Standardization and organizational change
Standardized ERP systems: a business development and change limitation?

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Abstract

When adopting standardized ERP systems organizations also adopt standardized processes. These processes are integrated in the organization. The integration of standardized business processes redefines the business while standardization also leads to more indistinguishable business processes. Standardization is a prominent property of SAP ERP. When organizations implement SAP they also implement the SAP way of doing business. The research question is based on a consideration whether increased standardization, as part of SAP ERP, may limit the organization’s possibility to change.

To examine the question the thesis use interviews with a business organization and SAP consultants as well as document studies. The results of the empirical work point to the fact that standardization is not limiting opportunity to change. Rather standardization is viewed as a necessary structure that is more of an organizational change enabler than a limiter. The enabling view of standardization is a consistent finding from the empirical study.

Keywords
Organizational change, standardization, ERP systems
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1 Introduction

Business development and change is important for the success of the organization. The ability to act on new circumstances to achieve long term competitive advantages is important. Organizations which are not able to cope with change will diminish their chances of becoming successful in a competitive environment. In this thesis the relationship between standardized information technology (IT) infrastructure and ability to change to conform to new prerequisites will be investigated. The thesis seeks to answer if the IT infrastructure can limit the organization in its development.

1.1 Background

Enterprise resource planning (ERP) systems have been prominent in research and thoroughly discussed in the business world over the past decade. In the 1990s ERP systems were adopted as a way of integrating various organizational functions. (Magnusson & Olsson, 2005) As of today ERP systems are considered best implemented and administrated as part of a standardized infrastructure. (Grabot, 2008) There are multiple reasons as to why a standardized infrastructure is preferable. A standardized infrastructure supports best practices which lead to conformity and homogenous practices. However standardization also calls for adaption of existing business processes, as new ways of conducting business processes emerges. (Grabot, 2008)

ERP systems lead business transactions towards standardization. Davenport & Prusak says that ERP systems impose their own logic on the organization. (Davenport & Prusak, 2000) Because of this it is crucial for the enterprise to protect their activities from being commodity and to seek differentiation. (Davenport, 1998)

“...firms implementing ERP will probably not be able to maintain ERP systems as a source of competitive advantage over time”. (Davenport & Prusak 2000)

Best practices for non-key processes are performance boosters, but it is unlikely that adaption of best practices will lead to competitive advantage. Best practices leads to indistinguishable processes. (Davenport & Prusak 2000) When best practices interfere with internal processes, decisions on organizational strategy is challenged.

“Enterprises that implement ERP systems aim at controlling their global performances through formalization and standardization of their processes, using tools dedicated to information processing and to exchanges and communication between actors.” (Marcotte, 2008)

Holding on to competitive advantages through information technology becomes harder. Competitors of today adapt faster to technology improvements and thereby reducing the competitive advantage gap. (Carr, 2004) Then why bother to set up individual information system environments when following best practices is both low risk and low cost? It is because, through various forms of tailoring, companies may be able to build unique
Sure ERP systems of today provide all the possible functionality a company needs, at least so claim the vendors. Vendors such as SAP say that their products meet all the information-processing needs of the companies adopting it. (Markus & Tanis, 2000) They enable adopters to integrate data and processes throughout the organization, and they support nearly all functions. (Brehm et al, 2000) It is however important to consider that there is no magic bullet of IT. That is why considering change is always an important matter.

1.2 Problem discussion

When implementing standardized information system organizations also implement standardized processes. A business transaction can flow through an entire application, updating records without aid from other applications data entries or processes. At the end, recorded transactions feed planning and support systems with relevant information. (Markus & Tanis, 2000) These processes are imposed on the organization and the organization has to adapt to them. The software and business practice becomes more indistinguishable. (Carr, 2004)

Adaption of standardized processes can be achieved in various ways. Modification is the event of altering program code of a standardized system to fit the organization. (Brehm et al, 2000) Through modification, IT systems can be carefully integrated into business processes. (Carr, 2004) Modification is mainly performed by specialized external consultants. The goal of customization is to change the system properties to better fit the target environment. (Brehm et al, 2000)

When altering a standardized system through modification the generic properties of the system could be lost. (Davenport, 1993) The system is no longer to be considered standardized but instead tailored to fit the organization intended. In the current environment the system is considered a best fit, highly efficient. When organizational conditions change and new prerequisites are discovered the modified system may not continue to be optimized for the working environment. The way of adapting standardized systems by modification is not advised. Heavy modification of standardized software is discouraged by vendors and implementation consultants. (Brehm et al, 2000) Instead organizations are accepting the standards of the standardized software adapting itself to best reap the benefits provided. This means preserving generics, but still some tailoring is possible through configuration.

At present the leading opinion speaks of integration of standardized software into the organization. This practice calls for critical adaption and sometimes extensive business process re-engineering. Current business processes must consider the new IT infrastructure. The change might affect processes which are deeply embedded into the business, leading to a loss of internal control. (Carr, 2004) Existing business processes are replaced by pre-defined equivalents which from the point of implementation and onwards will contribute to define the organization. It is likely that there will be a lack of fit between the standardized processes and organizational proceedings. (Brehm et al, 2000)
In the event of organizational change the integrated standardized processes must be taken into consideration. Changing processes which are part of a standardized system is problematic. When standardized processes constitute a big part of the organization they could work as a limitation on organizational change.

Initially, at the implementation phase, IT is considered as an enabler of business process re-engineering. However, when processes are to be re-engineered in the future the enabling properties of IT could now be working as constraints for change.

1.3 Research question

The discussion under the previous section highlights the problem of not controlling resources and processes important for the organization. When an IT infrastructure is chosen that outsource important components of an organization, issues of internal control might arise. If internal control is higher valued than standards and best practices, management should be more considerate when implementing standardized systems, conducting modification and configuration. The success of the organization is not to be considered as whether the software infrastructure is currently supporting the business but rather if the software infrastructure is likely to support long term success.

Based on these initial thoughts the research question of this thesis is formulated as:

*Is the ability to change business processes affected by limitations in a standardized IT system environment?*

1.4 Purpose

The purpose of this thesis is to find if a standardized IT system can limit organizations in changing their business processes.

1.5 Delimitations

There are many factors limiting and obstructing business process change. This research aims to investigate those factors related to the information system infrastructure. Considered as part of this domain are individual information system modules and functions.

The field of enterprise resource planning is vast, as is the field of business development and change. The phenomena of resistance to change at a human level as applies to new system implementations is not considered in this research. The matter of resistance of change and IT implementation is a much discussed topic in many scientific papers.

The thesis does not give a personal opinion on specific systems or vendors. The aim of this thesis is to discuss limitations imposed by ERP systems in a general sense. Answers to product specific problems or solutions will not be discussed in the scope of this research. The SAP system discussed is considered representative for the group of ERP systems. This does not neglect the fact that there are individual differences within the group of ERP systems.
When speaking of change it is considered in terms of processes. Viewing change in terms of processes make the research results more understandable. There are likely to be other studies or competing opinions arguing in favor of another approach. In this thesis a process view is applied. The process view is a familiar language of communicating actions.
2 Theoretical frame of reference

The theoretical framework applied in this thesis is described under this section. The research field investigated is multifaceted which calls for a thorough and interrelated theoretical frame of reference.

2.1 Defining IT in a organizational context

Information technology (IT) is deployed within organizations to accomplish a given task. According to Orlikowski & Robey (1991) there are mainly two ways of treating information technology (IT). IT can be treated subjectively thereby taking a social action perspective. The subjective perspective considers consequences of IT in terms of the interpretation of its users. The subjective perspective gives an understanding of the humanistic-interpretive process of the influences of IT. On the other hand IT can be considered from an objective perspective. Taking an objective perspective, IT can be viewed as an object having impact on a social system and the organizational structure. (Orlikowski & Robey, 1991)

“Information technology is both an antecedent and a consequence of organizational action.” (Orlikowski & Robey, 1991)

2.1.1 Influences of IT

In a business context IT is primarily relevant as a tool of performance improvement. The effect of the improvement is often measured in economical terms. (Markus & Soh, 1995) The performance construct is multidimensional leading to confusion. To better understand the interaction between IT and organization it is important to appreciate the social context of the organization.

