is more correct and due to the Timeliness, the information will as well be more updated and in that respect more accurate.

5.3.3.3 Accessibility

The facilitated activities Information Presentation and Information Storing allow for a constant easy access to the information needed for management control. There will be no need to trace old, archived, physical invoices as the accountants describe in the interviews, since all information will be reachable in the web-client and digitally stored.

5.3.3.4 Richness

Jeeves, as a new Executor in several activities (especially Information Registration) will be able to register more information than before, allowing for better and deeper cost analyzes. In contrast to the As-Is state where the main registered information regards booking accounts and business unit, the To-Be state additionally registers information that enables cost tracing all the way down to a specific supplier or even specific invoices. This will thus have effects on management control in form of information Richness.

5.3.3.5 Control

Due to the Modernized Invoice Process and the enhanced information Accessibility, the overall information activities will be easier to oversee and thus control. For instance, in the chain of attestation it will be easier to fast track an invoice down if it is stuck, or to trace a specific cost to a specific purchaser. In turn this allows not only for better control over the specific information process, but also better cost control. On the other hand, considering the closer business relationships enabled by EDI linkages, the overall control may as well be more difficult due to the additional external actors which may affect the management control ingredients. However, since EDI linkages were not practiced in the studied case, the possible effects on management control from it will not be considered.
Conclusions

This closing chapter consists of three parts. The first part (6.1) presents the conclusions that may be drawn from previous Analysis chapter (5) and thus answer both research questions (see Problem statement 1.3). Important to state, the conclusions regarding effects on management control (the second research question) are only potential, not definite. Following part (6.2) of generalizability, the relevance of using a case study exemplifying an EIP implementation as ground for generalizations on ERP level will be discussed and reflected upon. In addition, the applicability of research findings in other settings will also be discussed in this part (6.2). In the final part (6.3) suggestions regarding further research will be discussed.

6.1 Conclusions

Since the purpose of this thesis is to “create an understanding regarding how an ERP implementation may affect management control by causing changes among supporting roles and activities” (see figure 1), the authors have exemplified an ERP implementation through the case of a manufacturing company implementing an EIP system as part of a larger ERP change. The change faced by the manufacturing company has been projected and described with reference to change theories, as a combination of adaptation and reconstruction in a realignment change perspective. The described background to change lay grounds for a further presentation of the complete Project X in a balanced scorecard and strategy map, pointing out strategic themes and more importantly, where the specific case of EIP was situated. By doing so, the authors described how they apprehended the surroundings and context to the specific case study and furthermore argued for how they were to approach the case of EIP. As described by the analytical model presented in the summarizing framework (see section 3.4) the analysis of the case was to be carried out in two stages, each stage primarily representing one of the two research questions. The case specific analysis was then further examined and analyzed upon, which opened up for an even further categorization applicable on a general ERP level and with regards to management control. The case specific roles and activities which were identified, and their relation to the general categorization of roles and activities presented next, are illustrated in the comprehensive figure 17 (presented lastly in this chapter). In addition, figure 17 summarizes the identified changes in the general roles and activities, and finally how all the changes may result in five specific positive effects on management control.

What management control supporting roles and activities, and changes among them, can be identified in an ERP implementation?

From the case specific analysis it was apparent that it was always someone or something obviously crucial for the execution of each activity, therefore one role was termed the Executor. Before the change, the role Executor was mainly undertaken by individuals, however, the ERP change will to the largest degree replace the individuals as Executors with automated computer systems (in the specific case, Jeeves and Readsoft, see figure 17). The new Executors will be able to perform execution of activities more time efficient compared to the earlier Executors. As automated computer systems will constitute the mere part of these Executors, there is a need for someone overseeing so that activities are executed correctly, a need for a Supervisor; the second role primarily undertaken by individuals. This role, introduced as a consequence of the new Executors, will be very time consuming as they overlook the new Executors and additionally correct them if needed. In addition, the Supervisors will in some occasions also be needed to oversee the third role, Supporter. The main task of the Supporter is to provide the Executors with the right materials and services so that they can execute the activities and thus fulfill their role. The
6 Conclusions

ERP change will replace some individuals as Supporters with automated computer systems (in the specific case, Jeeves e-Attest, see figure 17), but at the same time, there will be a need for more individuals undertaking this role to support the new Executors. As a consequence, the role will be more time consuming.

Moreover, the authors identified five prime activities carried out by these three roles. Information Assembling involves those activities that assemble and prepare information for further processing. The ERP change will greatly extend and aggravate this activity, making it more reliant on the role of the Supporter. Information Verification comprises those activities that assure that the assembled information is correct and will to the largest degree be highly facilitated by the ERP change, as new role carriers are introduced. Information Registration will gain the most benefits from the ERP change since the major part of the activity will be automated by new Executors. In accordance to its name, the activity relates to all those activities and tasks that aim to create and register information with grounds in earlier assembled information. Furthermore, Information Presentation involves those activities that aim to present the assembled and registered information in different environments and interfaces, and the ERP change will completely modernize and extend this activity. Finally, the ERP change will make stored information more accessible and further simplify legislated archiving, the concerned activity is termed Information Storing.

What potential effects on management control can be observed?

