

Understanding the relationship between Enterprise Resource Planning systems and 'Beyond Budgeting'

Benedicte L. Moritsgård

SNF



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by

Benedicte L. Moritsgård

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Forewords

This thesis is written as a part of the double degree program between Norwegian School of Economics (NHH) and Louvain School of Management (LSM), involving taking master degrees in respectively Master in Business Analysis and Performance Management (BUS) at NHH and Master in Management Science at LSM. The thesis is also written as part of the Beyond Budgeting research program at Institute of Research in Economics and Business Administration (SNF), and is financed by Statoil. Acceptance into this program has been a door-opener, making it possible to use Statoil as a case-object.

Studying the relationship between Enterprise Resource Planning systems and Beyond Budgeting, building on comprehensive theoretical as well as empirical research has been a challenging, but good, experience for me. Without assistance from Statoil, especially Carsten Falk Hammershøj and Bjarte Bogsnes who facilitated the whole process, this would not have been possible. My sincere gratitude goes to them and all interview participants.

In addition, I sincerely express my gratitude to my two supervisors; Rafael Heinzelmann (NHH) for providing me with the idea for the topic as well as remarkable guidance and constructive suggestions, and Yves De Rongé (LSM) for giving me valuable feedback during the final phase of my work. Further, I want to thank my family and friends, especially my fiancé Thomas, for the support throughout the whole process. Finally, a special thanks to Tasha for comments and proof-reading. Thank you!

Louvain-la-Neuve, May 16th, 2014

Benedicte L. Moritsgård

Executive summary

This thesis is an analysis of the relationship between Enterprise Resource Planning systems (ERPs) and the management model Beyond Budgeting (BB). During recent years, several companies have introduced the principles of BB because of a need for flexibility. At the same time companies invest heavily in ERPs because of a need for a standardized and stable information system. ERPs provides several advantages, but organizations can also experience challenges as a result of ERPs being sophisticated and formalized. This thesis aims at expanding our knowledge about the relationship between ERPs and BB, and further attempts to answer the following problem statement:

How do Enterprise Resource Planning systems limit or facilitate the use of Beyond Budgeting? What are the practical challenges of using Enterprise Resource Planning systems for the implementation of Beyond Budgeting? How do organizations manage/overcome these challenges?

There exists little theory on the relationship between ERPs and Management Accounting Innovations (MAIs), especially BB. Thus, this study is based on existing theory of the two concepts individually, as well as an attempt to connect them theoretically. In addition, the practical experience of this relationship is explored using a case study. In this regard, an especially interesting angle was found to be looking into how a company, claiming to successfully have implemented the BB-principles into their organization, has managed this relationship. Statoil is one such organization. In particular, studying Statoil is interesting because they already in 1996 decided to implement an ERPs from SAP, called SAP R/3, as the main platform for the entire organization (SAP, 2003). In 2005, they also decided to abolish traditional budgeting, and implement the principles of BB (Bogsnes, 2009). Further, in 2010 they expanded the BB idea by also removing the calendar rhythm in most parts of the organization (Bogsnes, 2013).

The method chosen for this thesis is a case study, using an exploratory, qualitative methodology. This method is chosen in order to shed light into the complex nature of management accounting and control practices in organizations. Specifically, I have interviewed several persons in Statoil, as well as utilized other public available data and internal documents.

The major finding of this study is that ERPs can to some extent facilitate the implementation of the BB principles despite the fact that ERPs are by Statoil experienced as both inflexible and rigid. In order to solve these practical challenges concerning flexibility, Statoil has moved as much of the required flexibility outside of the system. First, by focusing on changing the mindset and culture in the organization. Second, when it comes to the information technology infrastructure, they have also tried to solve the issue of inflexibility by customizing and modifying SAP modules to meet their needs, as well as use separate legacy systems, among others, some developed by Statoil themselves. This has resulted in some complexity in the infrastructure, but Statoil believe that they have managed to find the balance of receiving necessary benefits from having a sophisticated ERPs, without suffering from having a too complex IT architecture.

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1. Introduction

The aim of this chapter is to present the background of the study and the problem statement. Furthermore, relevance and the scope and structure of the study will be described.

1.1 Report background and problem statement

As recognized by numerous companies as well as researchers during recent years, the business environment is changing with an increased pace. The environment has become more demanding, dynamic, unpredictable and turbulent for almost all businesses (Bogsnes, 2009). Some state that these changing conditions make it necessary for businesses to move away from detailed traditional accounting systems towards strategically focused and flexible management control systems (Bjørnenak, 2003).

In order to meet these challenges and be able to stay competitive, many companies have renewed their performance management system. The Beyond Budgeting (BB) movement states that in this regard, organizations should remove traditional budgets, and change their management model in order to become more flexible (Hope & Fraser, 2003a). When implementing the BB philosophy, most companies have to integrate new tools and processes into their information systems. As several companies use Enterprise Resource Planning systems (ERPs) in order to do this, it is interesting to look into how this is done in practice. In addition, it can be of interest to study whether such companies experience challenges due to the fundamental differences between BB and ERPs. Companies are going BB because of the need for flexibility, and at the same time companies invest heavily in ERPs because of the need for a standardized and stable information system.

This thesis attempts to study the relationship between ERPs and the management accounting philosophy BB by asking the following research questions:

How do Enterprise Resource Planning systems limit or facilitate the use of Beyond Budgeting? What are the practical challenges of using Enterprise Resource Planning systems for the implementation of Beyond Budgeting? How do organizations manage/overcome these challenges?

1.2 Relevance

Answering the problem statement will be done using existing theories as well as by exploring how the relationship between ERPs and BB is experienced in practice. In particular, a company claiming to have successfully implemented the BB principles into their organization, will be studied. Statoil is one such organization, who decided to abolish traditional budgets and implement the BB principles in 2005 (Bogsnes, 2009).

Several studies have been made in respect to Statoil's BB implementation. Among these, some have studied how this new management model is actually applied in Statoil (Bogsnes, 2009; Grostad, 2007), and how this model affects managers' behavior and decisions (Myrmell, 2009). Further, others have looked at how managers' ownership towards strategic goals changes when using this model (Andvik, 2012), and some have focused on how managers are able to use information provided in such a model (Ribe, 2009). However, research on the practical aspect concerning how an organization can implement the BB principles into existing information technology has not yet been pursued. The following paragraphs address why this aspect is interesting.

In today's organizations, management accounting is almost unthinkable without IT (Granlund & Mouritsen, 2003), and an increasing number of companies use ERPs in this regard (Scapens & Jazayeri, 2003). In addition, several new Management Accounting Innovations (MAIs) are becoming popular, making it interesting and relevant to understand the relationships between MAIs and ERPs. BB is one such MAI that has been given more focus over the last decades. Despite the fact that most companies are aware of the deficiencies of traditional budgets, budgets are still the most commonly used management tool (Eriksrud & McKeown, 2010). A lack of knowledge in how organizations in practice can implement the BB principles into existing ERPs is probably only one out of several reasons for this, but it is still a field worthwhile of investigation.

During recent years several companies, ranging from small to large, have abandoned traditional budgets and adopted the principles of BB (BBRT, 2013a). In Norway, several of the largest companies, such as Statoil, Telenor, Sparebank 1-Gruppen and Orkla, have implemented this new management philosophy (Eriksrud & McKeown, 2010). In addition, the number and scale of ERPs installations have also increased dramatically (Grabski, Leech, & Schmidt, 2011), making these systems central in management accounting and control. We

know little about how these organizations going BB were able to implement the principles into their ERPs, and whether they experienced problems during the implementation. Therefore, as several companies world-wide have implemented BB, and that most of these use an ERPs, this makes the understanding of the relationship between these two a highly relevant subject for both theory and practice.

The aim of this study is to shed light on the role of ERPs when implementing BB. Particularly, the flexibility claim is interesting as this is an important feature of the BB philosophy, but at the same time there seems to be contradicting arguments looking at the flexibility of ERPs. Current literature on ERPs' effect on flexibility and agility of organizations are conflicting as ERPs are associated with both flexibility and rigidity (Seethamraju & Sundar, 2013). In addition, research on post implementation effects of ERPs is lacking (ibid.). Because of this, studying the relationship between ERPs and BB appears to be both interesting and worthwhile.

This study attempts at contributing to the literature by expanding the understanding of the relationship between ERPs and MAIs, especially BB, which has not yet been studied in depth. Further, the study might be helpful for organizations interested in implementing BB, as well as for Statoil and other organizations who already have implemented BB. As BB is a flexible management philosophy, an understanding of this relationship can be valuable if such organizations find a need to make further changes in the management model.

1.3 Scope and structure

In order to answer the problem statement within the scope of this study, both a theoretical and a practical view is utilized. The scope of this paper is limited by examining only one organization, namely Statoil. Confining the paper in this way may provide a deep understanding of the relationship in question. However, this can also lead to a lack in generalizability of the result as discussed in chapter three. Thus, in order to examine whether the findings are applicable to other organizations and industries, further research is needed.

This first chapter

served as an introduction. The second chapter contains the theoretical background which is used as basis for the analysis, including theory on BB, ERPs, as well as a subchapter linking the two concepts together. Chapter three describes the research design and methodology.

Further, chapter four contains information about Statoil and chapter five the analysis. Finally, chapter six will provide the conclusion of this study, including a short summary of the main findings and also suggestions and proposals for future research.

2. Theoretical perspective

This chapter presents and discusses the theories used as the foundation for the analysis in chapter five; theories on BB, ERPs and also the theoretical relationship between BB and ERPs.

2.1 Beyond budgeting

In this part of the chapter, BB will be discussed by looking at important definitions, discussing the critiques of traditional budgets, and also looking at how the BB principles can help organizations solve these problems.

2.1.1 Definition of Beyond Budgeting

Hope and Fraser were the first to establish a formal model for the management accounting innovation BB, and they defined it as *“a set of guiding principles that, if followed, will enable an organization to manage its performance and decentralize its decision-making process without the need for traditional budgets. Its purpose is to enable the organization to meet the success factors of the information economy (e.g., being adaptive in unpredictable conditions)”* (Hope & Fraser, 2003a, p. 212).

Beyond Budgeting Round Table (BBRT), an international research- and learning network of BB, explains the meaning of BB as *“beyond command-and-control toward a management model that is more empowered and adaptive. Beyond Budgeting is about rethinking how we manage organizations in a post-industrial world where innovative management models represent the only sustainable competitive advantage. It is also about releasing people from the burdens of stifling bureaucracy and suffocating control systems, trusting them with information and giving them time to think, reflect, share, learn and improve. Above all it is about learning how to change from the many leaders who have built and managed ‘beyond budgeting’ organizations”* (BBRT, 2013c).

2.1.2 The origin of the Beyond Budgeting concept

The *Relevant Lost*-debate in the late 1980s started as Kaplan and Johnson (1987) claimed that the private sector did not produce relevant management data for decision makers. They argued that such data was too aggregated, came too late, and in addition was too influenced

by external reporting requirements in a way that made it unsuitable for decision-making (Hope & Fraser, 2003a). Further, they claimed that systems at that time were unsuitable to communicate what should be emphasized in an organization, and therefore also unsuitable to evaluate business performance. As a result of this debate, people started question traditional budgets. Some believed that it was possible to overcome the problems of traditional budgets by improving existing budgetary methods, while others believed that budgets had to be discarded altogether. Hope and Fraser belonged to the latter group, and became the first to come up with a framework on how companies could be better off rejecting budgets, and implementing their BB framework.

Several MAIs appeared in the wake of this *Relevant Lost*-debate, but BB differed in several ways. First, BB originated from practice, not academia. Second, while most other MAIs provided managers with new tools in addition to the existing ones, BB “*proposes taking something powerful out to make room for something new and even more powerful*” (ibid., p. xi). Hope and Fraser (2003a) emphasized that it was not enough to abandon traditional budgets, but rather that this new concept should focus on the whole general management model. As such, abandoning budgets was seen as an important trigger in order to improve the entire management control process by becoming forced to deeper and broader examine how the organization should be managed (ibid.).

Even though the formalized BB framework did not appear in the academia until the end of the 1990s, the concept was introduced in practice in the 1970s by a Swedish bank, Svenske Handelsbanken (ibid.). As their new CEO, Jan Wallander, was appointed in 1970, one of his first acts was to abandon budgets and its bureaucracy (ibid.). Despite the fact that this Swedish bank experienced good results in a time when other banks suffered, this did not convince the academia, and it took several years before a formalized model was established. However, when first formalized, this model was actually based on several sources of inspiration, such as Svenske Handelsbanken, using their success as evidence for providing a solid foundation for sustainable improvement (ibid.).

2.1.3 Critique against budgets

The foundation of the BB principles lays in the critique of budgets. A budget can be defined as “*a plan expressed in financial terms, a basis for controlling performance, an allocation of resources, an entitlement to spend, and a commitment to a financial outcome*” (Hope &

Fraser, 2003a, p. 212). The budget can further be characterized as *a fixed performance contract*, where the actors in the organization establishes the criteria for the upcoming year, and the actors according to the budget, the contract, must strive to meet them (Hope & Fraser, 2003a). Such a contract contains detailed information about absolute targets, description of the current plan of action, potential rewards, resource allocation, plan for coordination, as well as how performance will be monitored and controlled (ibid.).

Even though most companies still use budgets, they have for a long time been subject to criticism. Budgets are among other criticized for being time-consuming, adding little value, and preventing managers from responding quickly to changes in today's business environment (ibid.). Further, the focus on fixed targets and performance incentives can lead to dysfunctional, even unethical, behavior (ibid.). The critique can be illustrated by quotes such as "*Bye bye budget...the annual budget is dead*" (Gurton, 1999) and "*Who needs budgets?*" (Hope & Fraser, 2003b), or statements arguing that budget is "*An unnecessary evil*" (Wallander, 1999) and "*The hidden barrier to success*" (Hope & Fraser, 1999).

Hope and Fraser (2003a) highlights three main reasons why budgeting does not provide a satisfactory way of controlling the organization. First, that budgeting is a time-consuming and resource intensive process. Much time is spent on details and *number crunching* at the expense of value-adding activities, as well as on predicting what will happen long into the future.

Second, Hope and Fraser (2003a) believe that the budget is not able to handle the changing environment and does not meet the needs of current managers at various levels in the organization. Otley (2001) also emphasized this, by stating that the budget can be viewed upon as a financial representation of a business plan, and that it can only work reasonably well in a rather stable environment. Thus, in today's unstable and changing environment budgets may fall short of the emerging needs of management accountants.

Finally, the third reason Hope and Fraser (2003a) found, concerns the budget as a fixed performance contract. This results in a large extent of "*gaming the numbers*", including dysfunctional behavior based on thoughts such as "*Always negotiate the lowest targets and the highest reward*", "*Always make the bonus, whatever it takes*", "*Always ask for more resources than you need, expecting to be cut back to what you actually need*", "*Always spend*

what's in the budget", "Never provide accurate forecasts", and "Always meet the numbers, never beat them" (Hope & Fraser, 2003a, pp. 13-14).

The budget has also been criticized for trying to handle multiple roles, such as goal setting, planning and resource allocation, which results in conflicting objectives (Bogsnes, 2006). The list goes on, but the main idea is that companies located in industries with unpredictable environments are dependent on being able to adapt to surroundings in a dynamic way in order to achieve profitability. To achieve this, managers must be given the necessary latitude and flexibility, which the traditional budget is unable to provide. The oil and gas industry can be characterized as one of great uncertainty. Statoil has activities both in Norway and abroad, and is facing rapid technological development, changes in paradigms, as well as increasing operating costs. Statoil is, therefore, dependent on finding ways to adapt to the dynamics of the environment, which in turn puts high pressure on their leaders.

2.1.4 Solving the problems of budgets – the Beyond Budgeting principles

Based on the critiques of budgets, Hope and Fraser came up with the BB framework (Hope & Fraser, 2003a). This alternative management model is based on the decision-making needs of front-line managers and uses relative targets and rewards, dynamic cross-company coordination, resource on demand, continuous planning, and a rich array of multilevel controls.