Orlikowski & Robey (1991) identifies four key influences that operate in the interaction between technology and organizations. They also claim that by examining these relationships we can only develop a partial understanding of the matter.

The relationships in the model suggested by Orlikowski & Robey (1991) are:

- Information technology is the outcome of human action, being developed and used by humans.
- Information technology is also the means of other human action, serving to facilitate the accomplishment of computer-mediated work or communication.
- Information technology is built and used within particular social contexts.
- Interaction with information technology influences the social contexts within which it is built and used.

The outlined framework is interpreted as:

- IT is a human structure built within certain social and environmental circumstances. It is a human artifact created by creative human action.
IT is a mediator and facilitator of organizational activities.

People are influenced by the institutional properties of IT as they utilize on the prominent stock of resources and knowledge.

People act upon the institutional structure of IT either by sustaining it or by changing it. The interaction either reinforces existing structures or redefining them.

### 2.1.2 Why IT matters

In 2004 Nicholas G. Carr wrote the book *Does IT Matter? Information Technology and the Corrosion of Competitive Advantage*. Carr claimed that IT was no longer to be considered as strategically valuable for the organization. Rather IT according to Carr was to be considered a utility, like electricity, on which no distinctive competitive advantages could be built. (Bannister, 2005) Though giving Carr right at some points Bannister suggested that the primary drivers of competitive advantage are innovation and creativity. Innovation and creativity in turn have the ability of differentiating an organization from its competitors in procedures, processes and practices. Here the role of IT is prominent. But the effects of IT can only be harnessed by using it in support of innovation and creativity. (Bannister, 2005) Thus IT is irrelevant outside the scope of an organizational context.

Further discussion on the role of IT is held by Dedrick, Gurbaxani, Kraemer (2003) in the report *Information Technology and Economic Performance: A Critical Review of the Empirical Evidence*. In the report the construct multi factor productivity (MFP) is introduced. MFP states that technical progresses can increase quality of output without additional investments in input. (Dedrick et al, 2003)

### 2.1.3 How IT matters

Unhesitantly the ultimate goal of IT is increased performance. (Markus & Soh, 1995) Discussing goal without discussing the way of achieving the goal however is not instructive. Markus & Soh are explaining the role of IT in value creation in a three part process model. They discuss the matter of reaching increased performance by tracing the outcome back to the source. The ultimate model as suggested by Markus & Soh regarding the creation of business value is now illustrated.
Figure 1. The IT impact on business value creation. The illustrated picture is applying process theory. (Markus & Soh 1995).

Markus claims that before reaching a state of increased performance an intermediate state of the IT impacts is reached. For the IT impacts to result in improved performance the business conditions have to be favorable. Not only are the results of the IT impacts uncertain but also the favorableness of the impacts themselves. The resulting impacts are in turn a result of the usage of the IT assets. Depending on the appropriateness of the use of assets the impact will be affected in a favorable or a less favorable way. Then again the organizations IT assets are the result of IT expenditures in a previous process. The so called IT conversion process is much dependent on the skill of management, implying that expenditures are a necessary, but not sufficient, condition for obtaining assets. Expenditures are mainly inflicted by management strategy, organizational structure and project management. (Markus & Soh, 1995)

2.2 Standardized IT systems

There are multiple constructs to describe non-custom software. Standardized, commercial off-the-shelf or packaged are three of these constructs. The naming itself is not really important but rather the properties of the kind of software which is referred to. The constructs are describing a product which is commercialized and which is applicable in generic environments with little or no modification. (Brehm et al, 2000)

What makes a software package standardized is not the design principles applied in the actual software. Neither is it depending on the development nor target platform. The standardization is rather an expression of a set of agreed standards on how to conduct business as defined by the software. (Magnusson & Olsson, 2005) Markus & Tanis says that standardized systems are integrated, packaged, composed by best practice and evolutionary in nature. Markus & Tanis (2000) Standardized IT systems have impact on the organization. Grabot and Davenport conclude that standardized IT systems impose their own logic on the organization forcing it to adapt to the externally defined processes. (Grabot 2008) (Davenport 2000)
2.2.1 Best practice

The business world is competitive. Developing and administrating software and IT systems is resource demanding, calling for significant capital investments and therefore contributing to an increase in organizational risk. (Jones, 2010) To reduce organizational risk organizations can apply so called best practices. Best practices are generally accepted, informally standardized techniques, methods or processes that have proven themselves over time to accomplish given tasks. Best practices can be considered offering a reliable path for organizations to follow.

2.2.2 Enterprise resource planning systems

One of the standardized software applications who have gain consideration during the 1990s and 2000s is enterprise resource planning (ERP) systems. ERP systems of today are a multi-billion dollar industry which engages many of the world’s largest software vendors. ERP is considered one of the most widely adopted packaged software of today. (Klaus, Rosemann, Gable, 2000)

ERP systems consist of a number of application modules which are integrated across organizational functions. The software is based on the underlying database. (Klaus et al, 2000) The purpose of implementing an ERP system is to streamline business by optimizing the use of IT. The ERP system is supporting the whole range of functions within an organization. The main activities in the support provided by ERP systems are a centralized data storage and increased efficiency of business processes. (Magnusson & Olsson 2005)

“Enterprise resource planning systems are comprehensive, packaged software solutions which seek to integrate the complete range of a business's processes and functions in order to present a holistic view of the business from a single information and IT architecture.” (Klaus et al, 2000)

Because ERP systems are generic they have to support industries of different characteristics. Consequently it is very hard to define ERP systems by its functionality. ERP systems are most effective for manufacturing companies. Many of the ERP systems were developed from manufacturing resource planning (MRP). (Beynon-Davis et al, 2009) Davenport used the term “mega packages” to highlight the organizational as well as technical challenges imposed by ERP system. (Davenport, 1998) After recognizing the impact of ERP systems not only on manufacturing companies Davenport restated his pronouncement of mega packages, to one of wider meaning, “standard business application software”. (Davenport & Prusak, 2000)

ERP are so called standard software package. According to Klaus et al (2000) “all standard packages targeting an anonymous market must, during the process of system deployment, be tailored to the specific requirements of the individual enterprise.” (Klaus et al, 2000)

The process of tailoring an ERP system is called modification or configuration. (Markus & Tanis, 2000) The “tailoring” is optional, meaning ERP systems can be delivered “as is”. However, tailoring is a way to fit ERP systems to the special characteristics of the organization. It is by tailoring one ERP implementation can be distinguished from another.
2.2.3 Tailoring ERP software

Tailoring is a way of altering ERP software to meet essential business needs of the organization. The tailoring is considered as an important factor not only for the success of implementing ERP packages but for the overall success of the enterprise. The risk associated with ERP projects calls for a high managerial understanding of software tailoring. (Markus & Tanis, 2000)

One of the main problems of tailoring ERP software is the complexity of the software itself. The complexity requires skill and knowledge to be able to tailor the software to the organization intended. Another main tailoring issue is the flexibility allowed within the ERP system. The flexibility enables organizations to adapt the same system in an individual way, in turn, calling for individually performed tailoring. (Brehm et al, 2000)

Tailoring of ERP software as discussed in this thesis is divided into two main categories, modification and configuration. Configuration is a way of tailoring by setting predefined package parameters to reflect organizational features. The term modification refers to changing the actual program code of packaged software to add support for business specific processes. The degree of change executed by modification is high, while the configuration often implies a low degree of change. Tailoring is the umbrella term for configuration, modification and a range of options in between. (Brehm et al, 2000)

Including tailoring, organizations are able to choose between three options of conforming to an ERP system in the implementation phase. Though implementation is not considered as an important part of the thesis the view highlights the close relationship between software tailoring and organizational adaption.