The changes and altering of focus between these roles and activities were found to potentially affect management control positively through five prime aspects, which inevitably leads to the second research question. First, the ERP change will smothering out the information flow, make it faster and timelier, and eliminate common bottlenecks, which could affect management control from the aspect of Timeliness. A second aspect that may be affected is Accuracy and regards that the ERP change will make the information more correct, more updated and eliminate possible errors from manual tasks. Due to the enhanced activities of Information Storing and Information Presentation, the ERP change may affect Accessibility since information will be more available. Furthermore, improved capabilities of new Executors will allow for a more detailed and complete Information Assembling and Registration, in the aspect of Richness. Richer information will enable a management control that relies on better and deeper cost analyses. Finally, the overall enhanced information activities may result in better control over the information process, which could affect management control in the aspect of Control.

Figure 16 – Of an ERP implementation; affected roles and activities, and effects on management control.
Summing up, figure 16 illustrates how the exemplified ERP implementation may affect three distinct roles and the associated five information intensive activities. Together, the affect on these roles and activities may result in positive effects on management control through five prime aspects: Timeliness, Accuracy, Accessibility, Richness and Control. Thereby, evidenced through the specific case study, the authors claim to have created an understanding regarding how an ERP implementation may affect management control by causing changes among supporting roles and activities.

6.2 Generalizability

The relevance of using a case study exemplifying an EIP implementation as ground for a more general interpretation on ERP level will be discussed here. Beginning by identifying similarities between ERP and EIP, the authors will continue with a discussion how broad generalizations may be useful in other contexts, branches and companies. Having made a close examination of the case study the authors find close relation between ERP and EIP. An ERP system is an information system, an integrated platform of modern technology that links information between different departments of a company. An EIP system may also be referred to as an information system of modern technology since its prime aim concerns integration and streamlining of information flows. Moreover, regardless of what kind of system a company aims to implement (ERP or EIP) one must remember that both of them may likely require major organizational changes; changes among specific work tasks and the people involved, and changes within business processes in general. Because of this, the similarity of information systems aiming to improve information flows and the way implementations of such systems can affect work tasks and business processes in a company, the authors regard these as key similarities that strengthen the case study of EIP as an exemplified ERP implementation.

Can the increased understanding of how an ERP implementation may affect management control by causing changes among supporting roles and activities have a wider use?

The authors suggest the outcome of this thesis to be useful for any company approaching an ERP change that may affect roles and activities and the company in general. The outcome may not only be interesting for companies approaching change, but also management consultants that aim to advise companies in processes of change.

The generalized roles (The Executor, the Supervisor, and The Supporter) that were derived from the case study may be used to describe roles in any company. For example the Executor, which is someone or something obviously crucial for execution of an activity, can be an auditor that performs revision for an auditing firm, workers of a factory that are crucial for assembling products, or a driver that executes delivery for a delivery firm. Moreover, the Supervisor that overlooks the execution of an activity and verifies that it is executed correctly, could for instance be a middle manager of a company department that oversees employees and the specific operations they are carrying out. The Supporter, which main task is to provide the Executor with right material and services may also be applicable in other contexts. A Supporter may be an accounting clerk that supports the accountant in his/her daily work. Furthermore, the three roles where closely related to a number of generalized activities such as information registration, presentation, and storing. The authors suggest that these activities could be used for a more general classification of activities in business processes in other companies as well.
Although this thesis analyzes how changes in roles and activities may affect management control, the authors recognize how such changes could affect other areas and perspectives of a company as well. What became apparent in the case analysis was that the Modernized Invoice Process likely would lead to both increased and decreased manual work due to changes of and within roles and activities. Instead of as in this thesis focusing effects on management control, it may be interesting to change the lens to something else, and thereby see how changes among roles and activities may affect other business areas or perspectives.

For instance, using the lens of Corporate culture, an introduction of EIP with additional education would highlight the affect on employees (see 5.2.2) as new ideas can be generated, responsibility increase, which could result in an overall increase in employee motivation. However, an EIP introduction could at the same time lead to decreased employee motivation as the automated invoice process reduces manual activities (see 5.2.2). Changing the key element of employee motivation in the learning and growth perspective, the authors believe that such change could affect the Corporate culture of an organization in a larger extent both positively and negatively. Moreover, if the perspective and lens instead was Profit maximization, effects of changes among the roles and activities would focus the financial perspective of a company. Although an EIP introduction may be costly to introduce, a modernized invoice process could greatly reduce manual activities and therefore lead to cost savings and improved profitability in the financial perspective (see 5.2.2).

Hence, as been briefly exemplified with grounds in this thesis particular ERP change of EIP, depending on which perspective one undertakes, which lens that are chosen, the effects from changes among roles and activities may appear differently. The effects of changes among roles and activities must therefore not necessarily be analyzed from a management control perspective.

### 6.3 Further research

Since the empirical findings in this thesis rely on data collected from one case solely, it would be preferable to empirically identify the suggested roles and activities in other organizations and/or under other circumstances and seek if the same pattern of affects on management control will be apparent. Hence, further research identifying these roles and activities pointing out effects on management control are suggested. In addition, during the case study the authors have recognized how the specific ERP change opens up for fine possibilities to extend the ERP implementation to EDI linkages with suppliers, which have been discussed in some sections continuously (also referred to as “Virtual organizations” by Olve et al., 1999). Especially interesting becomes the area of EDI linkages and “Virtual organizations” since they diffuse earlier clear organizational borders that separate organizations from its external stakeholders. The authors therefore suggest further research regarding how EDI linkages and “Virtual organizations” may affect management control and the processing of crucial business information. Finally, it could be interesting to study how changes among roles and activities during an ERP implementation may affect other areas or perspectives than management control, such as Corporate culture or Profit maximization (see earlier discussion in 6.2).
Figure 17 – Summarizing figure, relating case specific roles and activities to generalized roles and activities, clarifying changes among these, and showing potential effects on management control
7 References