The figure below show how the BB principles are depicted on the webpage of BBRT:

Figure 1 : Principles of BB (BBRT, 2013b)

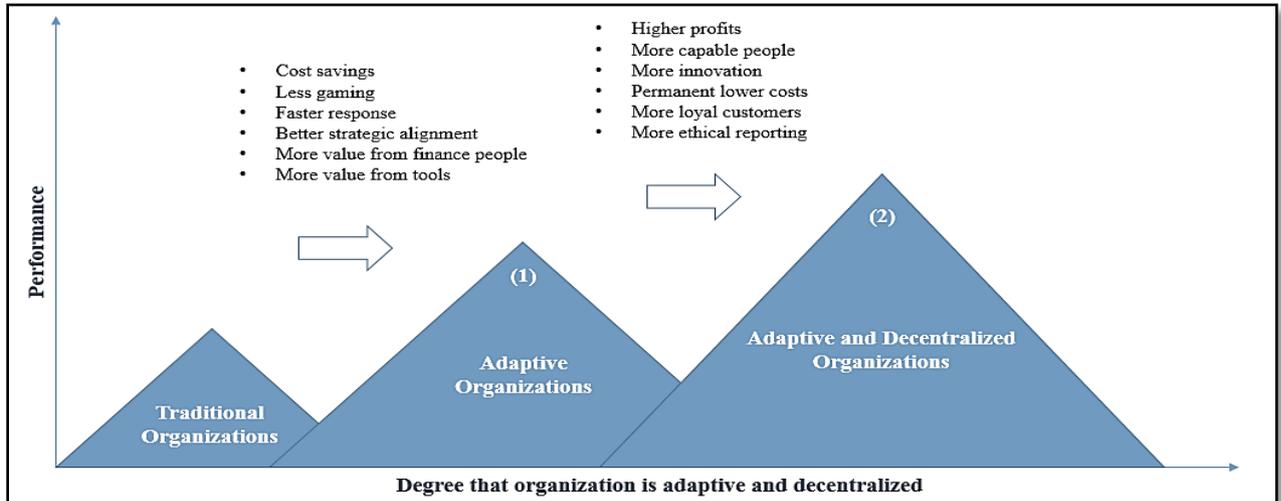
Leadership principles	
Governance and Transparency	
1. Values	Bind people to a common cause, not a central plan
2. Governance	Govern through shared values and sound judgment, not detailed rules and regulations
3. Transparency	Make information open and transparent, do not restrict and control it
Accountable teams	
4. Teams	Organize around a seamless network of accountable teams, not centralized functions
5. Trust	Trust teams to regulate their performance, do not micro-manage them
6. Accountability	Base accountability on holistic criteria and peer reviews, not on hierarchical relationships
Process principles	
Goals and Rewards	
7. Goals	Set ambitious medium-term goals, not short-term fixed targets
8. Rewards	Base rewards on relative performance, not on meeting fixed targets
Planning and Control	
9. Planning	Make planning a continuous and inclusive process, not a top-down annual event
10. Coordination	Coordinate interactions dynamically, not through annual budgets
11. Resources	Make resources available just-in-time, not just-in-case
12. Controls	Base controls on fast, frequent feedback, not budget variances

By following these principles, organizations will move away from the *fixed performance contract* to a *relative improvement contract*. Hence, also move away from a focus on short-term fixed contracts with control from the top, to longer-term contracts with control at multiple levels (Hope & Fraser, 2003a). The actors in the organization are no longer faced with predetermined, fixed targets, but are encouraged to change and improve so that the organization can adapt dynamically to the environment (ibid.). By following these principles, managers at lower levels in the organization will get more responsibility and freedom to make the necessary actions to achieve these goals. The new model should not involve reduced performance and control, but rather increased level of ownership and commitment, which will be the driving forces for continuous improvement (ibid.).

Principle 7 to 12 involves giving organizations adaptive process opportunities, and enable managers to focus on continuous value creation (ibid.). These principles can be illustrated by the first of the two peaks of BB as illustrated in Figure 2. Principle 1 to 6 involves giving

companies a radical decentralization opportunity, enabling leaders to create a high performance organization, as illustrated by the second of the two peaks.

Figure 2 : Peaks of BB (Hope & Fraser, 2003a, p. 36)



Reaching the first peak will probably result in significant benefits for the organization. This will, however, probably also make the organization realize the potential of having more sustainable results if supported by leadership actions (ibid.). Rising to the second peak is associated with a state of significant competitive advantage by having created committed, capable, as well as empowered people at the front line (ibid.). In order to get there, companies depend on information systems to provide these people with data required to make fast and effective decisions (ibid.).

2.1.5 Taking a critical look at this new management model

As a theoretical answer to the criticisms of budgets, this new management model appear to solve several of the problems and weaknesses of the traditional budgetary process. However, while new approaches to management control systems, such as the BB philosophy, are quick to point of these weaknesses, there is still limited knowledge concerning potential challenges and issues associated with these (Østergren & Stensaker, 2011). For instance, there is limited knowledge concerning whether these new tools and processes merely provide organizations with other types of “*gaming the numbers*”-problems, or on how this model handles cost control and liquidity issues (ibid.). Further, some question whether this model is suitable only in good times (ibid.).

Others are critical about the relevance of referring to successful BB cases. For instance, Lindsay and Libby (2007) pointed out that BB's most successful case, Svenska Handelsbanken, did not provide evidence of the relevance of BB. They argued that Svenska Handelsbanken was not located in a sector (banking) or time (1970s) requiring particular flexibility, and that this organization did not have to adapt to any revolutionary changes.

Finally, some critics also question the universal solution the BB philosophy claim to offer to budget deficiencies, and claims that BB exaggerate the environmental flexibility requirement and also underestimate the role budgets can play in highly innovative environments (Hammer, 2010). Organizations operating in highly innovative industries who still relies on budgets are by these critics used as evidence against the BB philosophy (ibid).

2.2 ERP systems

The aim of this part is to describe ERPs by looking at important definitions, describe ERPs in general, before looking in more detail into the ERPs offered by the vendor SAP.

2.2.1 Definition of ERP systems

There are many definitions of ERPs, some using words such as “*an enterprise information system designed to integrate and optimise the business processes and transactions in a corporation*” (Moon, 2007, p. 235) or “*comprehensive, packaged software solutions 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, Rosemann, & Gable, 2000, p. 1).

Some even compares an organization to a human body having vital parts in order to survive, in which information provided by the ERPs is viewed upon as the organization's blood, and the database as the heart enabling this flow of information (Davenport, 1998).

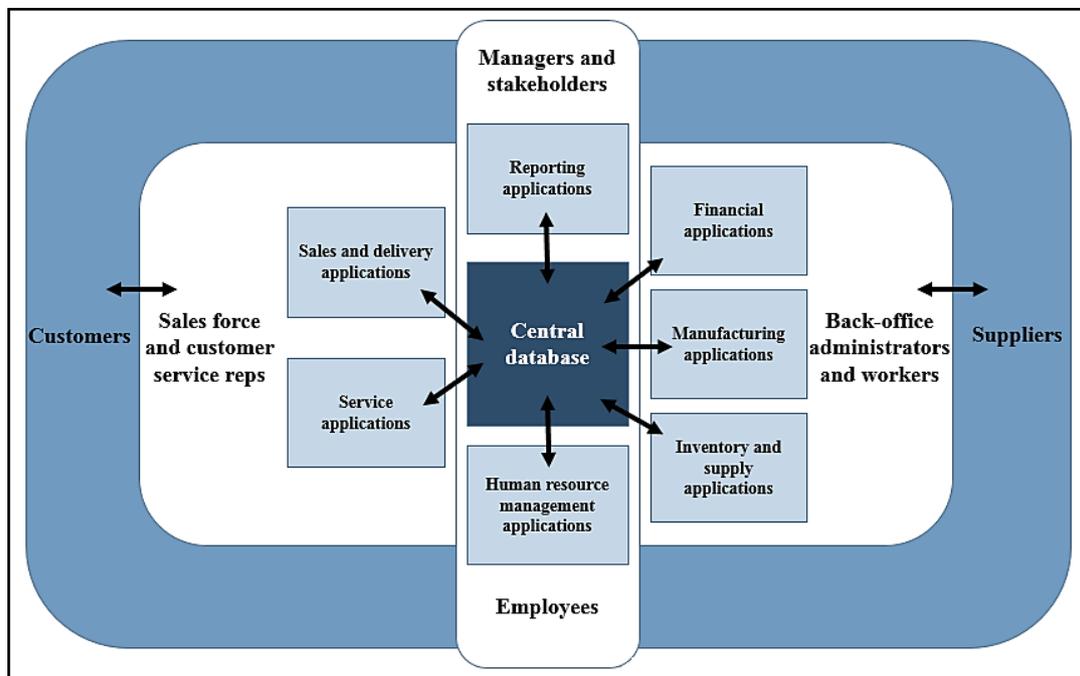
2.2.2 Origin and development of ERP systems

Enterprise Resource Planning as a term was initiated in the early 1990s (McAdam & Galloway, 2005), and are used to describe modular systems based on client/server technology (Rom & Rohde, 2006). Such systems originates from the early manufacturing and production planning systems. As from the mid-1990s, vendors expanded their offerings to also include

back-office functions such as order management, financial management, asset management, and human resource management (McAdam & Galloway, 2005). Despite the fact that there are more than hundred different ERPs providers worldwide, the *Big Five*, SAP, Oracle, J.D. Edwards, PeopleSoft and Baan, control approximately 70 percent of the ERPs market share (ibid.). Due to historical reasons, each vendor has specialized in one particular module area (Rashid, Hossain, & Patrick, 2002).

Today, ERPs has expanded even further, now offering a set of application modules spanning most business functions as illustrated by Figure 3 below:

Figure 3 : Structure of an Enterprise Resource Planning system (Davenport, 1998, p. 124)



The ERPs-modules are fully integrated, use real-time information, and are able to access many different business processes all based on so-called industry *best practice* (Rashid, Hossain, & Patrick, 2002). By providing companies, or groups of companies, with a centralized IT application for all business processes and functions (McAdam & Galloway, 2005), they get a comprehensive and institutional system that is capable of interfacing with external systems (Rom & Rohde, 2006). ERPs-vendors are also continuously introducing new modules as the market and technology changes.

A major advantage of having an ERPs is having data stored in a single database, which eliminates redundancy and reduces the need to update data in multiple different subsystems (Rom & Rohde, 2006). There are several other benefits as well, revolved around standardizing business processes. This includes improved financial accounting as well as more precision and timeliness due to automatic and ongoing data reconciliation (Dechow & Mouritsen, 2005). In addition, ERPs are said to help control inventories and provide increased clarity and assurance about data (ibid.). Further, these systems provides increased reliability of information access, reduction of delivery and cycle time, reduction of cost, easier adaptability, as well as improved scalability and maintenance (Rashid, Hossain, & Patrick, 2002). Recent technological developments, such as the development of internet, have further expanded the usage and enabled companies to share information with suppliers and customers, develop customer relationship management systems, as well as data mining and supply chain management systems (Scapens & Jazayeri, 2003).

Despite several advantages, ERPs are also criticized for being very time-consuming, expensive, and challenging when it comes to conformity and complexity of the modules and features, and in addition, for making companies vendor dependent (Rashid, Hossain, & Patrick, 2002).

2.2.3 SAP

This case study will focus on Statoil, a company that has decided to use the ERPs provided by SAP. SAP AG (“Systems, Applications and Products in Data processing”) was established in Germany in 1972 by five former IBM engineers (Rashid, Hossain, & Patrick, 2002), and thereafter emerged as one of the leaders of client/server ERPs, and further became one of the most applied standards for organizations attempting to change business processes (Al-Mashari & Zairi, 2000). SAP’s first ERPs product, R/2, was launched in 1979 and used a mainframe-based centralized database (Rashid, Hossain, & Patrick, 2002). In 1992 this database was redesigned to become a client/server software, R/3 (ibid.). This was a breakthrough for SAP because it brought together many core business functions such as accounting, inventory, sales and distribution (Al-Mashari & Zairi, 2000). This provided one-time data entry in addition to a sharing of fast, seamless access to one single facet of information (ibid.). R/3 has also developed further, and the latest version includes a comprehensive internet-enabled package (McAdam & Galloway, 2005). When comparing the *Big Five*, SAP has the broadest ERPs

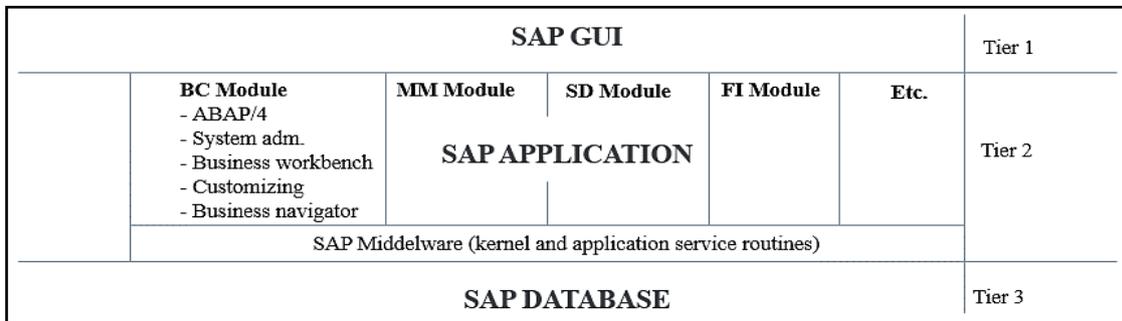
functionality, the highest capacity to spend on R&D, and also has proven to have strong industry-focused solutions and a long-term vision (Rashid, Hossain, & Patrick, 2002). Some of the modules that SAP R/3 provides are illustrated in the figure below:

Figure 4 : Illustration of some modules offered by SAP (Rashid, Hossain, & Patrick, 2002, p. 42)

Financial Accounting	FI	Controlling	CO	Asset Management	AM
Project System	PS	Workflow	WF	Industry Solutions	IS
Human Resources	HR	Plant Maintenance	PM	Quality Management	QM
Production Planning	PP	Materials Management	MM	Sale & Distribution	SD
Investment Management	IM	Enterprise Controlling	EC	Treasury	TR
Modules of Internet version mySAP.COM					
mySAP Workplace		mySAP e-procurement		mySAP e-Human Resources	
mySAP SCM		mySAP Prod Lifecycle Mgmt.		mySAP Marketplace	
mySAP CRM		mySAP CRM		mySAP Hosted Solutions	
mySAP Financial		mySAP Financial		mySAP Technology	

The SAP architecture consists of three main layers of software as illustrated by Figure 5 below.

Figure 5 : SAP layer- architecture (Al-Mashari & Zairi, 2000, p. 157)



Running on the end-users computer in the business departments we first find the SAP GUI (Graphical User Interface) layer which has three main responsibilities; presenting all relevant data to the end-user, creating important GUI components such as windows and buttons, and communicating all the user requests and inputs to all SAP applications across the network (Al-Mashari & Zairi, 2000).

The second layer, SAP Application, contains all the processing procedures for the business data represented by several software modules, such as material management, finance, production and planning, sales and distributions, and many others (ibid.).

SAP Database is the final layer, and works as an interfacing software, which retrieve and stores information (ibid.). This is usually done by using a third-party database management system (DBMS) such as one from Oracle or Informix (ibid.).

2.3 Theoretical relationship between Beyond Budgeting and ERP systems

This part will provide a theoretical connection between ERPs and BB. First, the changing environment's impact on management accounting systems and principles will be discussed. Second, a short literature review will be provided in order to illustrate the gap that exists in past research on the relationship between ERPs and MAIs, especially BB. Third, the contradiction that exists in the literature concerning the flexibility of ERPs will be discussed. Finally, an attempt to connect the characteristics of ERPs with the principles of BB is made, before looking into what practical consequences this might entail.

2.3.1 Changing environment, need for flexible and strategically focused systems

Recognizing that the business environment is changing rapidly, companies are starting to consider the ability to sense, shape, and respond to emerging business opportunities, dynamic customer needs, as well as threats, as crucial capabilities (Seethamraju & Sundar, 2013). Hence, that organizations need to be agile and flexible. Agility can be defined as *“the ease and speed with which firms can reconfigure, redesign and realign their processes to respond to these needs, threats, and opportunities”* (Seethamraju & Sundar, 2013, p. 137). When comparing agility and flexibility, Seethamraju and Sundar (2013, p.138) argue that *“flexibility refers to the capability of an organization to move from one task to another, adapt to expected changes and respond to change requests economically, while agility is about the speed to detect and respond to changes in the business environment”*.

In order to adapt to the unpredictable, dynamic and turbulent environment, companies need to move away from detailed traditional accounting systems, and implement more flexible and strategically focused management control systems (Bjørnenak, 2003).

2.3.2 Connection between ERPs and MAIs - a literature gap

As discussed, the environment has changed with an increased pace, resulting in developments of new MAIs as well as changes in ERPs. When implementing a MAI, this will probably have an important impact on how the business is managed. In turn, this might require changes in

the IT-solutions, and thus also in the company's ERPs. Understanding the relationship between ERPs and MAIs is therefore both relevant and interesting.