Figure 2. The figure illustrates three possibilities of aligning business to ERP systems. The core decision is whether to make adjustments to the software or adaption within the organization. (Brehm et al 2000).
2.3 Business processes

A process is a collection of a structured set of activities and decisions to perform a certain task. According to Davenport business should be viewed not in terms of functions, divisions, or products, but of key processes. Processes are the things businesses do to produce value for its customers. (Davenport, 1993) Davenport explains a process as:

"a structured, measured set of activities designed to produce a specific output for a particular customer or market. It implies a strong emphasis on how work is done within an organization, in contrast to a product focus’s emphasis on what. A process is thus a specific ordering of work activities across time and space, with a beginning and an end, and clearly defined inputs and outputs: a structure for action” (Davenport, 1993)

![Figure 3. A set of activities are forming a business process. The purpose of processes is to lead to an organizational goal.](image)

2.3.1 Distinguishing processes and activities

According to ISO-9000:2005 a process is defined as: "Any activity or set of activities that uses resources to transform inputs to outputs can be considered a process" (ISO-9000:2005)

This means every process is considered an activity. However it is not true that every activity is considered a process. In this thesis processes and activities will be used as synonyms, though there might be differences in granularity.

2.3.2 Processes in a value chain

A business is a collection of activities that are performed to fulfill a business goal. All business activities can be represented using a value chain (Porter, 1985). A business’ value chain is a reflection of business history, strategy, approach to implement the strategy and the underlying economics of the activities themselves. (Porter, 1985) Porter’s value chain identifies two different kinds of activities, primary activities and supporting activities. By isolating activities they can be investigated in a technologically and strategically distinct manner. These sub activities are the building blocks of an organization.

**Primary activities**

Primary activities are the ones involved with the actual core of the business. In producing organizations primary processes are those processes responsible for the physical product, from raw material, too end customer as well as after sales assistance. Activities are spanning from logistics, operations, marketing and sales, and service. (Porter, 1985)
Support activities
Support activities supports primary activities as well as other support activities. Support activities supply the foundation on which the primary activities can exist. Support activities include providing resource input, technology and other infrastructure, and human resources. (Porter, 1985)

Primary activities are the ones creating direct business value but this would not be possible without the existence of supporting activities. Supporting activities are the enablers which are not leading to immediate creation of business value, but rather indirectly through other activities.

![Figure 4](image_url)

Figure 4. Figure describing Porter’s value chain. The value chain is divided into primary processes and supporting processes. Through the value chain business value is generated. Margin is the difference between total value and the collective cost of performing the value activities. (Porter 1985).

### 2.3.3 Business process re-engineering

Business process re-engineering (BPR) is an organizational analysis approach to redesign business processes. (Beynon-Davis et al, 2009) The aim is to change business activities which will lead to increase in organizational performance. The re-engineering process can be divided into five phases. Three of the phases consist of unfreezing current activities, identifying inadequacies and planning for new ways of doing things. The last two phases consists of freezing activities, by specifying new processes and implement those processes accordingly. (Beynon-Davis et al, 2009) (Davenport, 1993)

Business process innovation (BPI) is the means by which organizations radically changes its activities. Business process innovation starts off with a clean sheet and aims to make both structural and cultural changes within the organization. The risks associated with BPI are high. The most common enabler of innovation over the past years is considered to be information technology. (Davenport, 1993)
2.3.4 Process control

Organizations that implement a standardized system aim at formalize and standardize their processes. Through standardization organizations are reducing the internal control over business processes. (Marcotte, 2008)

2.4 IT and organizational change

To enable a discussion on organizational change a substantial theory, including concept’s definitions and normative orientation, is needed. Markus and Robey (1988) are supplying an opinion on the matter in the article Information technology and organizational change: Causal structures in theory and research. The authors point to the need of a structured theoretical model. The model suggested is three dimensional, implying a three folded view of the problem. The three dimensions suggested in the theoretical model are causal agency, logical structure and level of analysis. These dimensions are supposed to clarify the underlying causal structure of organizational change. (Markus & Robey, 1988)

2.4.1 Causal agency

In the causal agency dimension the nature of causality is recorded. The cause of change is identified to emerge in one of three ways. The change is considered initiated by a causal agent having causal influence on elements of the organization. The casual structure can be illustrated as a relationship of dependent and independent variables for each dimension. (Markus & Robey, 1988)

Technological imperative
In the technological imperative change is cause by external forces. These forces are considered exogenous and impose constraints on the behavior of individuals and the organization.

Organizational imperative
The organizational imperative is concerned with the acts of people and the alignment with organizational objectives. The organizational imperative assumes an almost unlimited choice over technological options and control over the consequences of the choice made. Choice occurs according to a set of consistent preferences, prior to the action. Action is considered goal oriented.

Emergent perspective
In the emergent perspective change is emerging from the interaction between people and information technology. Consequences emerge from complex social interactions. The interplay between conflicting objectives and preferences are a central concept of the emergent perspective.
2.4.2 Logical structure

Logical structure is the second dimension of the theoretical structure. In this dimension a distinction between variance theory and process theory is made. The theory applied in this thesis is process theory. To understand the implication of the choice of theory a brief discussion of the differences of two theories are outlined.

The main difference between variance theory and process theory is the view of the relationship between logical antecedent and outcome. In variance theory the so call precursor, cause, is a sufficient and necessary condition for the outcome. In process theory the precursor is considered insufficient to cause the outcome, but it is considered necessary for it to occur.

The mentioned difference of the theories has various implications. In variance theory, the cause of the precursor is variable and continuous, implying, x is a necessary and sufficient precursor of y, more x leads to more y. In process theory the relationship between cause and effect is considered as a so called “change of state phenomena”. Outcome is considered discrete implying, adding more x does not necessarily lead to more y. (Markus & Robey, 1988)

Process theory addresses the problem of complexity of causal relationships. They support generalizability and prediction whilst allowing for outcomes to be considered likely but uncertain under some conditions and unlikely under others. (Markus & Robey, 1988) The properties of process theory make it suitable for studies of IT and organizational change.

2.4.3 Level of analysis

Within the theoretical framework of Markus Robey there are three prominent entities, individuals, organization and society. The prominence of the three entities in the conducted research is affected by the level of analysis. Level of analysis is popularly divided into macro and micro. The applied level of analysis defines the boundaries of what is reflected within a given context. To draw relevant conclusions from studies of IT and organizational change a reflection of level of analysis is needed.

2.4.4 Why change

Changing business processes is made to attain increased business output. Though the link between IT investments and profitability has not yet been satisfactory proven, management decisions involving IT have been found critical for the level of return achieved by the organization. Capital employed within the organization intended for improvement of managerial practices is a key factor of the investments’ returns. (Dedrick et al, 2003)

Whilst failing to prove a link between IT and profitability a link between IT changes and skill level of employees have been found consistent. The link implies that organizational change through IT leads the shift towards higher-skilled workers. The process of increasing skills through change is referred to as skill-biased technical change. Higher skill in combination with technology advances reduce worker headcount leading to continuously high output through lower input. (Dedrick et al, 2003)
2.4.5 Reviewing factors of change

The discussion on organizational change and IT is often involving IT investments. According to Dedrick et al. (2003) there are mainly two factors influencing change through IT investment. First, the potential for an organization to derive benefits from an investment is dependent on market position, rigidities in cost structures, brand recognition and managerial abilities affecting strategic options. These factors have the ability of change over time as the organization evolve, but cannot be easily manipulated in the short run. The factors introduce limitations on change where these factors are not aligned with emerging opportunities. Second, the organizational structure including, strategy and management practices, can influence these factors through control systems, process redesign and training. (Dedrick et al, 2003)

“IT is not simply a tool for automating existing processes, but is more importantly an enabler of organizational changes that can lead to additional productivity gains.” (Dedrick et al, 2003)

2.5 Summary

In the theoretical framework section several theories have been outlined. The framework begins by putting information technology (IT) in a context of the organization. The context definition is necessary to proceed with a meaningful discussion of further elements of IT and organizational change. A set of relationships between IT and a social context within an organization have been suggested. Implications of IT and business value has also been addressed, stressing that the ultimate goal of IT in an organization is to provide some sort of performance improvement.

The construct standardized system has been explained. These systems are generic and can be adopted by various organizations with little or no modification. Standardized systems are implementing a number of best practices. Best practices are proven techniques, methods or processes. Standard systems and best practices are properties of an ERP system. ERP systems are large IT resources in organizations. These systems are imposing standardized processes on organizations. The systems are defining part of the organization by defining some business processes. Two ways of tailoring ERP systems have been suggested. The purpose of tailoring ERPs is to get a better fit to the business environment.

A definition of a process as activities receiving an input, transforming it, and delivering an output has been stated. Processes are discussed as the things organizations do to deliver value. Processes can be of various types. In this thesis they are divided into primary and supporting processes. Primary processes are those processes contributing to direct business value. The interdependency between processes has also been investigated. A process is considered part of a larger context meaning that changes in one process may affect related processes. The matter of interrelated processes is important for business process re-engineering (BPR). Through BPR processes are transformed changing the way business is conducted. When BPR is considered vast, business process innovation is a more accurate term. Under the last headline of the process section the possible reduction of internal control through process standardization is acknowledged.
The view of organizational change is presented within a theoretical framework of causal structure. Applying Markus and Robey’s (1998) theories overlooks other important theoretical implications on organizational change. The motivation for such a narrow approach is the possibility of applying a single consistent theory in empirical studies. Awareness of the practical limitations of the approach is raised.

Under the IT and organizational change section a theoretical model by Markus and Robey (1988) has been outlined. The model suggest a three dimensional view to investigate the underlying causal structures of organizational change. In the causal agency dimension causal agents having influence on elements of the organization are identified. When researching change it is crucial to recognize these agents as these influences and initializes change. The logical structure dimension is targeting an understanding of the change activity. It suggests two perspectives from which change can be considered, variance theory and process theory. Process theory, as applied in this thesis is considered most suitable for the complexity of organizational change. Rounding up this section is an outline of level of analysis. Level of analysis is affected by the conductor’s bias. Finally the discussions of Dedrick et al regarding the problem of evaluating IT change in economical terms have been accentuated.
3 Methods

The methods section will describe the research assumptions on which the thesis is built. The methods section is to reflect a satisfying research approach. The goal of this section is to construct a framework which assures that the generated knowledge is structured and satisfy scientific conditions. The methods section defend the validity of the research conducted and give an understanding on the perspectives applied.

This thesis takes an interpretive perspective. The paradigm allow multiple subjective realities, accepts social constructs, and different interpretations of reality. The interpretative paradigm addresses the problem of capturing complexity of real life situations. (Oates, 2006)

3.1 Research strategy

The knowledge collected in this thesis is characterizing and explanatory. The research strategy adopted to collect this type of knowledge is an explanatory strategy. An explanatory strategy aims at explaining and understanding causal relationships between variables. (Oates, 2006) By applying an explanatory strategy the causes and effects of standardization and organizational change can be studied.

The data generation methods of the thesis are exclusively of qualitative character. The explicit choice of a qualitative method may impose limitations on the generalizability of the results. Focusing strictly on a qualitative method is assumed to improve the quality of the data generation process. A multi qualitative method including interviews and document studies will be used.

3.2 Data generation

The empirical data is collected through document studies and interviews. The choice of literature studies as a data collection method is made because of the accessibility of large volumes of empirical material. Using interviews allow a personal, interpretative, instrument of collecting data. Under the following section the collection, analysis and presentation of data will be presented.

3.2.1 Literature review

The literature used when stating the theoretical framework is attained by searching various literature databases. The primary search service used is LIBRIS. LIBRIS is the Swedish research library society’s collective catalog. The second most used search service is Google Scholar. Google Scholar list research literature from various disciplines and sources. The third source of literature is the university library of Ekonomikum, at Uppsala University.
When searching for relevant literature the phrases used are: organizational change, IT AND organizational change, standardized ERP systems, business change, IT AND organization, standardized systems, business processes to mention a few.

### 3.2.2 Document studies

Document studies are studies of a human imprint on an object. In this thesis the documents considered are in printed form. The documents studied are primary sources and they are purposively made public for readers. (Bell, 2006)

Documents considered in this thesis are official product material of SAP ERP. The material is access through the SAP web site and is publicly available upon free registration. The SAP ERP documents are mainly intended as marketing material to attract new customers and influence existing customers to extend their SAP functionality. The studied documents are the most prominent documentation of SAP ERP available at the SAP web site. The documents are considered a vital part of the SAP ERP marketing communication. The documents are considered the SAP official view of their ERP solutions. Under these assumptions the purpose of the documents studied is to give the SAP view of properties of their ERP solutions.

The documents are analyzed in a selective manner. Key words and key phrases are searched for within the studied documents. By applying a strategy of analyzing the documents the data generation is structured. The side effect of the phrase searching strategy is that it may overlook a wider context. Further limitations of the document study are the influence of bias. The interpretation of the studied material is affect by bias as is the selected search phrases. The use of interviews will partly repel the limitations found in the document studies.

The reason of using document studies is to collect official, qualitative data, to be applied in the analysis. Findings from the document studies are used as both empirical evidence and as inspiration for the interview design. Using findings from the literature study in the designing of questions for the interviews make the empirical study consistent.

The explicit consideration of SAP ERP in the document study is made, as earlier noted, to enable consistency in the data generation and data analysis phase. For the final results of the research it is indifferent whether the studied system is SAP or any other standardized system, due to the properties of which these systems stands for.

### 3.2.3 Interviews

Interviews are a kind of conversation between people. One of the main benefits of using interviews is the flexibility of following up on prewritten questions. Interviews capture more information than just the answer to a survey question and words in a sentence. Some limitations of interviews are the time consumption and the possibility of bias based guidance. Interviews are a good complement to surveys. (Bell, 2006)

The data generation from interviews is constituted of three semi-structured interviews with expert in two different roles. The expert roles are SAP consultant and IT official in a SAP
business organization. The reason of using interviews is to collect opinions from various sources on the studied problem.

Interview formation
Formulation the interviews are important for the validity of the information gathered from the respondents. By pinning down the core of the research area in the interview questions, the conducted research is improved. The interviews conducted for this thesis are based on two questionnaires, one questionnaire targeting the business organization and one questionnaire targeting the consultant perspective. Both questionnaires address the formulated theory as well as the strategy of deriving an answer to the research question. The structure choice of the interviews is following the pattern, information about the respondent, respondent experiences of the studied phenomena, respondent view of the theoretical foundation. By this structure alignment with the theoretical framework as well as personal experiences and opinions are encouraged.

Interviewee selection
The selection of interviewees is highly important for the quality of the research. Access to the right respondent does significantly raise the validity of the study conducted. Here follows a brief discussion of the interviewees and why they are relevant in this research.

Representing the IT-organization is Jan Mutzell of Vattenfall. Vattenfall is a public company with national commitments. Vattenfall have recently transformed their ERP implementation which make it interesting from two perspectives, one being before the change and the other being changes in the future. Vattenfall relies heavily on efficient use of IT, making Vattenfall an organization dependent on successful change. Mutzell is a solution architect with SAP ERP as his main responsibility. He is a former member of the SAP’s Swedish user society (SAPSA). Mutzell has both strategic and operational insight into the Vattenfall organization.