ERPs and Management Accounting – a short literature review

Considerable amount of research has focused on the impact of ERPs on management accounting. However, this has resulted in mixed findings and as a result problems drawing a clear conclusion concerning ERPs' impact on organizations' management accounting (Grabski, Leech, & Schmidt, 2011). As we will see, these studies have focused on many aspects, such as the impact ERPs has had on the organization as a whole, on the effect ERPs has had on the role of management accountants and on management accounting techniques and practices.

In this pile of research, some have been studying ERPs' impact on the organizations in general. Of these, some argue that the impact have remained very moderate and used arguments such as the fact that ERPs are not typically designed with change in mind (Granlund & Malmi, 2002), while others suggest that ERPs might impact the company in a positive manner if installed correctly (Dechow & Mouritsen, 2005).

Studies has also looked at ERPs' impact on the roles of management accountants. Among these, some argue that ERPs makes accounting knowledge easily transferable to non-accountants (Kholeif, 2011). Others has shown that the introduction of an ERPs actually enhances management accountants' knowledge and expertise by enabling them to promote themselves as experts able to derive benefits from such a system (ibid.). Scapens and Jazayeri (2003) found that ERPs' characteristics provides companies with opportunities and facilitated changes among management accountants by providing possibilities of eliminating routine jobs, giving more forward-looking information, giving line managers increased accounting knowledge, and by giving management accountants a wider role. As the role of management accountants is an important part of the management accounting processes in an organization, results such as these might imply that ERPs in fact can be positive for the organization in respect to its ability to respond to changes in the business environment. However, Scapens and Jazayeri (2003) did not argue that the ERPs was the only driver of these changes, but rather that by being specific, integrating, routinizing, centralizing and standardizing, such systems opened up certain opportunities and facilitated changes that were already taking place within the company (Scapens & Jazayeri, 2003).

Further, others have looked at the impact ERPs has had on management accounting practices. For instance, some have found that best-of-breed (BoB) systems were actually better suited to address most of the problems in management accounting, than ERPs, but also that the difference was too small to be statistically significant (Hyvonen, 2003). This is also supported by findings stating that ERPs has little impact on the adoption of MAIs (Booth, Matolcsy, & Wieder, 2000), as well as findings showing that advanced management accounting techniques such as ABC, BSC, as well as other more traditional ones, were actually operated in separate systems outside the ERPs (Granlund & Malmi, 2002). In addition, it has been shown that ERPs performs better as a transaction process system and ad hoc decision support than for sophisticated support and reporting (Booth, Matolcsy, & Wieder, 2000), and that Strategic Enterprise Management (SEM) systems are better suited for such reporting and decision making (Rom & Rohde, 2006). In this regard, Rom and Rohde (2006) emphasizes that ERPs and SEM systems should be viewed as complementary systems, as they support different management accounting tasks.

Other researchers have looked at the role of ERPs in organizations, and among these, Rom and Rohde (2007) found that by implementing ERPs, the role of management accounting became increasingly dispersed in the organizations. Further, Soh and Sia (2004) studied the misfit between ERPs' functionality and what is actually required in management accounting. They found that such package-organizational misalignment can, in extreme cases, lead to project and even organizational failure.

As seen, the impact of ERPs on management accounting has been the focus of considerable amount of research with mixed results (Grabski, Leech, & Schmidt, 2011). As the business environment has changed, ERPs has also changed as vendors want to meet new organizational demands. As a response to such changes in the business environment, new MAIs are also appearing. Despite a few studies looking at ERPs' effect on changes in management accounting practices, literature trying to gain a clear understanding of the relationship between ERPs and MAIs is lacking. In addition, there are no studies looking at specific ERPs modules applied in this regard.

ERPs are usually the largest and most demanding information systems implemented (ibid.), and an understanding of the relationship between ERPs and changes in management principles, such as the implementation of the BB principles, is therefore important.

2.3.2 ERP systems – agile or rigid?

Current research on ERPs' effect on organizations' flexibility and agility is contradicting, as standardization of processes can have mixed effects on the organization (Seethamraju & Sundar, 2013). This has resulted in ERPs being associated with both agility and rigidity. This contradiction is largely unknown and under-researched (ibid.). In addition, research on the post implementation effects is limited (ibid.). With ERPs widely used in most organizations today and considered an important factor when managing business processes, understanding the influence of ERPs on organizations' flexibility and agility is important (ibid.).

Research claiming that ERPs are flexible and agile

Some researchers take a neutral stand in the discussion of ERPs' flexibility and agility, such as Seethamraju and Sundar (2013) who argue that the effect ERPs has on organizational agility depends on the extent of standardization implemented and whether it included prior simplification. They believe that ERPs does not necessarily limit organizational flexibility, but rather that inadequacy during the implementation process as well as poor process optimization prior to the implementation causes restrictions in process agility.

Several researchers take a more positive stand, claiming that ERPs are inherently flexible and provide agility for organizations (Davenport et al., 2004; Nazir & Pinsonneault, 2012; Sambamurthy et al., 2003). Some even believes that ERPs actually addresses many of the traditional criticisms of management accounting systems debated in the late 1980s (the *Relevant lost-* debate) (Kholeif, 2011). Of these, some argue that IT in general, and thus also ERPs, enable agility by improving decision making and facilitating communication (Davenport, Harris, & Cantrell, 2004), by providing integration (Nazir & Pinsonneault, 2012), and by providing options (Sambamurthy, Grover, & Bharadwaj, 2003). Others gives the credit directly to ERPs by claiming that ERPs can provide more real-time information, better forward-looking forecasts, allowing organizations to use software from different vendors such as BoB-systems, as well as by providing detailed operational and financial information (Kholeif, 2011).

Gattiker, Chen & Goodhue (2005) claim that in order to be agile, it is important for organizations to be able to sense opportunities as well as respond to them, dividing agility into *sensing agility* and *responding agility*. They argue that integration of knowledge across the

organization become far easier as ERPs are able to globally connect data and processes, which in turn makes the organization able to better sense opportunities and problems. As they see it, it is not equally clear that ERPs facilitate response agility. When doing a case study on agility, they found evidence of several mechanisms through which ERPs provided agility. First by providing *built in flexibility*, referring to the way the information systems is designed in order to allow organizations to quickly and easily change their processes without having to rewrite the entire program code. Second, by providing *process integration*, referring to completely automated business processes, resulting from streamlined interfaces among business activities across different organization groups. Third, by providing *data integration* as data definitions and structures are standardized across different sources. Fourth, by providing the organization with a variation of “*Add-on*” *software applications* as ERPs-vendors offer special-purpose applications or modules that are possible to integrate with existing system in an easy and timely manner. Finally, ERPs may enable agility by the fact that, on the market, there exist extensive *consultant knowledge*.

There are many of those who believes ERPs are flexible and agile, and some even refers to problems concerning alternative systems. Among these, Azevedo, Romao and Rebelo (2012) found that it was much easier to implement or change a global process for those organizations using a single ERPs compared to those using a collection of disparate legacy systems.

Research claiming that ERPs are rigid and inflexible

As is the case with many other research topics, researchers does not seem to agree on whether ERPs are well suited to provide companies with the flexibility and agility today’s volatile environment requires, or whether ERPs might be an obstacle in this regard. In addition to arguments presented above, others strongly disagree by going as far as stating that “*Installing ERP systems is like pouring concrete on a firm’s business processes*” (Gattiker, Chen, & Goodhue, 2005, p. 88), “*In a way, we are slaves to the (ERP) system, and we have accepted the technological imperative that that implies. We cannot improvise on process...*” (Gattiker, Chen, & Goodhue, 2005, p. 89) or somewhat more generally stating that “*Technology is rigid*” (Dechow, Granlund, & Mouritsen, 2007, p. 47) or “*Whilst sophisticated ERP systems in principle can do everything, in practice the technological configuration sets limits that prevent the system from serving certain possible uses*” (Dechow, Granlund, & Mouritsen, 2007, p. 52).

Some of the following arguments are based on problems occurring before implementation, and some during or after implementation. Organizations can experience ERPs as inflexible and rigid due to a lack of functionality, due to the complex process of customizing or adding other systems in order to handle these lacking functionalities, or more generally due to the rigid nature of technology.

Technology is rigid

There are several of those using general arguments of technology being rigid (Dechow, Granlund & Mouritsen, 2007; Scapens & Jazayeri, 2003), such as stating that every configuration has opportunity costs due to the fact that the ERPs could have been set up to do things other than those actually established in the technical configuration (Chapman, 2005). Further, other claims that technology and management are very difficult to reconcile. Sophisticated ERPs can in principle do everything but is in practice limited from providing certain possible uses by the technological configuration (Dechow, Granlund, & Mouritsen, 2007). Despite the fact that the properties of technology is quite open during implementation, they are rarely flexible after implementation, and this causes problems as the complex relationship between technology and management is very difficult for a company to predict during early phases of the implementation (ibid.). By using such argumentations, some believes that ERPs are particularly interesting for what they make impossible (Dechow & Mouritsen, 2005).

By looking at these arguments we can argue that this might imply that the ERPs influences the possibilities to respond to changes by restraining organizational flexibility (Sandberg, 2010).

Standardization

Other take a look at the standardization ERPs provides, and shows that ERPs typically increase the standardization and centralization of processes and data, which in turn may diminish the options available for responding to local challenges and opportunities (Gattiker, Chen, & Goodhue, 2005).

Lack of functionality

By looking at functionality, researchers has also claimed that the variety of process configurations supported by the package provided by a single ERPs-vendor is limited (ibid.). This causes organizations to recognize that the system is unable to cover all processes in all

industries. In some cases ERPs-vendors might provide more functionalities as a response to pressure from the market, in other cases this problem might be solved by the organization themselves by using other commercial packages in addition to the ERPs. As demonstrated, this is not necessarily easy.

Complexity

Due to the complexity of such systems, many companies experience problems when trying to change them, as this is viewed as a complex and costly process. First, today's organizations are very dependent on the infrastructure being open and operational at all time in order to support the daily activities, which in turn severely constrains the possibility of introducing new elements into the system (Sandberg, 2010). Second, because processes and modules in the ERPs are tightly interlinked with one another, any reconfiguration may be very resource intensive, in part as a result of the risk of unintended consequences that must be identified before the changes are made (Gattiker, Chen, & Goodhue, 2005). Due to such complexity, some even argue that changing the system can weaken the system altogether (Dechow, Granlund, & Mouritsen, 2007).

Research studying the effect of ERPs on organizational flexibility and agility is lacking

As discussed, existing research is contradicting as some believes that ERPs provide flexibility and agility, while other argue the reverse. Despite the fact that the relationship between a firm's agility and IT has been studied, the underlying contradiction has not been studied sufficiently, and in addition, research on post implementation effects of ERPs concerning agility is very limited (Seethamraju & Sundar, 2013). Further, some have also found that an understanding of the relationship between ERPs and the way management accounting techniques is designed are lacking (Rom & Rohde, 2007).

ERPs are by many organizations considered important in order to manage business processes, and as ERPs represent a large investments and entails a significant risk of failure, an understanding of the influence such systems have on agility is important (Seethamraju & Sundar, 2013). Even though several IT vendors as well as consultancy firms have made it their key strategy to help companies achieve flexibility and agility, it is shown that an understanding of the relationship is limited and should therefore be studied further (ibid.).

2.3.4 Connecting ERPs to the principles of BB

At this point, the theoretical framework needed in order to connect the characteristics of ERPs to the principles of BB is provided. When trying to connect the theories of ERPs and BB, it becomes clear that the process principles are the most relevant ones. However, ERPs also appear to theoretically facilitate the implementation of some of the leadership principles.

Connection between ERPs and the leadership principles of BB

Implementing the leadership principles affects the behavior of employees and leaders, and thus culture and values, more than specific processes and management tools. However, concerning the principle of transparency, the characteristics of an ERPs should, based on theory, facilitate the implementation. This is rooted in the fact that ERPs are well suited to provide transparency within the entire organization by deliver information throughout the organization in real-time. As stated by Hope and Fraser (2003a), having an information systems to provide employees with data required to make fast and effective decisions is highly important in order to reach the second peak of BB. Having an ERPs can in this regard be important in order for organizations to reach the state where they are both adaptive as well as decentralized. Looking at the remaining five principles, the ERPs characteristics provided in the theoretical framework does not seem to neither facilitate nor limit the possibility of successful implementation.

Connection between ERPs and the process principles of BB

Looking at the process principles, it is possible to examine whether ERPs can in fact facilitate or limit the possibility of implementation by looking at specific tools and solutions offered by ERPs-vendors, as some ERPs-vendors actually seem to have developed some solutions and tools in order to facilitate these principles. In the following, the two principles concerning goals and reward will first be studied by attempting to both look at the theoretical connection between ERPs' characteristics and these principles, as well as try to look into what solutions and tools are actually provided by ERPs-vendors, especially SAP. Further, the same will be carried out for the four principles concerning planning and control.

Goals and rewards

The first of the process principles concerns setting ambitious medium-term goals. In order to implement this principle, ERPs can in fact provide organizations with specific solutions and tools to use. Looking towards SAP, and their portfolio, they have developed a Strategic Enterprise Management system (SEMs) where one of the modules, named ‘Measure Catalog’, is a tool enabling organization to both build and analyze measures (Hauke, 2001). In addition, this tool allows the user to define key performance indicators (KPIs), set relative targets, as well as upload internal and peer-based benchmark information (ibid.), which can be helpful for an organization when implementing this principle. Moving on to the principle of rewards, which states that organizations should base rewards on relative performance, the SEMs is also able to provide organizations with solutions in order to fill this role. This includes a scoring mechanisms that allows organizations to have automatic calculation and ranking of performance based on relative measures (ibid.).

Planning and control

When implementing the principles of planning and control, ERPs appears to facilitate the implementation of the principles concerning resources and control.

First, concerning the principle of making resources available just-in-time, SAP has developed a solution named Business Analytics. Within this solution there is an activity based management module which is said to enable organizations to identify, communicate as well as optimize resource consumption (ibid.).

Second, basing control on fast, frequent, feedback can be facilitated by ERPs as these systems can allows for control based on actual results, several indicators, rolling forecasts, as well as by providing organizations with the possibility of sharing this information through an integrated information system. In addition, ERPs enables organizations to distribute such information to all management levels at the same time, as well as provide organizations with the possibility of providing lower levels with more detailed information than higher levels, based on what is needed at the specific level. Specifically, the SEMs provides a range of solutions for performance measurement as well as rolling forecasts, and in addition, the module called ‘Management Cockpit’ can be used (ibid.). This module include several early warning indicators and leading indicators, which can make leaders able to control on a continuous basis (ibid.).

In addition to the above characteristics, the fact that ERPs provides organizations with good forecasts can also facilitate planning as a continuous and inclusive process. However, when it comes to the principles of coordination, the ERPs does not seem to neither facilitate nor limit the implementation in any significant way based on the theory provided in this thesis. Providing transparency can, however, indirectly ease such coordination.

Conclusion

In total, the most important characteristics of ERPs in order to facilitate the implementation of the BB principles, is shown to be that ERPs provide transparency, and that they offer specific solutions and tools ready for organizations to use. The fact that ERPs can provide organizations with more real-time information and more forward-looking forecasts is also viewed upon as important. These are both important features in the BB philosophy. This might imply that ERPs can facilitate the implementation of BB.

Despite the fact that ERPs might have such positive effects, one important aspect of the BB is flexibility, and as we have seen, there exist contradicting arguments when looking at the flexibility of ERPs. ERPs has been shown to be associated with both agility and rigidity. In particular, there still exists some conflicting goals, as organizations implement ERPs due to a need for flexibility, and invest in ERPs because of a need for stabile and standardized information systems.

The above findings concerning the tools and solutions offered are also based on information provided by the ERPs-vendor themselves, and as they want to convince organizations of how excellent their solutions are, organizations might experience a gap between what the solutions is said to provide, and what is actually provided. It is thus interesting to see whether Statoil has chosen to use such pre-made solutions from SAP, and in addition, whether they has had to customize and modify these in order to meet Statoil's specific needs.

2.3.5 Conclusion and practical implications

There exists considerable literature studying the role of ERPs, but a lack of literature studying the relationship between ERPs and MAIs, such as BB. Furthermore there are no studies on the use of specific SAP modules in management accounting, and looking at how BB can be realized through SAP modules could therefore also be interesting to investigate. This thesis has tried to connect the characteristics of ERPs to the principles of BB, and as demonstrated,

it actually seems like ERPs can facilitate implementation of some of these principles, especially the process principles. However, this thesis has also highlighted the relationship between ERPs and BB as particularly interesting due to the importance of flexibility in the BB philosophy and the flexibility contradiction in the ERPs literature. Hence, there still seems to be some conflicting goals involved when implementing BB compared to those involved when using ERPs.

In particular, it is shown that existing literature does not seem to agree on whether ERPs provide organizations with the required flexibility and agility needed in today's environment, or whether they suffer from inflexible and rigid systems. It is nevertheless important to remember that building agility into business processes depends not solely on the ERPs, but also on other factors such as the capability of managing business processes, organizational culture, as well as process characteristics specific to the organization (Seethamraju & Sundar, 2013). This study focuses on ERPs, and looks into how the MAI BB is facilitated or limited through the use of the SAP system. More precisely, this study will attempt to investigate whether an organization putting considerable emphasis on flexibility by implementing BB, experiences rigidity or limited flexibility due to the ERPs. This will be carried out by studying how the dynamic interplay between the BB and the ERPs is experienced in practice.

Stating that the business environment are changing rapidly these days, in addition to researchers claiming that ERPs can have a positive effect when installed correctly, might imply that some companies actually have managed to overcome the potential problem of inflexible ERPs. If this is correct, and there exists a way to overcome this problem, an understanding of *how* this is done is important knowledge for companies. When studying this, it is also important to remember that the organizations' perceived experience of the relationship might depend on the choices made when the ERPs was first implemented.

In the implementation phase organizations are faced with the option of either adjusting its processes to conform the *ERP way* or alternatively adjusting the ERPs in order to support specific needs of the organization (Sandberg, 2010). As most companies find that there are certain things neither the generic version nor an industry solution can provide, such customization may be necessary (Scapens & Jazayeri, 2003). When handling such problems, there are in practice two alternative approaches. First, the organization can choose to write extensions to the ERPs, using the built-in programming language in order to create new

programs, screens, interfaces and other adaptations (ibid.). Even so, this might later complicate the implementation of new ERPs releases and as a result the essential advantages of buying packaged software will be lost as it becomes a customized solution (ibid.). The second alternative is to use the ERPs in order to provide a reasonable satisfactory system and, when necessary, interfacing it with another commercial package (ibid.).

2.4 Summarizing the theoretical perspectives

As demonstrated in this chapter, the theoretical relationship between BB and ERPs is rather complex. Especially the flexibility contradiction appears to be interesting in this regard, as the management philosophy BB emphasizes the importance of organizational flexibility and agility, while there exists contradicting theories concerning the flexibility of ERPs. This underlying contradiction is also shown to be largely unknown and under-researched. Hence, studying how this relationship is experienced in practice as well as how potential problems are solved can contribute to the literature by aiming at filling out this literature gap.

3. Research methodology

This chapter will elucidate the methodology used by describing the purpose of the study, the chosen research design and the information gathering techniques applied. In addition, this chapter includes argumentation of why the methods are chosen, a discussion of validity and reliability, and further explains potential limitations.

Methodology is the theory of how research should be carried out and can be defined as “*a systematic investigation of the various rational and procedural principles and processes which guide scientific inquiry*” (Delanty & Strydom, 2003, p. 4). Research can be defined as “*something that people undertake in order to find out things in a systematic way, thereby increasing their knowledge*” (Saunders, Lewis, & Thornhill, 2012, p. 5).

When starting a research process it is important that the research is based on logical relationships, and knowledge about research methodology is also essential in order to verify that the results are based on actual and real observations and not just a consequence of the research itself (Jacobsen, 2005). In order to conduct research there are several different methods, which in turn refers to different techniques and procedures used to obtain and analyze data (Saunders, Lewis, & Thornhill, 2012).

3.1 Purpose of the study

The purpose of this study is to answer the following research question: *How do Enterprise Resource Planning systems limit or facilitate the use of Beyond Budgeting? What are the practical challenges of using Enterprise Resource Planning systems for the implementation of Beyond Budgeting? How do organizations manage/overcome these challenges?*

The research question of this study contains three separate questions to be answered, and therefore also involves three purposes. The first is to explore how ERPs limit or facilitate the use of BB. The second is to explore what the practical challenges of using ERPs are when implementing BB, and the third is to describe how organizations can manage or overcome such challenges.

Saunders, Lewis & Thornhill (2012) classifies study purposes into exploratory, descriptive and explanatory.

An *explanatory* study attempts to establish causal relationships between variables and looks at the situation or problem in order to explain the relationship between these variables (ibid.).

An *exploratory* study is used when trying to discover what is happening and to gain insight in a specific topic of interest, and is often applied when asking open questions (ibid.). Answering the two first research questions is thus of exploratory nature. When conducting such research there are several possibilities, such as literature-search, interviewing experts, conducting focus group interviews, or conducting in-depth individual interviews (ibid.). To be exploratory, the interviews are likely to be unstructured. Such studies have the advantages that they are flexible and adaptable to change (ibid.).

A *descriptive* study on the other hand tries to gain a more accurate profile of events, persons or situations, and might be an extension of a piece of exploratory research (ibid.). Such description is important in management and business research, but it should be thought of as a means to an end rather than an end in itself (ibid.). This is the purpose of answering the third research question, which in turn is a natural extension of the two first research questions of exploratory nature.

3.2 Research design

Research design is the general plan of how to go about answering the research questions, and there exists several different designs such as experiments, case study and questionnaires (ibid.). In choosing design, there is no one best way, and the choice should be based on the purpose of the research (ibid.). The main challenge is choosing the research design that fits the research question in the best way.

Hellevik (2009) distinguishes between extensive and intensive research design. Extensive design is characterized by being general studies looking into many units, and the intensive design entails in depth studies on a few units. The best way to grasp reality is by combining these two by studying numerous units (breadth) as well as a vast number of variables (depth) (Hellevik, 2009). Due to constraints in time and resources, and also because it is found to be the most appropriate design in order to explore the complex relationship between ERPs and BB, this study will use an intensive design. To do this, a case study design is chosen, in which the relationship between ERPs and BB is studied by looking at how Statoil, a company

claiming to successfully have implemented the BB-principles into their organization, has managed this relationship.

3.2.1 Case study

There are several definitions of a case study. Stake (1995, p. xi) defines it as “*the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances*”. Simons (2009, p.21) defines case study as “*an in depth exploration from multiple perspectives of the complexity and uniqueness of a particular project, policy, institution, programme or system in a ‘real life’ context*”. This method is chosen in this study to get an in-depth understanding of the relationship between ERPs and BB.

Using a case study approach is not equivalent to using qualitative methods, and relevant methods will differ according to the type and purpose of the study (Simons, 2009). Nevertheless, using a case design will always involve studying one or several cases over time, through detailed and extensive data collection (Johannessen, Tufte, & Kristoffersen, 2010). Two dimensions are important in this regard; first, the number of cases involved in the study, and second, how many units that are involved in the analysis (Yin, 1994). This study will focus on Statoil as the case-object, and interviews will be conducted with people from several units at Statoil. Thus, this study is a single-case design involving several units.

3.2.2 Case study object

To understand the complex relationship between ERPs and MAIs, such as BB, an in-depth analysis of an organization can be suitable (Yin, 2012). As a research objective, the international energy company Statoil was viewed upon as interesting of several reasons. First, Statoil has been one of the early adopters and further proponents for BB (Bogsnes, 2009; BBRT, 2013a), and has also been at the forefront of implementing state of the art ERP-solutions for management accounting and control (Statoil, 2011). In addition, writing this thesis as part of the ‘Beyond Budgeting’ research program at the Institute of Research in Economics and Business Administration (SNF), which is financed by Statoil, made Statoil a possible research object.

Statoil is a Norwegian oil and gas company, with approximately 23 400 employees worldwide (Annual Reporting Compendium, 2013b). Statoil has business operations in 33 countries, with the majority of employees in Norway (ibid.). Statoil was founded in 1972, and building on

more than 40 years of experience from oil and gas production on the Norwegian continental shelf, Statoil tries to be a committed company accommodating the world's energy needs in a responsible manner, applying technology and creative innovative business solutions (ibid.). Statoil is involved within a vast and complex number of business fields. Operating in a large number of business arenas and countries makes it essential for Statoil to have a strong overview and management control system, which might be a reason why Statoil has invested in a sophisticated ERPs from SAP. At the same time, today's rapidly changing environment entails pressure of flexibility on their management control system, and in 2005 Statoil decided to implement the mindset of BB and abandoning traditional budgets. For this reason, Statoil is ideal as a research objective in order to address the problem statement.

3.3 Information gathering and analysis of data

Having established central choices in respect to research design, the next choice is which data needs to be gathered as well as how this should be done. There are two broad groups of methods used; *quantitative* and *qualitative*, where 'quantitative' usually is used as a synonym for any data collection techniques or data analysis procedure that generates or uses numerical data, whilst 'qualitative' refers to methods generating or using non-numerical data (Jacobsen, 2005). Quantitative analyses are applied when collecting a large number of data, and therefore may be appropriate for extensive research, whilst qualitative analyses aims at in-depth studies of a phenomenon and may be appropriate for intensive research. Further, Jacobsen (2005) differentiates the methods based on whether the collection of data is pre-structured or more open in nature. The qualitative method is open, meaning that the researcher want to put as few constraints as possible on the collection of information, whereas the quantitative method is pre-structured, meaning that the researcher to a large extent limit the possibility of respondents to reveal information (ibid.). When deciding on the best method one can choose either of these, or it might be useful to combine them using a multiple methods research design. When shedding light into the complex relationship between ERPs and BB it is valuable to have an open angle. Due to the choice of having an intensive research approach as well as constraints in time and resources, this study will focus on using a qualitative methodology.

When ensuring validity and reliability, it is important to make use of several sources of evidence (Yin, 2003), and in order to get a good understanding of the relationship in question,

existing literature will therefore also be used as a source of information. Literature sources are normally divided into two categories; *primary* and *secondary* literature (Jacobsen, 2005). Primary literature is the first occurrence of a piece of work, whilst secondary literature is subsequent publication of primary literature (ibid.). In order to find primary literature, the researcher has to gather data directly from the primary source of information (ibid.).

In a case study, normal source of evidence ranges from interviews, documents, archival records, participant observation, direct observation as well as physical artifacts (Yin, 2003). This study will focus on in-depth interviews with employees at Statoil as a source of primary data, which will also constitute the majority of the data. In addition, secondary data such as previous studies of BB in Statoil as well as other external and internal documents will be used, primarily to gain an understanding of the organization.

3.3.1 Interviews

According to Yin (2003), interviews serve as one of the most valuable sources of information in case studies, and there are several possible methods to use in order to conduct interviews. Interviews can be structured, semi-structured or unstructured depending on the extent of guidance given by the researchers (Saunders, Lewis, & Thornhill, 2012). In order to avoid pre-coded answers, but still be able to set the tone of the dialogue, this study uses semi-structured in-depth interviews, where the interview-guide is more a conversation guide than a pre structured questionnaire (Johannessen, Tufte, & Kristoffersen, 2010). Having an interview guide can be a very powerful tool, and using such semi-structured interviews can make it possible to find a balance between flexibility and structure. In addition, open questions as well as follow-up questions were asked in order to obtain detailed and specific information where needed.

The interviews were conducted in steps. In order to get an initial feeling of the context, as well as discuss potential interview candidates, an unstructured conversation was first set up with the contact person in Statoil. Following this, a total of five candidates in Statoil having different roles were interviewed. First, an ERPs solution architect and an IT consultant were interviewed, and by using knowledge from these interviews, new semi-structured interview guides were created for the following interviews. In total, three different interview-guides were used (See Appendix 1 to 3). The interviews were conducted using the participants' native tongue, Norwegian. This was done in order to ensure better understanding and to limit

potential problems or barriers of answering in a foreign language. The interview-guides have been translated to English in the appendixes.

Four main-interviews have been conducted, ranging from 40 to 70 minutes, with employees all having worked at Statoil for more than 20 years. These included one lead solution architect within accounting and controlling, one IT consultant, as well as two vice presidents within relevant departments. In addition, one short interview of 30 minutes was conducted with a functional controller within IT having worked at Statoil for three years. This latter interview was conducted both in order to get the opinion of how a controller experiences the relationship in question, but it was also valuable to get the opinions from a rather fresh employee. An overview of the interviews is provided in the Table 1 below:

Table 1: Overview of the interviews conducted

Date	Type	Informant	Aim	Mode	Position
Spring 2013	Informal		Overview and potential interview candidates	Face-to-face	Vice President
17.06.2013	Semi-structured qualitative interviews	1	Get an understanding of Statoil's ERPs	Face-to-face	Lead Solution Architect
19.06.2013		2		Face-to-face	IT consultant
25.02.2014		3	Get an understanding of BB in Statoil in connection to the ERPs	Phone	Vice President
24.04.2014		5		Phone	Vice President
14.03.2014		4	Understand the issue from an user's perspective	Phone	Functional controller IT

Every respondent were informed about the study, its purpose, and were reassured that the interviews were anonymous. Establishing an informal and relaxed, as well as trusting and professional atmosphere when starting the interviews, was strived. The candidates were also asked for permission to record the interview, which all candidates allowed. During the interview, accurate notes were taken in order to best be able to ask follow-up questions. In order to have the interview, including language, body-language and extended meanings, fresh in mind the complete interview was transcribed immediately. Due to difficulties in arranging personal meetings, some of the interviews were conducted in person, and others over the phone.

3.3.2 Analysis of data

After the transcription of the interviews, the analysis was conducted in a stepwise process. First, the data was divided into different categories by thematically organizing them in order to reduce, systematize and arrange the data to become feasible for analysis without losing

important information (Johannessen, Tufte, & Kristoffersen, 2010). At this stage, experiences and thoughts of the interviewees were categorized based on theoretical assumptions. As a result, not all of the information gathered is used in the analysis. Second, the information available was analyzed and interpreted in order to answer the research questions. Finally, the findings are presented, summed-up and discussed.

3.4 Evaluation of the methodology and potential limitations

When using a case study approach, some weaknesses may occur, such as difficulties in processing the overwhelming amount of data, dealing with too long and detailed internal documents and reports, and narratives that over-persuade (Simons, 2009). In addition, the credibility of the case study researcher's procedure may be questioned (Yin, 2012).

Using a qualitative methodology in order to understand the relationship between ERPs and BB will be limited to the particular sites, issues and people engaged closely with, called the *contact zone* (Ahrens & Chapman, 2006). Ahrens and Chapman (2006) claims that despite detailed insight into the organizational processes, there is always more going on than the researcher can observe and report, and within this contact zone, the researchers can only hope to understand parts of the defined field of interest. By using knowledge from a range of disciplines the research can, however, gain insight not possible by only using these disciplines separately (Saunders, Lewis, & Thornhill, 2012). In order to get a broad insight, research should also engage with the world of theory as well as the world of practice (ibid.). This study will engage with theory and practice, but is indeed limited by confined time and resources, and as a result Statoil is the only organization studied. In addition, only a few people in Statoil have been interviewed. As demonstrated, qualitative semi-structured interviews can be appropriate when attempting to answer complex questions, but they are typically not suited for generalizing data (Yin, 2003), and this can therefore be a limitation of the study.

In addition to the above mentioned, another potential limitations of the study can be selection bias. The participants of this study has been picked by two facilitators at Statoil, and these might not share the same thoughts and opinions as the rest of the organization.

3.4.1 Validity and reliability

Positivist researchers assess the quality of research on whether it is reliable and valid. Reliability refers to whether one could produce consistent findings if the research was replicated by another researcher (Saunders, Lewis, & Thornhill, 2012), and concerning qualitative studies, reliability refers the extent of which the findings in a timely manner reflect the purpose of the study and represent reality (Johannessen, Tufte, & Kristoffersen, 2010). When addressing this issue, it is important to question whether the results are in fact real or just a consequence of the research itself.

Saunders et al. (2012) describes four threats to reliability; participant error, participant bias, observer error and observer bias. First, participant error relates to the fact that the setting of the research may possibly influence the result. In order to reduce such error, this study has tried to make sure that the interviews was comfortably conducted at the participants own office, during normal working hours, and also conducted using the participants native tongue. The second threat is participant biases, which occurs if the participant only partially tells the truth or turn the information in a given direction, for example due to a wish to give a positive impression to external parties. In this study, this bias is limited by giving the participant anonymity, as well as asking questions on both the positive and negative sides of the issues. In addition, all participants seemed interested in the issue being studied. However, there is always the risk that these people who actually works with these issues, do not want to fully admit what problems they might face (or have not been able to handle), but this should be limited by interviewing several employees performing different types of work within Statoil. In a similar manner, observer error and bias may threat the reliability. In order to reduce observer error, all interviews have been recorded and formally written down immediately after the interview. Observer bias may also be a threat. In this study, this bias is limited by the ambition of this study, namely to get a better understanding of the issue in question, not necessarily to draw drastic conclusions. Nevertheless, as the interviews were conducted in Norwegian, and translated by the author, this could potentially cause observer bias.