Malin Lindström of Accenture and Thomas Therborn of EDB are the candidates representing the consultant perspective. Accenture and EDB are established, global companies with far reaching experience of SAP. When selecting interviewees of the consultant perspective it was important to get interviewees of great experience which was achieved by the contact with Lindström and Therborn. Lindström is an Accenture Manager with a total of six year experience from working with big companies, implementing and maintaining SAP systems globally. Therborn has SAP experience since 1994 when he was an employee at SAP Sweden. Today he works as a SAP unit manager with responsibilities for 40 consultants and as key account manager with responsibility for one of EDB’s biggest customers. Both have experience from various occasions involving organizational change in a standardized IT environment.

Discussion of interview relevance
When evaluated, the business organization is considered the perspective of highest relevance among the conducted interviews. The reason is that the business organization is directly affected by the implications of change, making Mutzell’s opinion highly important in the research context. As Mutzell has long experience from SAP, within organizations and through SAPSA, he is considered highly suitable as representative of the organizational perspective.
Of the two consultant interviews the interview with Therborn is considered the one of highest relevance. Therborn was one of the first employees of SAP Sweden back in 1994 and he has over the years collected great experience from working with SAP. The interview with Lindström is also considered highly relevant as she, through her position at Accenture, has global experience from working with SAP. However she does not possess the same experience as Therborn as he has been working with SAP for almost 20 years.

3.2.4 Data generation critics

The main limitations of the data generation are the quantity of studied documents, the number of interviews conducted and the variety of interviewees selected. First considering the studied documents it could be argued that the focus of few public documents is hardly a thorough document study. The literature study is however first and for most intended to give an overview of the properties of the standardized solutions. It works like an extension of the theoretical framework by zooming in on SAP ERP. The document study is insufficient alone but enhances the empirical quality in combination with the interviews. The SAP material is acknowledged to contain directed opinions. The critic of such interest inflection is addressed by the use of interviews as a multi method approach.

The motive of selecting a range of roles for the interviews is to collect more perspectives of the studied area. While limiting in depth it reduces the relationship independence between working role and the problem studied. By selecting high skilled interviewees with large experience the problem of under saturation is addressed. The answers from each interview is claimed to be representative for a group of people as the respondent is carefully selected. The careful selection does not however eliminate the problem of under saturation. For the business organization perspective at least one more interview would raise the quality of the empirical findings.

3.3 Data analysis

There are two main research analysis methods, qualitative and quantitative analysis. Qualitative data analysis is applied for this thesis. A qualitative analysis implies grounding theories in empirical observations of a studied context. (Oates, 2006)

3.3.1 Document analysis

When analyzing the documents key phrases have been extracted. These phrases are together forming the empirical findings of the document study. The context of the extracted phrases has been considered. The extraction is necessary to bind certain phrases together building an interesting and valid information basis.

3.3.2 Interview analysis

The interviews have been analyzed both in written key words collected during the interview and in a voice recordings of whole interviews. By combining written word and recordings misinterpretations and missed information are minimized. The key words are words
accentuated by the interviewee or words perceived as important for the study according to the interviewer. The recordings are played back and sentences, paragraphs and quotes are collected while listening through the recording. Because the interviews were semi-structured information was not collected in a linear manner. By puzzling data together interesting relationships and views of the interviewee could be found. The data presented in the empirical findings are value neutral from the writer’s perspective. The aim is to depict the interviews in an unformatted version as good as possible. The information stated is intended to reflect the actual opinion of the interviewee, without inflection of the researcher.

In the analysis the empirical findings are analyzed by the writer. Here relationships between theory and empery are acknowledged as well as the alignment of opinions between the interviewees and studied documents.

3.4 Data presentation

The presentation is divided into empirical finding and analysis. In the empery the researcher is neutral, trying to retell the story of the interviewee. In the analysis the researcher take a more prominent role. Here the results are discussed in an interpretative manner. For the data presentation it was important to first reflect on the outcome of the research in contrast to the research question. When using theoretical knowledge combined with the empirical findings an answer to the question could be delivered. The answer is presented by discussing the views of the different perspectives, trying to find common values, and contradictions to enclose the complexity of the research question. By discussing the retained knowledge from theory and empery the findings are valid in such extent that it could be assumed similar answers would be given by other Swedish SAP consultants. Regarding the business organization it is not possible to generalize due to under saturation in the interviews. For this particular research the answers are not universal. The methods limitations restrict the answer to be guiding, rather than universal. The answer is advised to be seen as introductory to a closer, more specific study of the area of standardization and organizational change.
4 Empirical findings

Under this section the results from the empirical work will be presented. At the beginning the vendor perspective is reviewed. The empirical data for this section is collected from the SAP official homepage. Following the vendor review are the experts’ interviews. From each interview a perspective is added to the full understanding of the studied area. The empirical material is intended to depict a multi-perspective view of the illuminated problem.

4.1 The vendor perspective

In the vendor perspective a review of the official opinion of SAP about their solutions will be outlined.

4.1.1 SAP ERP

SAP ERP is an application targeting large and mid-size companies. According to SAP they provide the best business insight and enable operational excellence and innovation. SAP ERP provides a foundation on which flexible business processes for today and the future can be built. SAP ERP is claimed to provide functionality supporting a global orientation, with a package flexibility which will lead to sustainable competitive advantage and organizational growth. Further SAP ERP breaks barriers allowing for extended, end-to-end processes to partners, suppliers and customers.

The SAP success recipe

To meet challenges of today’s competitive environment SAP argues you have to be able to respond and transform quickly, cost-effectively and without sacrificing profitability, transparency or internal control. To meet these requirements SAP suggest the use of IT support that is flexible, robust and secure. Through streamlining business processes and operations with an integrated, industry-specific ERP solution, business success will be reached.

Interaction with business processes

According to SAP, SAP ERP “…is a world-class, fully integrated application that fulfills the core business needs of mid-size companies and large organizations across all industries and market sectors.” SAP ERP supports present business processes and helps organizations understand how these work. The platform supplied supports continuous growth and innovation through a software oriented architecture (SOA). More business value is claimed to be realized from existing IT investments by developing new business solutions as defined by the platform.

SAP ERP is said to facilitate alignment of people, information and business processes across organizational boundaries. The software oriented architecture enables organizations to refine
business processes continuously, addressing quick organizational responses to new opportunities and environmental challenges.

“…SAP deliver innovation the way customers want it – in a continuous fashion, but packaged in a way that customers can consume it at their pace, and without impacting their core operations.” (Tobias Dosch, Senior Vice President, SAP Suite Solution Management, SAP AG)

SAP alignment with organizational change

SAP does not provide a distinct discussion on the possible limitations on change as imposed by their ERP system. They give examples of factors making SAP ERP suitable for coping with issues arising from organizational change. They stress the importance of integration, and claim organizations reach flexibility through the SAP ERP standardization leading to high efficiency and adaptability. The time horizon is mainly focused at the present arguing that organizations gain fast access to functionality needed through present default packages. Thinking forward SAP claims to be able to add new functionality as business requirements evolve. SAP also state that through tailoring the ERP package can be adapted to unique business requirements, low in cost and disruption free.

According to SAP, SAP ERP is a robust application that grows with the business. SAP ERP provides efficiency and flexibility through standardization. SAP discourages the use of bureaucratic processes and organizational structures as these will reduce the effects of the ERP system leading to overarching “IT creativity”. Keeping former business processes in adopting SAP ERP maintain unnecessary workload. They advise a complete adaption of the SAP ERP business concept. (Insight)

When implementing SAP ERP, SAP acknowledge the problems of not first conducting process redesign. They claim that rather than rework the system to accommodate existing processes, redesign of the same processes would be preferable. SAP claims that this is the way of going about real organizational change. Working the other way around would just add to the workload. SAP further acknowledge that process change is longitudinal and should be carried out continuously, ultimately resulting in standardized business processes, applications and data.