Looking at the validity of the study, one could say that the results are valid if they explain what they are actually intended to explain, with no underlying reason (Saunders, Lewis, & Thornhill, 2012). The discussion is normally divided by looking at internal and external validity, where internal validity refers to whether the findings are applicable to the entire organization or not, and external validity (generalizability) to whether the findings are applicable to other organizations (ibid.). In this study, the number of interview participant may cause a problem concerning internal validity. However, the number of participants was not selected in advance, but considered sufficient as the answers received started repeating itself, and as such the results are valid by arguing that the majority of participant addressed the same issues. There might still be issues concerning external validity as this study only examines one organization. Connecting the findings to current theoretical perspectives might however reduce this problem, and one may hope that the results in fact can be relevant for other organizations as well.

4. Statoil, its management model and ERPs

The aim of this chapter is to present information about Statoil which is necessary for the analysis, such as the historical background, developments of BB in Statoil, as well as a brief description of the development in Statoil's ERPs. This is primarily based on internal documents as well as interview findings.

4.1 Historical background

Statoil, the Norwegian State Oil Company, was established in 1972 and as a company owned by the Norwegian State their role was to be the commercial instrument for the government in the development of the oil and gas industry in Norway (Annual Reporting Compendium, 2013b). As from 2001, Statoil became a public limited company being listed on both the stock exchange in Oslo as well as in New York (ibid.). Initially, Statoil's operations were primarily focused on exploration, production and development, but later expanded to include among others oil-refining operations (ibid.). Today, Statoil operates in a vast number of business arenas and their corporate structure are organized into six business arenas; Development and Production Norway (DPN), Development and Production International (DPI), Development and Production North America (DPNA), Marketing, Processing and Renewable Energy (MPR), Technology, Projects and Drilling (TPD), Exploration (EXP) and finally Global Strategy and Business Development (GSB) (ibid.).

In the 1980s Statoil experienced substantial growth through the development of large fields on the Norwegian continental shelf. More recently, since 2000, Statoil's business has grown due to investments on the Norwegian continental shelf as well as internationally, and further through the merger with Hydro's oil and gas division in 2007 (ibid.).

Today, the Norwegian State is still the largest shareholder, holding 67% of the shares (ibid.). However, the importance of the capital market has increased over time as Statoil's shares and corporate bonds are listed on the stock exchange. Currently, Statoil is run by the CEO Helge Lund appointed in August 2004 (ibid.). Further, Statoil is Norwegian's largest company with a turnover of over 700 000 MNOK, a turnover seven times as large as number two on the list (Kapital500, 2014b). Worldwide, Statoil is one of the largest net sellers of crude oil and condensate, as well as the second-largest supplier of natural gas to Europe (Annual Reporting Compendium, 2013b). Statoil has around 23 400 employees, and operates in 33 different

countries (ibid.). In addition to oil and gas, Statoil is also participating in projects focusing on other forms of energy such as offshore wind as well as carbon capture and storage (ibid.).

Operating in a large number of business arenas and countries makes it necessary for Statoil to formalize procedures, particularly regarding their management control systems. This might be one of the reasons why Statoil has invested in a sophisticated ERPs solution from SAP. At the same time, the rapidly changing business environment entails pressures of flexibility on their management control system. One reaction to these changing business environment has been that Statoil in 2005 decided to go beyond budgeting. More precisely, Statoil replaced the traditional planning process of budgets with the management philosophy of BB.

4.2 Beyond Budgeting in Statoil

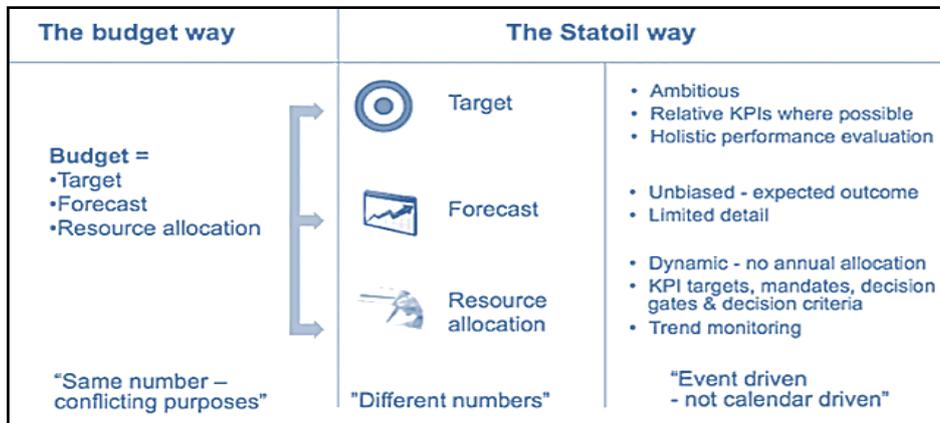
During several years of growth in Statoil, new management processes had been introduced one after another causing increased bureaucracy and rigidity. As a result, Statoil realized it was time to change focus in order to increase flexibility and agility, as well as aligning what was communicated through the leadership principles and what was actually carried through in the organization (Bogsnes, 2013).

One of the initiators for change in Statoil, Bjarte Bogsnes, argued that companies are not destined to become slow and sad places to work simply due to growth and age, and he wanted to see if it was possible for Statoil to balance the benefits of being big with the benefits of being small by asking the question “*How can we be small and big at the same time, young and old, brave and wise?*” (Bogsnes, 2013, p. 12). Statoil found that the budget and the mindset behind the budget-process was a good place to start, and in 2005 Statoil started implementing the philosophy and principles of BB, which in addition to the abolishment of budgets also included the introduction of a process called “Ambition to Action” (A2A) (Bogsnes, 2013). At the corporate level, several benefits from this new control system were communicated. For instance, that the implementation of BB was expected to solve the conflict between target setting and forecasting, as well as reduce budgetary games. In addition, Statoil believed that this new management model would solve the problem associated with inflexible budgets seen as useless in a rapidly changing environment characterized by expensive and extensive offshore exploration activities.

Since the first initiatives, Statoil has experienced a gradual development in the BB mindset and the development of the management control system has been a continuous process. One of the largest changes following the introduction in 2005, was in 2010 when they decided to also leave the normal calendar rhythm in most business units (ibid.). By implementing the BB philosophy, Statoil has developed a new performance management culture and system with a strong focus on values and change, emphasizing the importance of moving forward, towards a more dynamic, self-regulating and flexible management model (ibid.).

One of the first things Statoil did was to take a good look at existing budgets by asking the question “*Why do we budget?*”, and by answering this question they realized that this single process actually attempted to do three separate things at the same time; *target setting, forecasting* and *resource allocation* (ibid.). Statoil found that these three purposes could not in a meaningful way be handled in *one* process resulting in *one* set of numbers (ibid.). Their solution to this problem was actually quite simple; separate these three purposes and by that allow optimization of each process, as illustrated by the figure below:

Figure 6 : The budget way vs. The Statoil way (Bogsnes, 2013, p. 13)



One of the purposes behind this new management model is having employees who are able to do the right things in every daily situation, including situations that are not possible to foresee in the budget or within other business plans (The Statoil Book, 2013a). As the fundament for leadership and performance in Statoil, the idea is that having employees taking good decisions, the organization as a whole will also be successful. In order to make this possible it is important to decentralize responsibility so that people in the actual situation are allowed to make this decision, and this new model attempts to do this within some boundaries (ibid.).

Concerning these boundaries, Statoil requires first of all that every employee follows The Statoil Book, a document describing values and desired behavior, as well as emphasizing the importance of using sound business judgment (ibid.). Second, they have developed the A2A-process, which is a dynamic tool for strategic planning for the long and short term. This process includes more specific guidelines through strategic goals, KPIs and specific actions (ibid.). In order to break these plans down to individual goals, they have further developed a “People@Statoil”-process which in turn also evaluates employees based on both delivery and behavior in accordance with the organizational values. Finally, Statoil has also provided a few boundaries by making employees use a structured decision-making process. In order to implement this processes into the IT structure, Statoil has developed an information system called “Management Information in Statoil” (MIS) to establish, describe as well as follow up the individual performance contract.

4.2.1 Ambition to Action (A2A)

Statoil’s management process, the A2A-process, is based on the Balanced Scorecard concept, but tries to a greater extent to also implement the principles behind BB in order to achieve a more unique and robust management model, which could solve many of the problems organizations face when only using the Balanced Scorecard (Bogsnes, 2013). A2A is an integrated performance process developed to manage three purposes (The Statoil Book, 2013a). First, it aims at translating ambitions and strategies into strategic objectives, KPIs, actions and team, or individual, goals. Second, it tries to create a dynamic and flexible execution framework. Finally, it attempts to activate values, people and the leadership principles. Having realized that their business environment is demanding, dynamic and unpredictable, Statoil believes that in order to continuously evaluate risk and respond quickly they need a dynamic and event-driven performance management process. Statoil has therefore tried to accomplish this by allowing for dynamic resource allocation, forward-looking and action-oriented follow-up, holistic performance evaluation, as well as trying to learn through sharing and improving (ibid.). The A2A-process separates target-setting, forecasting and resource allocation from each other in order to improve the quality of these activities, and the whole process can be illustrated by the figure below:

Figure 7 : Ambition to Action process (The Statoil Book, 2013a)



Every unit in Statoil has its own A2A-plan, and today Statoil has around 1200 unique A2A plans (Bogsnes, 2013). When making these plans, Statoil emphasized the importance of translation, meaning that every team should ask the question *“What should our Ambition to Action look like in order to support the Ambition(s) to Action(s) above?”*, and to facilitate such translation there is full transparency around all these 1200 A2A-plans (Bogsnes, 2013, p. 17). Both KPIs and actions are constantly measured and monitored, and the A2A-plan is adjusted whenever needed, commonly several times a year (The Statoil Book, 2013a). In addition, the employees themselves are also involved in setting their personal goals (ibid.).

Using this management control system we see that several of the 12 principles of BB are followed. By first taking a look at the six leadership principles, we can see that the principles of binding people to a common cause by the use of values are achieved, the principle of governance are met through their claim that values and sound judgment are important factors, and transparency seems important as they emphasize that a learning and sharing environment is essential. Further, the principles of using teams, providing trust as well as basing accountability on holistic criteria and peer reviews seem to be met by varying degrees.

Concerning the process principles, all six principles seem to be covered by this system. We can first see that the principle concerning goals is met as Statoil aim at setting ambitions and relative goals with a view on both long and short term. Further, they base rewards on relative performance, as the A2A emphasizes that the KPIs should be relative, and by the fact that Statoil uses benchmarks towards competitors when setting performance goals. In addition, focusing on A2A to be a dynamic process, the principle concerning an inclusive planning process is fulfilled. Coordinating interactions dynamically is managed by the dynamics of the system, and control is

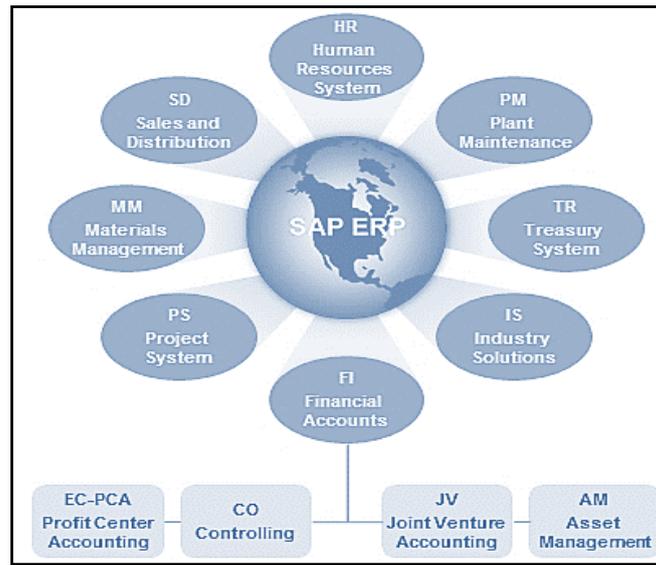
based on fast frequent feedback. Finally, looking at the principle of resources, we see that Statoil also has emphasized this by having a dynamic resource allocation process.

4.2.2 People@Statoil

Statoil has introduced a more holistic performance evaluation, through a process called People@Statoil. This process attempts to ensure alignment between the A2A and individual targets and performance (ibid.). An important feature of this process is the definition of behavior being equally important and weighted as delivery. Thus, every employee is measured both based on the delivery against the A2A goals, as well as on how they deliver. The targets to measure against are described in the MIS-system, and performance evaluation is conducted yearly (ibid.). The behavior evaluation is based on following the corporate values, which are defined as being courageous, open, hands-on as well as caring (ibid.).

4.3 Statoil's ERPs

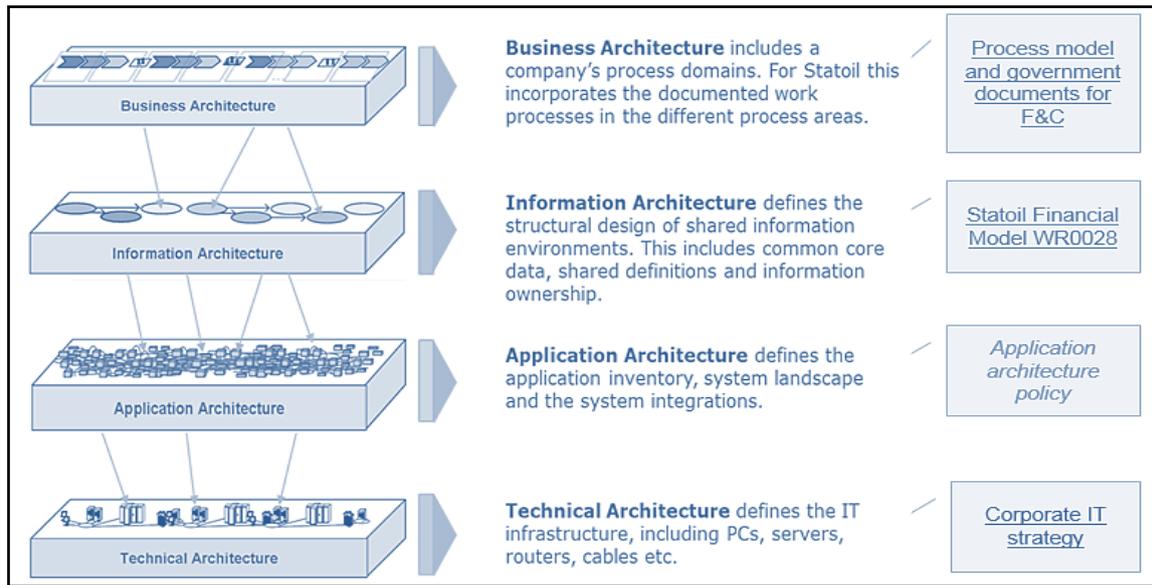
The oil industry is characterized by having large investments, high risk, several partners collaborating together, as well as taking a long-term view. This is also true for Statoil, and this puts high pressure on capabilities of systems as well as for the users of such systems. In 1997 Statoil decided to implement the ERPs provided by SAP (SAP R/3) in the entire organization, and in 2008 this system was upgraded to the SAP ERP 6.0 solution (Statoil, 2011). Using this SAP-environment enables Statoil to use one common solution including modules such as for Financials, Treasury, HR, as well as others specially designed for the oil industry (ibid.). This environment can be illustrated by the figure below:

Figure 8 : SAP ERPs in Statoil (Statoil, 2011)

In Statoil there are several user groups needing the information stored in the ERPs. In order for these users to get access to this information, it often has to go through several layers. Some users, such as accountants, may get necessary information directly from the ERPs. For others, this information is consolidated with other data before presentation. In this regard Statoil uses a common data warehouse as an integration layers, the Business Warehouse (BW) provided by SAP, as well as other specialized business applications and reporting analysis visualization tools on top of this warehouse (ibid.). In addition, as Statoil has developed their own enterprise performance management process, the A2A process, they have also developed an additional integration user interface. This management reporting tool is made by Statoil themselves and called Management Information in Statoil (MIS) (ibid.). To see a complete overview of the architecture, see Appendix 4.

4.3.1 Finance and Control

As explained, the ERP-environment is only part of the picture. Statoil has a sophisticated IT system in which the application level is based on the business architecture, the information architecture as well as the corporate IT strategy (Statoil, 2011). This can be illustrated by taking the structure for the Finance and Control (F&C) architecture as an example:

Figure 9 : F&C architecture in Statoil (Statoil, 2013)

Statoil has developed a clear F&C application architecture that supports the F&C's ambitions, efficient processes to ensure operational excellence, as well as enable Statoil to analyze consequences of change (ibid.). Their strategic objectives for the application architecture involves having compliance with external and internal requirements, providing quality in decision support, drive improvements and change, be prepared for portfolio changes, as well as provide cost efficient processes to be the most important objectives (Statoil, 2013).