By the look of it, adaption of SAP ERP seems to call for great adaption within the business organization. SAP does not dispute that adaption of SAP ERP calls for a major transformation of current business processes.

4.2 The consultant perspective

In the consultant perspective two consultants have been interviewed. The consultants are Thomas Therborn of EDB and Malin Lindström of Accenture. The companies are two global consultant agencies. Malin Lindström is an Accenture Manager with a total of six year experience from working with big companies, implementing and maintaining SAP systems globally. Thomas Therborn has SAP experience since 1994 when he was an employee at SAP
Sweden. Today he works as a SAP unit manager with responsibilities for 40 consultants and as key account manager with responsibility for one of EDB’s biggest customers.

4.2.1 Lindström - Accenture

SAP is always integrated as a part of a bigger context, Lindström says. SAP is not viewed as a standalone system with a straight and uncomplicated relationship with organization and business processes. When working with SAP systems one has to be considerate of the surrounding environment.

Lindström views IT as increasingly important. IT is an integrated part of the business nature of today and it is an important tool for meeting the escalating demands of customers. IT is a way of connecting more closely to customers. Lindström extend the view of IT by considering the value generated, arguing value is created when the right persons receive relevant information at the right moment.

Lindström finds one of the key benefits of a standardized system, that you will get a modern system over time. This is due to the vendor support of new releases and processes. She compares it to custom systems which are highly modern when going live but is hard to maintain and update over time. In the end custom systems are very hard to overlook leading to more direct maintenance costs.

Best practices give stabile workflows, according to Lindström. Through the adoption of best practices and the choice of standardization, personal set ups and thereby personal dependencies are limited. In that sense, Lindström says, standardization is really adding to flexibility and enabling change.

The generic characteristics of SAP and the specific industrial solutions fit most business models. Lindström finds that only a few organizations, mainly public companies, have highly differentiated business processes which are not supported by the SAP software structure. The standard structure is covering needs as well as designing custom workflows is often, when evaluated, not outperforming the standard workflows. However some individual workflows may be inevitable because of their special and critical nature.

“Customizing workflows are like inventing the wheel once again. After consideration the decision often falls on the reliability of the best practice solution.”

Addressing adaption, Lindström says that configuration is necessary. Configuration relates the organizational characteristics to the underlying software. Without a specific set up through configuration the system will work ineffectively within the organization. Making more radical changes in the SAP software is discouraged. Lindström instead argues in favor of building extended functionality by calling function module supported by SAP. By using these modules the vendor support is kept intact as well as the fundamental program code.

Lindström argues that standardized systems are not limiting possibilities to change. She claims that there are really no limitations on the extensibility, as long as there are sufficient resources supporting change. These resources are dependent of the management support.
Building on this statement Lindström extends the discussion by saying that organizational change through IT is really a strategically decision. The decisions are taken at management level. Strategic decisions reflect favorable effects of change and IT is considered a mean of reaching these effects.

Changing to conform to a standardized system is necessary to reap the full benefits provided. In this sense change is a matter of facilitation. According to Lindström SAP support facilitation because it is built on continuously evaluated best practices. Conforming to the system is thereby a way of facilitating business processes. When conforming to standardization the main hazard is the application of its use rather than the system itself. The fundamental system is supporting flexibility but the organization can impose their on limitations by carelessly formulated processes. It is important that the business strategy is well formulated and that processes are harmonized throughout the organization.

Lindström acknowledge that in every single person’s opinion the SAP system may be found suboptimal. Tough, thinking in a collaborating sense the structure might be the only thinkable way. The need of harmonizing is highly prominent. The harmonization through standardization can be extended further when considering the demand for internal control. Here again Lindström finds standardization actually increasing control due to the increase of reliability in the system structure. By standardized procedures and practices organizations can maintain coherent definitions cross functions. In a time where businesses go towards a centralized thinking harmonization gets increasingly important.

Lindström does not find standardized systems are a limitation on change, but the systems themselves have to keep up with organizational change. Organizational change, though not limited, has to be recorded in the system. By reflecting change through adapting the system to the organization, the effective capacity of the system is increasing. The system adaption is a consequence of organizational change. Lindström finds it important to appreciate the effects of the change process, simultaneously change the IT system as processes are re-engineered. Processes are exchangeable, but they have to be reflected in a consistent way.

“Standardized systems are a little heavier when it comes to quick adaption.”

According to Lindström the purpose of using SAP is integration of business processes and the following efficiency gains. SAP is robust and reliable which is suitable for organizations with critical workflows. In big organizations quick change is not relevant due to the characteristics of their business. Big organizations’ main concern is rather product development than process change. It is arguable if, in these cases, the rigor of a standardized solution is considered a limitation. Fact is, transforming fast is both hard and expensive.

Viewing the problem more abstractly the limitations have more of an innovative impact. Lindström believes that through the adoption of best practices some creativity and free thinking are restricted. However, applying best practices gives the confidence of working like the branch leaders.

Change isn’t driven by technology. It is not desirable either. New technology isn’t a sufficient reason for change.
4.2.2 Therborn - EDB

Therborn’s view of IT is that IT is a business enabler. IT has no actual value in itself. The use of IT is intended to support various business functions. Therborn compares IT’s role within an organization with the role of electricity. Electricity is necessary for the organization but it is of no value outside a context. IT is considered a commodity. To derive business value from IT Therborn recognizes that IT and especially the IT unit has to know its role in the value creation. When IT is put outside the organizational context it could not contribute to value creation. IT should be thought of from a business perspective and designed to support business processes, on organizational conditions.

Deep down standards are good Therborn thinks. They form a consistent structure. However sometimes things are called standard which really are not. Standard could be used as a “buzz-word” with an unclear definition. Who says it is a standard and who is the standard intended for? In a sense standards are often theoretical, seldom applicable in practice. Here Therborn sees a distinction between standards and best practices, which he thinks of as a pragmatic standard. Therborn means these best practices are those integrated in the ERP standard, forming for example industrial best practices.

Therborn finds standards supportive of most businesses. There are very few cases where they are not applicable. Often when customers are skeptical to standardized systems it is because they fail to estimate the uniqueness of their organization. Customers are seldom as unique as they at first believe. Part of the skepticism towards standardization is also found to originate from lack of knowledge about the system’s scope. For example when extended functionality is search customers forget to first look inside the existing systems. This does not suggest adaption is not needed. Adaption is needed to enhance part of the business where a competitive edge could be reached. Adaption enlarges the little differences with competitors giving an important edge. Few businesses, if any, work efficiently without any adaption at all.

Talking about degree of adaption Therborn has some interesting rules of thumb. Configuration he considers necessary in 100 % of the cases. Modification on the other hand should be performed with care. Modification through programming enhancement functionality on top of a standard structure is advised. Therborn suggests that, if more than 20 % modification of the original code is needed, business processes should be evaluated. It is likely that business processes are uncommonly defined and could be standardized. The question of the uniqueness of the business has to be evaluated. Tough not commonly suggested organizations with need of above 20 % in modification should make changes in their business to better reflect a standardized business process workflow.

Therborn considers the nature of business not being that different today as compared to before. What is differing is the tendency to split processes into smaller parts. Some parts are handled internally while others are outsourced to external parties. When business is divided over several parties it gets increasingly important to overlook the complete picture. Maintaining separated processes is more important now than ever before. The process separation brings flexibility benefits. Processes get more fluent. It is easier to make changes in parts of the process chain than to change entire processes. Though talking about the same process, with a divided process structure the flexibility is increased, giving possibilities of quick action and change.
In the transition towards more fluid and flexible systems Therborn finds IT a driver. IT is driving technology making mobile solutions, security and accessibility better whilst contributing to cutting cost. IT is in this context a driver for process change which in turn is driven by economical forces aimed at slimming down the business.