As for the accounting processes in Statoil, this involves several different processes such as financial accounting, equity close, corporate close and reporting and disclosure. In order to support these processes Statoil uses both the SAP ERP (ECC) system, as well as several other modules such as Tax Calculation Modules (TCM), Business Planning and Consolidation (BPC), as well as a solution for compiling financial statements in numbers and text called Porter. To support the controlling processes Statoil mainly uses the MIS tool, several SAP modules such as Business Planning and Simulation (BPS), several customized SAP modules as well as a few other solutions. To see an illustration of all the processes within F&C as well as a list of all applications currently applied in this business unit, see Appendix 5.

4.3.2 Continuous improvements

Statoil has invested in an extensive business warehouse implementation from SAP called SAP NetWeaver® (SAP BW), which includes tools such as BPS, SAP BEx and SAP

BusinessObjects as well as others used for reporting (Statoil, 2011). Statoil continuously make changes to the systems and recently they decided to deploy the Business Planning and Consolidation application by SAP, they migrated financial data to the before mentioned SAP NetWeaver® business warehouse application as well as switching from a database provided by Oracle to the SAP HANA® platform (SAP, 2014). This illustrates that Statoil has high focus on making continuous improvements in the IT architecture.

Statoil believes that their IT system creates value on multiple levels, among others by increasing the speed of change, by enabling Statoil to facilitate global growth, as well as by supporting new business models (Statoil, 2013). If this is true, it seems like Statoil's ERPs in fact is flexible enough to manage the changing needs of the organization.

5. Analysis

The aim of this analysis is to address the following problem statement:

How do Enterprise Resource Planning systems limit or facilitate the use of Beyond Budgeting? What are the practical challenges of using Enterprise Resource Planning systems for the implementation of Beyond Budgeting? How do organizations manage/overcome these challenges?

When looking into the relationship between ERPs and BB it is important to remember that BB is not merely a toolbox ready for a company to implement. BB is a management philosophy, and the tools and processes used, as well as the changes needed will differ from company to company, depending on its area of business. The term BB is somewhat misleading, because the focus is not solely abandoning budgets, and in some cases it might even be reasonable to keep budgets within specific areas characterized by great stability. This implies that getting an understanding of the relationship between ERPs and BB is not a simple task as one cannot simply study how certain tools and processes can be implemented into the system, or by studying what solutions ERPs-vendors offers in this regard. Rather, in order for organizations to go beyond budgeting there are twelve guiding principles to follow. This analysis attempts to answer the problem statement by looking into whether the ERPs limit or facilitate the possibility of successfully implementing these principles. In addition, this study attempts to explore how the flexibility contradiction of ERPs is experienced in practice. To do this, theory on BB as well as evidence from the management accounting and control literature on ERPs are utilized while analyzing the Statoil case.

The analysis is divided into three parts. First, a short discussion of what flexibility requirements and current challenges Statoil faces within the *oil and gas industry* will be provided. Second, the way Statoil has *implemented the BB principles into the ERPs* will be studied, and by that look into whether the ERPs (SAP) actually limit or facilitate the possibility of a successful implementation. Finally, *the flexibility contradiction of ERPs* will be addressed.

5.1 Statoil operating in the oil and gas industry

Statoil is faced with several industry-specific challenges. One of their main challenge is being able to adapt to a changing business environment. In particular, adapting to increasing costs has been important, which in turn has resulted in a flexibility contradiction.

5.1.1 Need for flexibility

« *Our business environment is demanding, dynamic and unpredictable* »

In accordance with the above quote obtained from the Statoil book (2013a, p.27), the main governing document in Statoil, several of the participants seem to agree that Statoil operates in an especially dynamic and unpredictable environment. However, one vice president explained that on one hand Statoil actually operates in a rather long-term oriented business:

On one side, Statoil operates in an industry with relatively long lifetimes compared to many other businesses (...). It may take as long as 5-10 years from the time we make a new discovery until we start producing, further we may produce from this field the following 30-40 years. In this way, we have long lifetimes and the decisions we make will have long-term consequences. Informant #5

On the other hand, this long-term production focus goes hand in hand with short-term market driven factors that significantly affect Statoil's profit:

Within these long lifetimes, there exist plenty of short-term uncertainty. We, of course, have to deal with an oil price fluctuating up and down in the short term, as well as changes of paradigms happening very quickly such as with the shale gas and shale oil in the US. In addition, there are many other reasons causing an operational need to turn around quickly despite the fundamental rhythm being slower than what is the case in some other companies. Informant #5

Because of such short-time fluctuations and changes, Statoil's management and control systems truly needs to be flexible. In addition to the operational needs mentioned above, the fact that Statoil is present on an international basis also makes it necessary for Statoil to be flexible on several other dimensions as well. First, when operating on an international basis it is important to be able to sense opportunities spread across large geographical areas, to enter

unfamiliar territories, and to capture such opportunities before others. Further, Statoil needs to respond to changes in the international environment concerning law, regulations, or other changes having an impact on Statoil's business areas. One of their biggest challenges today concerns increased operational costs which in turn might compromise this required flexibility.

5.1.2 Cost consciousness

Currently, Statoil, like the rest of the oil and gas industry, is facing fundamental challenges as cost is increasing, production growth is slowing down and profitability declining. Especially exploration and production costs has increased, putting high pressure on Statoil's ability to adapt to such changes. In addition, fluctuations in oil and dollar price are viewed upon as very critical. Because of this, Statoil has communicated a strong focus on cost consciousness, which was clearly illustrated by the answers provided concerning what is seen as Statoil's greatest challenges in today's environment:

It is cost-reductions. Informant #4

I believe that Statoil has several of the same challenges as the industry has, namely that it has become more and more expensive to explore and produce oil and gas, making us under pressure. Dollar and oil prices are not as they used to be. So, it is very much about addressing a significant increase in costs in the entire industry.

Informant #5

'Cost consciousness'. In 2013 IT is supposed to reduce its costs by 1.13 billion NOK. This is a dramatic reduction. We are not alone, all support-processes needs to do this, but we take a big share. There is really a focus on cost, doing things in a smarter and less expensive way, this is something each and every one are told to have in mind.

Informant #2

In order to handle this, cutting unnecessary costs, having stricter project prioritization as well as a strong focus on comprehensive efficiency programs, are viewed upon as important at Statoil.

5.1.3 Flexibility contradiction

Based on the above findings, this implies that Statoil is faced with a situation in which both flexibility and standardization seems to be crucial, resulting in a flexibility contradiction. On one hand, having an ERPs can help by ease standardization, as well as by providing detailed information:

In order for Statoil to succeed as a company, I believe it is important that we have access to the base-information (from the ERPs) supporting us in making the right decisions, and prioritize the right activities (...). That we are able to make solutions available, solutions that are both simple and secures a single source of truth, for those needing this information that is occurring in the company. Informant #3

On the other hand, Statoil still need to be flexible enough to manage the changing business environment, but the cost focus has put tremendous pressure on the current management model, resulting in people wanting to change it:

This (cost consciousness situation) gives us some restrictions concerning flexibility. (..) this implies that we, to a greater extent, have a pre-allocation of resources. This is truly a challenge nowadays, looking into how we can still make this work within the BB management model, or Ambition to Action process. Informant #3

Some may think that it is easier to manage costs using traditional budgets. It is clearly easier, but it is not necessarily better (...). we have to remind people that we had good reasons to leave previous ways of doing things as there was some fundamental problems with these, and explain that these problems will come back if we introduce such traditional management again. It is quite clear that Beyond Budgeting is generally a more demanding management model for our leaders, from a leader-perspective, and traditional management is in many ways easier. This implies that it will always be tempting for some to go back to what is easier, just because it is easier. Informant #5

To sum up, Statoil is faced with a situation in which their ERPs is advantageous regarding the cost focus, but, as demonstrated in the theory part, might impede the highly important flexibility requirement of today's environment. In addition, their current management model is by some perceived as unable to handle the increasing focus on costs. It is therefore

interesting to look into whether the ERPs is actually experienced as rigid, hindering this flexibility, and eventually how this may be solved in practice.

In the following sub-chapter an analysis of whether the ERPs actually facilitate or limit the implementation of the BB will first be provided. Further, we will look into the flexibility contradiction of ERPs by getting an understanding of whether Statoil actually experiences its ERPs as rigid and inflexible, thus impeding the required flexibility.

5.2 Implementing Beyond Budgeting into the ERPs

In order to be best suited to respond to these changes in the environment, Statoil has implemented the principles behind the BB philosophy. In this subchapter an analysis of how Statoil has managed to implement these twelve principles into their organization, and as a result also into their ERPs, will be provided. Because gaining an understanding of the relationship between BB and ERPs is the focus of this thesis, some of the principles will only be briefly discussed, and the focus will be on those which are most connected to the ERPs.

5.2.1 The leadership principles:

Within the six leadership principles three of them are connected to governance and transparency in the organization, while the other three are connected to having accountable teams. These principles are there to help organizations become decentralized, and in order to get there the organization needs information systems to provide people at the front line with data required to make fast and effective decisions. These principles are important for Statoil in order to maintain a flexible, self-regulating management model.

Governance and transparency

Of these three, the principle concerning making information open and transparent is the most relevant when looking at the connection with the ERPs. However, the principles of values and governance can also to some extent be facilitated by having an ERPs in the organization.

Transparency

When looking at the principle of transparency, this study found that having an ERPs have a profound positive effect. As demonstrated in the theoretical part, ERPs are well suited to provide transparency in an organization as most information will be available in real-time throughout the whole organization. During this study, one of the most important effects in this

regard, is what one of the vice presidents referred to as ‘*drill-across*’, meaning that the ERPs enables teams to learn from each other by being able to see what others are doing. One of the solution architects also seem to agree by explaining that:

The advantage (of having large SAP systems), this is demand-driven, and as we think about it within the Performance Management area, we are especially thinking about the corporation and transparency. Everybody is able to see what others are doing, and having internal benchmark, trying to yield against each other in addition to setting its own goals. Informant #2

Having an ERPs in place is thus helpful in providing horizontal transparency. In addition, ERPs can provide companies with vertical transparency, to ‘*drill-down*’, as confirmed by one of the vice presidents who gave a somewhat extreme example in order to illustrate exactly how transparent the ERPs can make organizations become in this regard:

Looking at ERPs, they (vendors) talk a lot about the possibility to ‘drill-down’, meaning that you can for example sit at the head-quarter and drill down to see the consumption of blue ballpoint pens at the sales-office in Italy. Informant #5

One can of course question whether such information is actually valuable, but the main advantage is clearly that the system makes it possible to have updated information about costs, revenues and other important information in real-time throughout the whole organization. Further, it enables the organization to quickly detect if something is not working as it should and in turn do something about it.

Despite the fact that ERPs is perceived as important by some, not everyone in Statoil seems to understand exactly how important ERPs is in order to provide transparency:

It is easy to forget how much this system (ERPs) provides us with integrated information and integrated functionality. Informant #1

As this solution architect emphasized, it is really important that Statoil do not forget the benefits provided by having an ERPs in order to maintain transparency throughout the entire organization.

Values and Governance

When implementing the principles concerning values and governance, Statoil did not have to rely on the ERPs as these are mainly implemented using a written document, The Statoil Book, as well as by changing the mindset of employees. This document emphasizes the message behind these principles, but are not directly linked to the ERPs. By distributing this document out to every new employee, and also have it available on their webpage, Statoil tries to bind people to a common cause. Concerning the governance principle, this is mainly implemented in the evaluation-process. Statoil assess behavior in accordance with these corporate values as equally important as what is actually delivered, and by using this process they truly aim to govern through values as well as sound judgment.

Even though ERPs does not have any direct effect on the implementation of these principles, it can have an indirect effect in two ways. First, focusing on the importance of having the same IT system in the whole organization provides a feeling of fellowship among all employees in the organizations. Second, Statoil emphasizes the importance of having equal processes for all employees with similar responsibilities despite geographical differences, and in this regard it is shown that ERPs makes it easier to standardize such processes:

It was very important for Statoil, especially when justifying the project (implementing SAP), to make sure that every employee having similar work-processes actually conduct their work in the same way (...). So that one can be sure that Statoil deals with stuff in the same manner no matter where in the organization you are.

Informant #1

This implies that having an ERPs can help Statoil achieve the goal of having equal processes, which in turn might ease the process of binding people to a common cause.

Accountable teams

Moving on to the principles made in order to help organizations develop accountable teams, ERPs can facilitate two of them to some extent; the principles concerning teams and accountability. However, if not managed correctly, ERPs can actually hinder the principle of trust.

Teams

One of the guiding principles here involves decentralizing power by organizing around a seamless network of accountable teams instead of having centralized functions. In every organization it is important that whoever making the decisions are able to make well-founded decisions. In this regard having an ERPs can actually simplify this process by easily providing employees at lower level in the organization with the information and data required to make such decisions:

We have hierarchical access-controls on our data. This means that depending on where you are in the organization, you will be allowed to see more or less.
Informant #2

This, in turn, also enables the company to respond quicker, as decision makers are located closer to the actual problem or opportunity detected. In addition, ERPs facilitates the implementation of this principle indirectly by providing transparency:

If the system (ERPs) provides transparency, then it also provides a kind of implicit control mechanism in the sense that you know that what you do can be seen by others, not necessarily from above, but from your neighbor, your colleague or other teams. This is thus a kind of positive social self-regulating control mechanism, making it easier for the organization to delegate and allocate responsibility. Informant #5

This implies that, if an organization is able to create transparency this will also work as a social self-regulating control mechanism which in turn will make it easier for the organization to delegate responsibility and control.

Trust

By providing employees at lower level in the organization with better data, ERPs will also make it easier for an organization to trust teams to regulate their own performance, which is another important principle of the BB philosophy. Despite this positive effect, having a sophisticated ERPs might in fact also impede trust. By making it easier to monitor every movement in a detailed way, this might result in employees feeling they lack the trust needed. One of the vice presidents agreed to this, but emphasized that there will always be a correlation between transparency and the possibility of monitoring by stating:

By having transparency, there will always be a possibility of monitoring. This is all about how the systems are actually used. (...) In order to have transparency, it is very useful to have an ERPs (...), and avoiding that this (transparency) become misused is a matter outside the system itself. Informant #5

The same vice president also emphasized that if there exists a lack of trust in the organization, managers will always be able to find other ways to monitor, even without having an ERPs. Thus, this implies that having an ERPs does not directly hinder the possibility of implementing this principle. However, this is a possible problem the organization should be aware of, regardless of what systems they use.

Accountability

Accountability is the output a unit is expected to produce, and the performance standards managers and employees in this unit is expected to meet. This principle says that organizations should base this accountability on holistic criteria and peer reviews. When implementing this principle into the organization, the ERPs is not that relevant. However, using peer reviews to evaluate accountability can be facilitated by having an ERPs, which again is related to the transparency dimension of the ERPs, especially the possibility of *drilling across*. In this regard, having an ERPs can make it easier to look at what other teams are doing, and base accountability on this. Further, when making sure to hold teams accountable for meeting their agreed success criteria this is also to some extent supported by the ERPs. This process is mainly conducted using the People@Statoil process, a process in which Statoil has chosen to use a relatively standard IT system from the SAP company 'Successfactors':

When it comes to People@Statoil, we have recently purchased 'Successfactors' as a software-package in order to run this process, and this is a relatively standard solution that is chosen. Informant #5

Conclusion concerning implementation of the leadership principles

In total, the analysis above have shown that the most important impact ERPs has on the possibility of implementing these six leadership principles is providing organizations with better transparency, as well as facilitate decentralization by providing better information to decision-makers at lower levels in the organization. Concerning transparency, this is in

accordance with what was found in the theory-part. When looking at the above discussion it does not appear that ERPs limits the use of BB in any significant way. The only negative aspect detected is the possibility that employees might feel monitored, which in turn might damage the principle concerning providing employees and teams with trust. However, by having the right attitude and mindset, and not misuse this possibility, this in itself will not limit a successful implementation. As noted by one participant, such misuse will probably be possible despite having an ERPs in the organization. Based on the findings it thus seems like the most important part in order for an organization to actually become flexible and decentralized, is changing the way leaders behave and think. In this regard ERPs are not that relevant. One participant explained this by stating:

95 percent of our challenges lays outside the systems, they are located in the heads of the people working in Statoil. It is a matter of culture, management, mindset and stuff like that. Informant #5

Despite the fact that mindset and culture is probably the most important aspect when implementing these six principles, having an ERPs is also shown to facilitate the implementation to some extent.

5.2.2 The process principles:

Within the six process principles, two are connected to goals and rewards, whilst the remaining four concerns planning and control. These principles are to a larger extent connected to actual tools and processes implemented in the organization. Thus, the following analysis will focus both on how ERPs might facilitate or limit the implementation of these principles, as well as look at the specific tools and processes used. As discussed in the theory-part, ERPs-vendor has developed some solutions and tools that can be valuable when implementing some of these principles. Hence, this part of the analysis also aim at getting an understanding of whether these tools and processes are implemented using standardized modules provided by SAP, customized modules from SAP, or alternatively developed by Statoil themselves. In addition, the connection between these and the ERPs are also analyzed.

Goals and rewards

Moving on to the principles of goals and rewards, ERPs can facilitate the implementation in several ways.

Goals

The BB philosophy emphasizes that an important principle is being able to set ambitious medium-term goals, which can be facilitated by the ERPs in several ways. First, in order to know what is actually ambitious, having good forecasts of various environmental variables might be helpful, and as presented in the theoretical part, having an ERPs have proven to provide organizations with better forecasts. Second, ERPs enables the organization to easily communicate these goals across the entire organization, to all employees involved. In addition, the transparency provided by the ERPs may also help in order to make teams actually wanting to set ambitious goals, as one vice president explained:

If your goals are visible for everyone, meaning that your colleagues and other teams can see them, this will work as a social control-mechanism making it more difficult to hide behind unambitious goals. Informant #5

ERPs-vendors offers organizations specific tools to use in order to set goals. These include the possibilities of defining KPIs, set relative targets, upload internal and peer-based benchmarks etc. However, Statoil has chosen to use their own management reporting tool, MIS, in order to set its goals. This is an internal application built on top of the SAP database. It is developed by Statoil themselves, and works like an interface between the SAP system and the user. Within this system, some of the solutions are made up of SAP modules which are customized in order to meet Statoil's needs, while others are built by Statoil. One participant explained that making such a system was necessary in order to make it more user-friendly and provide Statoil with text-based features, but also emphasized that having an ERPs as a fundament was helpful:

I believe that it has been a strength for Statoil that we already very early had a global SAP solution, or ERP solution. This gave us better data quality, as well as more centralized data. There was, however, a need to build an interface between SAP and the user, a system that in many ways was much more user-friendly than what SAP could offer us, and that was capable of managing texts which SAP could not provide.
Informant #5

Another participant, one of the solution architects, also explained that:

Concerning our Ambition to Action process, we have the situation today that we have many text-based objects; ambitions, strategic goals, actions, comments on the results, which is not stored in the (SAP) data-warehouse, but store outside it. Informant #2

The MIS system is a system working as an integrating user interface, and includes reporting functions such as static reports, online reporting, ad-hoc reporting, as well as reports concerning procurement and project. In addition, this system makes it possible to define written strategic objectives, as well as KPI selection and target setting. Only one part of the MIS solution is directly supported by the ERPs, which is the part involving the KPI's which uses information provided by the ERPs:

The Management Information in Statoil (MIS), only the part concerning KPIs are supported by SAP. This in order to provide real numbers, planned numbers, through what we call the Business Warehouse, in order to support these KPIs (...). What we really did, was to use a standard methodology and standard solution to present KPIs where the content is based on the information we have available (in the ERPs). Informant #3

Rewards

Moving on to the principle stating that organizations should base rewards on relative performance instead of meeting fixed targets, Statoil uses an incentive system where the way employees behave are equally important as what they actually are able to deliver. In such, Statoil uses a holistic evaluation process. Having an ERPs will make organization able to better evaluate the delivery part as such systems provides managers with more accurate data. The behavioral part are, however, evaluated based on how well employees are able to behave according to the corporate values.

In order to ensure alignment, Statoil has developed a process called People@Statoil, a process where employees are measured on delivery of the A2A goals as well as behavior, and are thus also connected to MIS where the A2A targets are documented. The characteristics of this process is that it is conducted yearly, but that performance measures and measurement are also subject to re-evaluation every six months. In addition, employees are expected to contribute with their own personal goals. One of the participants explained that this process

are carried out through a recently acquired software-package provided by the SAP-company 'Successfactors':

Concerning our People@Statoil process, we recently acquired 'Successfactors' as the software-package to run this process, and in this case we have chosen a relatively standard solution. Informant #3

In order to carry out this process, Statoil found it sufficient to use a standardized tool provided by a SAP company. Thus, having an ERPs seems to facilitate the implementation of this principle in several ways. First, by providing accurate data and a possibility of uploading peer-based benchmark, this can be helpful in order to base reward on relative performance. In addition, as SAP is able to provide finished solutions that are viewed upon as good enough to be implemented by Statoil, this also implies that ERPs can facilitate the implementation.

Planning and control

Moving on to the principles concerning planning and control, having and ERPs will only to some extent facilitate the implementation of these principles.

Planning

In order to make planning a continuous and inclusive process Statoil uses dynamic forecasting. This process differs from rolling forecasts by the fact that it is more dynamic and event-driven, and has more options regarding when prognoses should be updated and how long into the future they should be able to look. Statoil wanted these forecasts to be updated *when something happens* and *as far ahead as relevant* for each unit. In order to make this possible Statoil had to leave their previous system within the ERPs:

Before, we used the ERPs to plan activities we should go through with, and our forecasts laid in the ERPs. On a very detailed level. What we had to do was to disconnect this process; we cut the connection with the ERPs for the part concerning forecasts, and moved it into a better solution making us able to actually follow our dynamic forecasting principle, making it even-based and enabling us to do upgrades when something happens. The ERPs was a restriction in this regards, having a 12 months cycle on everything you do. Informant #3

Even though this process was disconnected from the ERPs, it is still supported by input from a SAP application called ‘Business Planning and Simulations’ (BPS) within the SAP business-warehouse (BW) system:

We have an ERPs as the foundation supporting processes such as HR, Procurement, F&C and so on, where all transactions are actual numbers and actuals as well as historical numbers. These meet in a data-warehouse on top of this, which collects all this information, and in addition we have some input from an application in this data-warehouse, called Business Planning and Simulations (BPS), which is a SAP tool.

Informant #3

The dynamic forecasting process is therefore based on this BPS application within the SAP Business Warehouse system, but as another participant explained, this modules is still subject to modifications in order to meet Statoil’s specific needs:

This is a standard SAP module in which we have modified in order to meet our needs.

Informant #5

Coordination

Organizations going BB should coordinate interactions dynamically instead of through annual budgets. Removing the budgeting solution from SAP was not viewed as a technical challenge. However, removing budgets should not be at the expense of coordination in the organization. Thus, Statoil needed other tools and processes in order to ensure this. Statoil has implemented a process in which big changes needs to be approved one level up, while smaller changes only need to be informed of, as well as a policy of always informing affected units. In this process the team themselves are responsible of sorting out what is a big or small change. In this way leaders one level above can coordinate activities of a certain size, while smaller activities are coordinated by the teams themselves. The ERPs was not that relevant when implementing this principle, but again, the transparency ERPs provides can help to ease this coordination.

Resources

In order to make resources available just-in-time, Statoil has implemented two different processes depending on the characteristic of the investment. The first process are connected to large investment-decisions, such as whether to build a platform, a field, or buy expensive assets. For these decisions Statoil uses a process called Capital Value Process (CVP) in which

every project has to go through a set of decisions gates, starting with a screening of business opportunity, going through several other gates, and if accepted through all gates, goes to the final steps of the execution and operations:

What we use, is something called Capital Value Process (CVP), where the project matures through decision gates, and at decision gate, or decision-point, three, then necessary resources will be granted to the project. This can happen at any time, not like in the budget-process where this only can happen during the fall. So you could say that the bank is open twelve months a year. Informant #5

Hence, this is a continuous process, so that a project can start the journey through these decision gates at any point in time. This CVP process is also a module in SAP in which Statoil has made several modification in order to meet their specific needs:

We have a module in SAP that keeps track of these projects, and where they are in the different phases. This is a module in SAP named, which we have made ourselves, named CVP, Capital Value Process. Informant #5

As a result, this process is based on a standard SAP module, but are modified and re-named Capital Value Process.

For smaller operational or administrative costs, Statoil uses several mechanisms, including something called a “burn rate” guidance, telling the units to operate within an approximate activity level. In addition, they use unit costs targets, benchmark targets and profit targets. In some cases they do not have any targets and chooses to provide complete freedom by saying that they will monitor cost trends and only intervene if necessary. These mechanisms are included in the KPI-part of the MIS system. In this system, the ambition level, or “burn rate”, works as an absolute KPI, while the different unit cost measures usually work as relative KPIs. In addition to this, if no KPI is found for a specific team, group or department, only the strategic objectives as well as actions are used in this regard.

To handle these smaller operational and administrative costs, Statoil does not use standardized SAP tools. As demonstrated, the KPI-part of the MIS system which they use in this regard, is only connected to the ERPs by drawing on data provided by the ERPs, but is not a pre-structured module within the ERPs.

Controls

The final principle says that organizations should base control on fast, frequent feedback instead of budget variances. This is connected to several of the processes and mechanism already explained, but mostly to the People@Statoil- process where one tries to follow up yearly on both delivery and behavior. As seen, this process is basically provided as a standard tool from 'Successfactors'. In addition to this, Statoil has also developed an important controlling function which ensure critical follow-up of all commercial activity at every level in the business units and business arenas. The controller has several responsibilities, such as challenge as well as support the A2A and business decisions in the line, ensure quality in the forecasts as well as reporting, and follow up improvements initiatives etc. To support the role of the controller Statoil uses a module called Financial Analytics (FA):

This (FA) is a flexible report-generator (...). It based on a SAP module which is upgraded, which is then transported out into a cube in order to put information together and make it visible in a web-functionality. Informant #4

Hence, this FA tool is basically a management reporting module based on the BW system. In addition, other systems such as the MIS system, BPS and other systems for risk management, and for operational planning is also used by the controller.

Conclusion concerning implementation of the process principles

In total, the analysis above have shown that ERPs also can facilitate the implementation of the process principles. Particularly, having an ERPs have again proved to provide transparency, which in turn is positive in order to communicate goals, ease coordination, as well as making it harder for teams to hide behind unambitious goals. In addition, ERPs can facilitate implementation by providing accurate data which affects the reward-process, resource allocation-process as well as planning-process in a positive manner. Further, ERPs has proven to provide organizations with better forecasts which facilitate the process of making planning into a continuous and inclusive process, as well as ease the process of setting ambitious goals.

The analysis also revealed that ERPs vendors, such as SAP, are not able to provide Statoil with all required functionalities in order to implement all of these principles. However, as demonstrated, SAP has provided Statoil many of the solutions needed in the follow-up and reward processes, in the dynamic forecasting process, resources allocation process as well as

controlling process. The tools Statoil use are mostly based on these features, but have usually been customized to some degree due to either a lack of required functionality, or out of strategic considerations. In other cases, Statoil had to come up with their own solutions. In particular, SAP's solutions are not as user-friendly as Statoil wants, and are also not able to provide Statoil with the possibility of having a text-based functionality. Statoil has solved this by developing their own system, the MIS system. This is an interface between the SAP system and the user. Within this system, the KPI part is actually supported by the ERPs, while the other features such as targets, comments and strategic objectives are completely disconnected from the ERPs, and are stored outside the SAP environment. However, one of the lead solution architects emphasized that this is not necessarily a disadvantage by stating that:

(When implementing BB) I believe that the changes and adaptations made in the business warehouse was made by Statoil themselves. It is based on SAP's functionalities, but when data first are stored in a business warehouse, this is quite an open system primarily offering several different ways of structured storage and data, as well as some tools for reporting and user-presentations, but not completely finished solutions. Experience tells us that organizations usually wants to decide how such things should look like themselves. Thus, it is quite reasonable that neither SAP, nor other vendors, provides pre-made finished solutions used for management and follow-up. Nobody would want such systems. Informant #1

Looking at the systems in which SAP has provided complete or partially complete solutions to Statoil, we see that the system they use to make dynamic forecasts use input from the BPS application from SAP. The forecast itself is disconnected from the ERPs, as Statoil want to be able to update the forecasts when something happens, and as a result be more event-based. Following SAP's pre-structured schedule in this regard was not satisfactory, and therefore changes were necessary. Such modifications were also needed when implementing the SAP module in order to allocate resources to large investments. For this process, Statoil has decided to modify a SAP module in order to make their own continuous process called Capital Value Process (CVP). Further, looking at the solution chosen to follow up goals and rewards, the People@Statoil- process, Statoil seems to be satisfied with a pre-made solution, and has chosen a standardized process provided by the SAP company 'Successfactors'. This

is also true for the solution used by controllers, in which a SAP module called Financial Analytics (FA) is applied.

5.2.3 Conclusion:

The above analysis shows that having an ERPs does not have to be an disadvantage when implementing the principles of BB. In most cases, having an ERPs will actually facilitate implementation. Only a few limiting aspects have been detected, such as the possibility of impeding trust in the organization, as well as ERPs not always being able to provide needed features. However, based on the data gathered, this does not cause significant problems for the organization, as Statoil has managed to solve these limiting factors by modifying SAP modules as well as by developing own systems.

Implementing the BB philosophy is a complex matter, and has many different aspects. To summarize how Statoil has implemented these principles into the IT architecture, one of the lead solution architects provided a clear picture. He believed that Statoil has managed to implement the principles in a successful manner by developing three layers in the architecture. First, the management model is based on an interaction with the basic transaction management systems, the ERPs. The second layer consists of the business warehouse (BW) system having several features and applications. Finally, Statoil has developed a presentation tool using internet solutions in order to turn to those having management accounting responsibilities, the MIS system.

5.3 Flexibility contradiction of ERPs

By looking at how Statoil has implemented the BB principles into their organization, it seems like having an ERPs does not limit the possibility of a successful implementation. On the contrary, it actually seems like ERPs can be a valuable resource in the process of implementing these principles. Despite these findings, there are unfortunately several challenges concerning the flexibility of ERPs.

5.3.1 Flexibility of ERPs in general

ERPs viewed as inflexible and rigid

In Statoil there seems to be an agreement that the ERPs provided by SAP are in fact rather rigid and inflexible. One was talking about a system outside the SAP-environment and stressed that a positive side of this system was that it was:

Not part of the rigid SAP system. Informant #4

Others seem to agree by providing statements such as:

We accept that the system is rigid and gives us some limitations (...). If you want to implement a system having these synergies and provides integration as one of the advantages, you need some kind of heavy governance that controls the flexibility (...). I understand that these systems have to be rigid in order to provide those connections..

Informant #3

There is no doubt that Statoil is able to acknowledge that the ERPs can in fact be rigid and inflexible. However, a large organization such as Statoil do needs some sort of transaction management system:

You cannot live without some sort of system, so you can either make it into your worst enemy or you can try to work with the system you have and use it to your advantage.

Informant #3

Having an ERPs is viewed upon as crucial for Statoil, and living without it is almost unthinkable. In addition, it does not seem like having a rigid ERPs is necessarily experienced as a disadvantage in Statoil:

You can say that we accept that the systems is rigid and gives us some limitations, but having the possibility of extracting information from the data warehouse and put this information together with other kinds of information, we are able to provide reports that the business units requires, and with a completely different response-time than the one SAP is able to provide. Informant #3

In summary, Statoil seem to accept that the ERPs is rigid, and as demonstrated, Statoil also believe that they have managed to solve this problem by having several layers on top of the ERPs. In addition to having several layers, Statoil has also solved it by customizing and modifying the ERPs to provide required functionality, usability and flexibility. In other cases, Statoil has found it to be necessary or even desirable to also use separate legacy systems.

Customization, modification, separate legacy systems

As explained, having a large and sophisticated ERPs is indeed associated with rigidity and inflexibility. In addition, Statoil realizes that using such a large and integrated system also increases complexity:

Nothing is easy within a large system. Informant #4

It is viewed upon as quite challenging to solve every variations needed within the same system. This has not been impossible in very many situations, but it leads to a relatively complex system. Informant #1

SAP provides standard solutions. As a result, Statoil find it difficult and challenging to solve all these variations among units and country-subsidiaries. This requires customization and modifications which in turn makes the system complex. However, Statoil has had benchmarking on this issue trying to figure out the effect of such customization:

It turns out that it is not that expensive when comparing it to other alternatives, and this implies that the disadvantage (of customization) is not that tremendous.
Informant #1

In some cases, Statoil has also found it necessary to use other systems in addition to the SAP system. An example concerns the payroll-system, where Statoil has experienced challenges due to differences in national legislations as well as traditions:

For example, concerning the human resources area, the payroll-system are very dependent on national legislation and traditions. In this area, we have chosen to decide from one country to another if we want to use SAP or use local solutions, and this is probably the area we most often has chosen not to use SAP everywhere.
Informant #1

To solve this particular problem Statoil decided not to customize, but rather to allow different countries to choose between the SAP system and other local systems. By allowing for such disparate legacy systems in addition to the SAP system this can in turn make the IT architecture very complex, which is also a reason why Statoil aims at using SAP as much as possible:

However, we really try and want to resolve all processes within the SAP system. Our sales-system, however, are basically outside the SAP system (...). We want to be more unique on the sales-processes. Informant #1

Despite this general desire to solve most processes within the SAP environment, having to make customizations, allowing for legacy systems, as well as having a few processes entirely outside the SAP system, can make it quite complex. This can in turn hinder some of the benefits such ERPs provides, namely standardization and transparency.