The main reasons for using SAP are transparency and control according to Therborn. SAP stands for a foundation on which coordination is facilitated and activities are harmonized. When using an integrated system uncertainties are reduced leading to less confusion and better decision basis. SAP provides this desired transparency. Therborn finds flexibility and control to be contradictory. More flexibility leads to decrease in control. On the other side of the coin he acknowledges that flexibility could be based on control. By obtaining control, decision flexibility is enhanced. Processes of the SAP system are however not flexible. They are supposed to be carried out in a predefined way, but the structure gives organizational flexibility due to the ERP system controlling properties.

Therborn thinks EDB are good at delivering adaptable SAP systems. He says that like good carpenters they are passionate about their profession. The implementation phase is of importance for the future. It is during this primary phase directions are taken out for the future of the business. Therborn says the main limitations of the SAP systems delivered by EDB are inherent to the SAP software. Process management within the system is often rigorous. The rigor in itself does not have to be limiting if business are willing to accept and adopt the standards. Through SAP control is elevated whilst part of the flexibility is restricted. Once again this flexibility loss mainly affects process workflows. Changing interface and parameters are easily made.

Therborn can not overlook the fact that standardization to some extent limit change through the increased control integrated in standards. SAP is deeply integrated in business, and processes have to be conducted in an imposed manner. Standardization will create frustration and conflict but it also assures consistency and information integrity. Changing system defined processes is not like pushing a button, change needs to be coordinated and performed in symbiosis with organization. Old resources have to be preserved or re-mapped to the new model, transactions and processes are changed not only in the software and organizational theory, but also in practice affecting people.

"SAP is either 1 or 0, either on or off."

Change, while limited by standardized systems, is equally limited by business strategy and management. Organizations appreciate the severity of making change and avoid making irrational change. Change is about influencing and affecting “the right things”. Therborn says everything is doable but SAP is in the back of the head as a limiting factor. Performing change calls for strong leaders, and a skilled IT unit who knows its role in the organization, as a supporting function.

"Standardization can limit innovation. But actually there is just a pile of code stored somewhere."

Rounding up the discussion Therborn questions the role of organization. Change can sometimes be a matter of stirring around in the pot, in an effort of reducing conflict. In this
stirring IT can be a prominent argument. Changing IT systems drives changes in business in general. If business change is not favorable management use IT systems to take the blame for it. ERP systems could be used as a catalyst to force behavioral changes, which by other means could be hard to achieve.

### 4.3 The business organization perspective

Speaking on the behalf of the business organization is Jan Mutzell of Vattenfall. Vattenfall is a public power company subject to government regulation. Jan Mutzell is a solution architect with SAP ERP as his main responsibility.

#### 4.3.1 Mutzell - Vattenfall

“The question might be put the wrong way. It could very well be a matter of problems changing the systems because of lag in changing business processes."

Today Vattenfall are on the way of consolidating their systems environment. The purpose is to centralize and reach collaboration benefits. To achieve centralized collaboration the shared service center (SSC) model is applied. Cross functional and cross border consolidation is important for the efficiency of the use of IT within Vattenfall. Mutzell advises IT systems should reflect organizational policy. He recognize that the business characteristics and branch of the organization is somewhat defining the conditions for the IT environment.

SAP is found everywhere within Vattenfall. It is highly integrated into the organization and it supports most functions. When making the transition towards a SSC Mutzell finds it crucial to harmonize business processes. Harmonizing processes is more important than just re-configuring the IT-systems. Mutzell recognizes that increased collaboration would lead to scale benefits. Just through collective purchases cost could be cut. To enable these types of purchases, processes and key definitions have to be synchronized across the organization. The synchronization issue is not a matter of limitations in the SAP system but rather a question of coordination at an organizational level. Using standards make collaboration possible.

Mutzell finds the SAP structure to be a bit too rigorous. The reason is that the foundations of SAP have been around for 20 to 30 years. The criticism of the SAP rigor is partly dismissed because it stands for a structure that actually exists and works. Business now days, with some exceptions, are conducted the same way as when SAP was once constructed. The rigor is in that sense reflecting the environment the system aims at supporting. All ERP vendors are aware of this which means that ERP systems in general are not that different. It is about collecting data from business processes and trying to present information in a tasteful way. Though business fundamentals stay the same Mutzell acknowledge areas where improvements are made. Today these improvements are focusing on extracting relevant information from the data stored. This information is used in reporting and analysis. Rapidly accessible and tasteful analysis data is what organizations need.

“Almost everything you want to do is there, the information needed and wanted is in the system. It’s a matter of extracting this information in a tasteful manner and to sustain flexibility in the analyses. Analysis support is what is important.”
Standardization is a mean of coping with complexity. In an organization with over 2000 systems it would be impossible to coordinate work without standards. Standards are a prerequisite for efficiency according to Mutzel. Best practices Muntzell finds a bit unclear in definition. In his opinion best practices are solid and secure solutions lasting over time. One limitation of applying best practices is the difficulties of creating a competitive edge.

Standards may not be as limiting as the individual appliance of the standard. As the SAP systems are set up to fit the working organization practical obstacles are introduced. Mutzell says that the foundation of a SAP system is almost never the problem. He argues the problem is really strategic. Slowly formulated business strategies and business political agendas might be the most obstructing change factors. In the end it always comes down to economical factors, such as cost reductions. When new decision makers enter, organizational effects are strived at. In such cases IT could be used as leverage to reach organizational change. If the change process is poorly conducted it will have negative implications throughout the organization, and the blame might fall on the IT systems. Mutzell acknowledge strategic direction as one of the main catalysts of change within Vattenfall and that insight of the role of IT is important.

The flexibility of SAP, Mutzel think is sufficient. He says that the foundations of SAP are the same over all industrial solutions and that it is rare that organizations have distinctly different demands. When extended functionality is needed there is a best in bread solution to fill that need. The integration could be problematic if data is badly harmonized. Mutzell once again points at the importance of harmonizing data, keeping definitions consistent within and between systems and workplaces.

“If you are a small player you can allude on flexibility, reaching small customers. The big players, SAP and others, satisfy the specification of requirements fairly well.”

Talking of ERP systems and adaption Mutzell thinks it is important to split the system into layers and components. He says that configuration is standard and interface adaption is common. He strongly advises against changing the software through modification. It changes the state of the entire system. To add functionality or to combine systems Mutzell speaks of enhancements, which builds on system standards and user exits. User exits’ enables synergy between systems.

Mutzell means that Vattenfall have two types of processes. Key or value creating processes, which are mainly plant processes, and supporting processes. Mutzell thinks Vattenfall are able to change their business processes in the present IT environment. He says one of the main enablers of process change is the standardization. It creates a consistent foundation and facilitates the work towards a shared service center as is Vattenfalls current intention. Standardization is viewed as a success factor because it is not permitting. It makes business work and that’s the purpose of its use. Mutzell extends his view of the benefits of standardization in a discussion on security. He points out security as a vital part of the SAP system. SAP relates to cross country legislation, satisfying political demands worldwide. Security is much harder to maintain in a set up of many small systems. Even though SAP security does not come cheap it is manageable.
“Dull is what we want, it works.”

SAP support processes in Vattenfall to a good extent. There are a few, highly sophisticated processes that would be too rigid to carry out with SAP. The use of SAP within Vattenfall has recently been evaluated. The conclusion is to continue working with SAP as the corporate ERP system. If there in the future would emerge ERP systems building on a completely different technique, for example truly service oriented architecture, the SAP use would be re-evaluated. However a service oriented approach would constitute a shaky structure, even though every single component is of high quality.

“SAP is a German armored car, highly secure and reliable...tremendously solid.”

Mutzell ends with a reflection on the possible negative impact standardization might have on innovation. He finds that one can maybe get stuck in certain ways of thinking and miss opportunities by standardization. But without standardization you have not got a solid structure to work with in the first place. In the long run standardization might limit free thinking, but it also work as a prerequisite to create new things. Because of this SAP is not really the problem. The functionality and information needed is present. It’s about designing solutions to reap the benefits of it.

“There is almost no purpose of rebuilding [SAP systems]...data is stored some place, there is just a matter of processing it.”
5 Analysis and discussion

A foundation for analysis has been formulated throughout the preceding sections of the thesis. Combining the theoretical framework with the empirical findings a distinctive analysis of the research area is performed. In the analysis consideration is directed to the important findings of the empirical study. The analysis also considers what knowledge is somewhat universal having originated from various sources. Overall the analysis aim at breaking research results down into relevant and distinct facts.

5.1 Important findings

Considered the most important finding from the conducted research, due to alignment with the research question, is the fact that standardization is not perceived as limiting of organizational change. Rather standardization is said to supply a structure that is necessary to support change. This view is consistent in the empirical evidence collected. The most convincing promoter of the supporting characteristics of standardization is the business organization. The business organization states that business would be impossible to manage without the use of standards. Coordinating and harmonizing without standardization would lead to suboptimal practices radically decreasing the efficiency of the organization. The view is partly affected by the working branch of the organization as well as specific organizational characteristics. Standardization is perhaps mainly beneficial for organizations in a controlled business environment, which evolves more slowly. Emergent businesses, on the other hand, might suffer from lack of flexibility as a result of adopting standardized processes. Standardization supports centralization to a good extent. Centralization seems, according to Vattenfall and SAP, to be currently popular. The fact that standardized ERP systems seem to support a presently popular strategic structure might affect the research result. As mentioned in the theoretical section, IT infrastructure is supposed to support present and future direction. Acknowledging that fact, standardization is considered as supporting current organizations.

According to the consultants interviewed restricted flexibility is not the main reason to why organizational change is not executed. Rather organizational change is limited by strategic direction and financial insufficiencies. Changing software is just a matter of putting in an effort. As Therborn said, it is just a pile of code somewhere. The experienced consultant agencies are comfortable with making adjustments in standardized software. In their view, organizational change is not limited by standardization, due to multiple choices of extending functionality and other workarounds, such as user exits. Conflict is another organizational change driver. When conflict steams up, change is a way of coping with the conflict. In such cases IT arguments are commonly used as leverage to achieve organizational changes, whereas IT is also picked to take the blame when change projects fails.

SAP systems are deeply integrated into organizations. This is something SAP is aware of and they themselves say that, SAP provides a foundation of growth and development over time. The empirical findings suggest that organizational alignment with SAP business processes is partly achieved by transformation of current business processes. Though not advised in theory, it is inevitable not to transform the business to fit a SAP system. The imposed
alignment could in a sense be perceived as identity blurring, whilst the benefit is a structure continuously supporting business objectives. The ultimate decision of whether to conform or tailor is highly individual. As Therborn suggested IT is only a supporting resource and should not affect business decisions whether or not systems should be tailored. However SAP advises conforming to reap the full potential of SAP. Other factors are also to be considered. For example Mutzell stress the solidity of SAP security, which facilitates managing businesses. The knowledge learned from the discussion of organizational alignment or tailoring is in the end coming down to organizational preferences. What is the organizational view of IT and how is it used to support creation of business value? As Orlikowski & Robey suggested, IT is an antecedent and consequence of human action and it is built and used within a social context. The social context is in this case an organizational context. Extending the view of IT Markus & Soh presents a figure suggesting IT expenditures leads to organizational performance increase when it is appropriately used. This further consolidates the view of IT as a supporting resource.

Change is not only restrained by organizational obstacles inherited into the business but also by a poor innovative climate. By adopting standards innovation could be reduced according to both consultants. Mutzell of Vattenfall however does not think innovation is restrained by standardization. These contradictory opinions are interesting. Vattenfall as change inventors find no limitation, while the consultants, being executers, do. The contradiction is interpreted as uncertainty from the consultant side, about the perceived flexibility of the business organization. Because the business organization which is directly affected by organizational change does not recognize limitations on innovation, the perceived limitations of the consultants are rather considered a communicative problem. In the theoretical framework, Davenport acknowledges IT to be one of the drivers of innovation.

5.2 What it means

The research question which has been discussed in this thesis is:

Is the ability to change business processes affected by limitations in a standardized IT system environment?

In the research conducted, evidence have been collected that support the view that ability to change is not limited by standardization. The conducted research is not applicable universally but it provides good knowledge about the general view of the properties of standardization. This thesis should be read by people who want to get further insight about the characteristics of standardization. The thesis holds evidence that business and business information systems are good at supporting centralization and standardized business processes. The structure seems to be well aligned with the past, present and future of the business organization. Standardized ERP systems may be around for a long time, at least until the technology is improved so that truly service oriented structures are available. It should be in the interest of organizations to apply standardized practices and review the organization at all levels. The organizations being the best at optimizing every part of their business, thinking in terms of micro processes, and showing the greatest willingness to embrace necessary changes are the ones who will reap the greatest benefits from a standardized architecture. Accentuating the differences towards the competition will lead to a competitive edge and superior business value over time.
6 References

6.1 Literature


### 6.2 Documents


### 6.3 Interviews

Jan Mutzell, Solution architect - Vattenfall, 9/5 2011, 09:00.

Malin Lindström, Manager - Accenture, 9/5 2011, 12:00.

Thomas Therborn, SAP Unit Manager - EDB, 12/5 2011, 12:00
7 Appendix

7.1 Appendix A

Questionnaire: Business organization

About the interviewee
1. What is your position at the company and what are your main tasks?
2. For how long have you been working in this position?
3. What are your experiences of SAP?

SAP within the organization
4. What is the purpose of the SAP usage?
5. Have your company got a flexible and adaptable IT-environment?
6. What potential obstacles of change exist in your SAP system?
7. How do you feel standardization of a SAP system is integrated in the company?
8. Can the company change business processes in present IT-environment? Please develop your answer.

The IT view
9. What is the IT role in the business organization according to you?
10. How do you perceive business value is created by IT?

Standardized systems
11. What is your view of standards and best practices?
12. Are tailoring necessary? Please include the terms modification and configuration in the discussion.
13. Do you see any problems with branch specific solutions having generic properties?
14. Does standardization limit innovation?

Processes
15. In which way can IT be a driver in business process change?
16. How is standardized systems related to control and flexibility?

Organizational change and IT
17. What is the main reason of organizational change? E.g. new technology, strategic direction or social conflict.
18. What are the beneficial outcomes of IT driven organizational change? If economical, then why and how?
7.2 Appendix B

Questionnaire: Consultant

About the interviewee
1. What is your position at the company and what are your main tasks?
2. For how long have you been working in this position?
3. What are your experiences of SAP?

The SAP delivery
4. What is the purpose of the SAP usage of your customers?
5. Does your work lead to a flexible and adaptable IT-environment?
6. What potential obstacles of change exist in delivered SAP system?
7. How do you feel standardization of a SAP system is integrated in the companies?
8. Can the companies change business processes in supplied IT-environment? Please develop your answer.

The IT view
9. What is the IT role in the business organization according to you?
10. How do you perceive business value is created by IT?

Standardized systems
11. What is your view of standards and best practices?
12. Are tailoring necessary? Please include the terms modification and configuration in the discussion.
13. Do you see any problems with branch specific solutions having generic properties?
14. Does standardization limit innovation?

Processes
15. In which way can IT be a driver in business process change?
16. How is standardized systems related to control and flexibility?

Organizational change and IT
17. What is the main reason of organizational change? E.g. new technology, strategic direction or social conflict.
18. What are the beneficial outcomes of IT driven organizational change? If economical, then why and how?