When looking into what actually makes the ERPs rigid, one of the solution architects explained that the system, or the ERPs-vendors, are not always the ones to blame:

There is kind of a fault-sharing between the system-vendor and the implementing organization concerning what is actually making the system rigid. The SAP system provides several different alternative possibilities of implementation when it comes to many processes. (...) In some cases, the system was initially quite flexible, but Statoil has chosen to narrow the possibilities. Informant #1

However, there seems to be disagreement concerning what makes the systems rigid and cumbersome, as one interviewee also stressed that ERPs-vendor's choice of strategy also has a critical role concerning the flexibility of the systems:

The problem we see with these big gorillas, as we like to call them, the large vendors such as SAP, IBM, Oracle etc, is that in order to survive they see it as necessary, in order to have a good offer, to expand and buy everything popping up around them. They buy and buy organizations in order to get their hands on new technology, and then they are faced with a problem, which we have seen with SAP, concerning their ability to integrate these new products with existing ones. Informant #2

In addition, there are some cases where ERPs-vendors get the blame for not being able to provide needed functionality, in which the problem is actually rooted elsewhere. It might be caused by lack of information regarding what decisions were made when deciding to implement current solutions.

In some of the cases where Statoil has chosen to use systems not provided by SAP, this has not necessarily been caused by the lack of functionality or difficulties in customization. Such decisions can be based on strategic reasoning, as one solution architect explained:

We use SAP mainly in order to solve the administrative processes and support functions, while (Statoil) wants to be more unique on the sales-processes. This implies that even if we were to choose again, we might choose our own solutions on such areas. Informant #1

In summary, Statoil seem to agree that the ERPs is rigid and inflexible, but have been able to solve this by customizing, modifying as well as use other systems. However, this might in turn result in a loss of some of the benefits of having an integrated ERPs, as it might be at the expense of standardization and transparency.

5.3.2 Lack of flexibility in the user-interface of SAP

Another common problem concerning SAP is user-friendliness. This is experienced as one of the greatest challenges in using these solutions:

The bad thing about SAP is the user-interface (...). SAP has a cumbersome user-interface. Informant #4

Some would probably say that this (user-friendliness) is the weakest side of using SAP all together. The system has a very large range of processes and variations of processes offered. Basically, it exists as layers of screenshots having coverage for all these variations within the same screens. Due to this, there will be many fields to fill in, and banners to choose from. Those using the system rarely find it a little too complicated. On the other side, those using the system often will find most of what they need. Informant #1

The challenge is that it (the ERPs) is not very user-friendly when it comes to the normal user. We have tried to reduce these peoples contact with the SAP system.

Informant #3

Another solution architect agreed to this, and went as far as stating that the SAP systems are old fashion. However, SAP has tried to solve this by offering possibilities of making alternative, simplified, screenshots:

Directly in the SAP system package, there is a possibility of making alternative, simplified screenshots as well as making its own way through the processes so that it is possible to do this in areas where you would find it to be urgent. Informant #1

In this regard, Statoil has tried to customize where they find it necessary:

Statoil is probably one of the organizations putting relatively large amount of resources into customizing the SAP solutions in order to support Statoil's needs. We have created our own validations or substitutions in order to get the correct processing. Informant #3

Such user-problems are a classical dilemma within such large systems. When looking at such issues Statoil uses a cost-benefit evaluation in order to see if making such simplified screenshots are something worth using resources on by stating:

There will always be a question of prioritizing whether to use effort on this (improving the user-interface) instead of providing fundamentally new and unique functionality.

Informant #1

To sum up, professional users will probably not experience a lack of user-friendliness as a problem, and will be able to find most information needed. However, having more flexibility in the user-interface seems necessary, which is illustrated by the fact that Statoil uses significant amount of time and resources on improving this.

5.3.3 Conclusion and solutions

Statoil has solved this flexibility issue of ERPs by trying in the best possible way to move the flexibility outside the system, and acknowledge that in order to get the required benefits from such a system they have to accept that it is somewhat rigid. In total it appears like Statoil has

chosen to use the ERPs as a system for transaction management in order to support the large heavy processes:

The system (ERPs) works as a transaction management engine, (...) while processes concerning both planning and control as well as decision making and stuff like that, are taken care of at higher levels, if looking at the data warehouse as one step up in the information architecture. Informant #1

SAP covers the large and heavy processes such as off-shore, logistics, generally the support processes. Informant #2

There seems to be an agreement concerning this solution, as another vice president also explained this in a similar manner:

We use SAP as a transaction management system in order to obtain required information, and in addition we use other tools on top of this system in order to actually consume these data and use them analytically (...). I understand that these systems have to be rigid in order to provide those connections making us able to utilize the possibility of having information about a transaction occurring at one place in the organization at a completely different location (...). We accept that the systems is rigid and gives us some limitations, but having the possibility of extracting information from the data warehouse and put this information together with other kinds of information, we are able to provide reports that the business units requires, and with a completely different response-time than the one SAP is able to provide. Informant #3

By having such a strong and powerful system as a basis, it can provide Statoil with good quality data which in many ways can facilitate some of the BB principles. In addition, by moving the flexibility outside of the system, Statoil seem to have managed to resolve the most profound problems of inflexible ERPs. In addition, Statoil emphasizes that the flexibility provided by the BB philosophy in many cases are located in the heads of people working in Statoil, as well as in the processes:

Very often, the rigidity is outside the system, outside the ERPs, rooted in the process decisions we have made, for example by deciding to only update once a year, and not being able to change a KPI etc. Informant #5

Beyond Budgeting are more connected to culture, and the way an organization does its work, than ERPs. I would even say that ERPs are completely decoupled from the decision of wanting to have a Beyond Budgeting approach. Informant #3

In some cases the solution to problem caused by a lack of functionality can be solved easily by many organization demanding the same functionality, and in this regard the vendors end up wanting to provide this in order to please their customers.

6. Conclusion

This chapter will provide answers to the research questions of the problem statement, a summary of the findings, as well as some suggestions for future research.

6.1 Answering the research questions

How do ERPs limit or facilitate the use of BB and what are the practical challenges of using ERPs for the implementation of BB?

Based on the theoretical framework and the case study research conducted, this study found that ERPs does not seem to significantly limit organizations possibilities regarding implementing the principles of BB. In particular, ERPs can actually facilitate implementation in the following ways.

First, ERPs is shown to facilitate implementation of the leadership principles by providing organizations with transparency, which is in accordance with the findings in the theoretical part. In addition, ERPs facilitate decentralization by providing better information to decision-makers at lower levels in the organization.

Second, this study shows that ERPs facilitates implementation of the process principles by again provide transparency, which in turn is positive in order to communicate goals, ease coordination, as well as making it harder for teams to hide behind unambitious goals.

Third, ERPs acts as a facilitator by providing accurate data, affecting the reward-process, resource allocation-process as well as planning-process in a positive manner. ERPs are also shown to provide organizations with better forecasts, facilitating the process of making planning into a continuous and inclusive process, as well as ease the process of setting ambitious goals.

Nevertheless, ERPs also has some constraining factors. First, ERPs ease the process of monitoring, and as a result this might constrain the principle concerning trust. However, such problems may exists regardless of having an ERPs as leaders always will find other ways to monitor if there is a lack of trust in the organization.

In addition, ERPs-vendors are not always able to provide the right technical infrastructure to compile management accounting and control. In some cases SAP has provided Statoil many of the needed solutions, such as in the follow-up and reward processes, in the dynamic forecasting process, resources allocation process, as well as the controlling process. These have, however, usually been subject for customization due to lack of required functionality, or out of strategic considerations. Such customization can complicate the implementation of new releases of these modules, and can in turn make organizations lose the benefits of buying packaged solutions as they become customized solutions.

However, this study also provides evidence for what is called the problem of flexibility of ERPs. The ERPs are by the participants in Statoil perceived as rigid and inflexible in some situations. Especially, the possibility of providing flexibility concerning the user-interface seems to be an important issue in practice, as all participants stressed that this was one of the biggest challenges of using SAP's ERPs.

How do organizations manage/overcome these challenges?

Statoil has solved the flexibility issue of ERPs by trying to move the flexibility outside the system, which contradicts with the integration idea of ERPs. In particular, Statoil acknowledges that in order to get the required benefits from such a system they have to accept that it is somewhat rigid. In order to provide Statoil with required connections to utilize the possibility of sharing information throughout the organization, Statoil seem to accept that this system have to be rigid, and has tried to solve the problem of inflexibility in other ways.

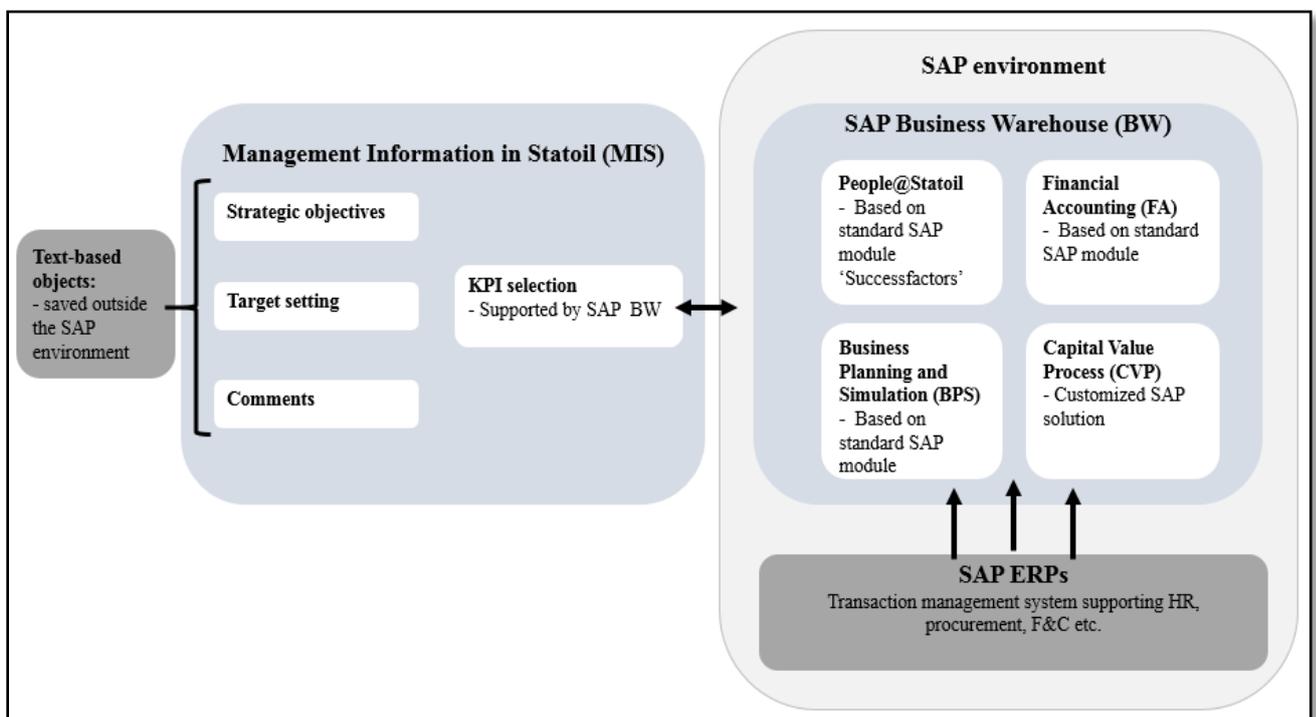
When it comes to the total IT architecture, Statoil has solved the practical challenges by using three layers. First, the management model is based on an interaction with the basic transaction management system, the ERPs. The second layer consists of the business warehouse (BW) system from SAP having several features and applications. Within this layer, Statoil has further solved some practical challenges of lacking functionality and user-friendliness by customizing and modifying these SAP modules. Finally, Statoil has also developed a system themselves, a presentation tool using internet solutions in order to turn to those having management accounting responsibilities, the MIS system. The MIS system is an interface between the SAP environment and the user. Within this system, the KPI-part is the only part actually supported by the ERPs, while the other solutions are stored outside the SAP environment. This is also in accordance with the findings in the theoretical part concerning

organizations choice to use the ERPs in order to provide a reasonable satisfactory system and, when necessary, customizing this system as well as interfacing it with separate systems. The fact that Statoil has chosen to use systems developed in-house, such as the MIS system, and used separate systems for the sales-process, complies with findings illustrating that organizations should be more original in some processes that enables them to create competitive advantage, such as sales process or other processes facilitating core strategic capabilities in the organization (Davenport, 2000).

Summary of the findings:

The following figure attempts to provide a condensed overview on how the case company Statoil integrates BB into the ERP system. The foundation of the architecture is based on a strong and powerful transaction management system, the ERPs, providing Statoil with good quality data. In addition to this, Statoil has built some systems based on standard SAP modules in the BW-environment, such as for the People@Statoil, the FA, BPS and CVP-process. Finally, Statoil has tried to separate the flexibility from the SAP-environment, by building the MIS system. In this regard, only the KPI-part use input from the SAP environment, namely from the BPS application.

Figure 10 : Overview of how BB is implemented into the IT systems in Statoil



The major findings of this study is that ERPs can actually to some extent facilitate the implementation of the BB principles, despite the fact that ERPs are by Statoil experienced as both inflexible and rigid. In order to solve practical challenges of inflexibility, Statoil has moved as much of the required flexibility outside of the system. First, by focusing on changing the mindset and culture in the organization. Second, by customizing and modifying SAP modules to meet their needs, as well as use separate legacy systems, among others some developed by Statoil themselves. This has resulted in some complexity in the infrastructure, but it is shown that Statoil believe that they have managed to find the balance of receiving necessary benefits from having a sophisticated ERPs, without suffering from having a too complex IT architecture.

This study contributes to existing literature by expanding the understanding of the relationship between ERPs and MAIs, especially BB. In particular, this study has shown that ERPs can in fact enable companies to use innovative management concepts such as BB, which in turn are of strategic relevance for the organization. In addition, evidence of the flexibility problem of ERPs, has been provided.

6.2 Suggestions for future research

One of the limitations of this case study is that only a limited number of interviews have been conducted, however this has been complemented by using different sources, but this might not be sufficient to reach saturation (Yin, 2003). Confining the paper in this way did provide a deep understanding of the relationship between ERPs and BB, which is actually the nature of qualitative case studies (Ahrens & Chapman, 2006). However, from a quantitative perspective my study lacks generalizability. Hence, in order to examine whether my findings are generalizable and applicable to other organizations and industries, further research is needed.

Another interesting follow-up of my study could be to use a cross-sectional comparison with companies not having implemented BB, and how do they experience this relationship concerning flexibility of the SAP modules/systems. These companies also need to respond to the dynamic business environment. Therefore, it could be interesting to see if there is any differences in how such companies has chosen to design the IT infrastructure in order to be flexible and agile.

Finally, the existing flexibility/agility contradiction of ERPs, partly confirmed by this case study, offers research opportunities, i.e. by focusing more on the technical or social dimension of flexibility/agility versus ERPs.

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Appendix 1

Interview guide 1: IT/ERP employees

Interview candidate:

Current position:

E-mail:

Location:

Date:

Time available:

Remember :

- Ask why
- Ask if something is unclear
- Ask for examples

Introduction:

- Explain the project briefly
- Ask if there is any question related to the project or the purpose of the interview
- Explain that the interview will be anonymous, and that his/her personal opinions are desired.
- Ask if it is okay to record the interview.

General:

- How long have you been working at Statoil?
- What is your current role, and how long have you been in this role? (Previous roles?)
- What is your responsibility? What does this entail?
- What department are you apart of?
 - o How large is this department?
 - o Could you describe the business area of your department?
 - o What is on top of the agenda for your department?
 - o What other departments do you cooperate closely with?

ERP-system:

- Statoil uses SAP as their ERP system. What are your immediate thoughts about SAP as a system?
- What systems does your department use? Only SAP or other as well?
 - o If several systems:
 - What systems?
 - Why several? Are these connected to SAP? How?
- Do your department use/work with specific SAP modules?
 - o If yes:
 - What modules?
 - What does this work entail?

- What do you believe are the biggest advantages of using SAP's solutions?
- What do you believe are the biggest disadvantages of using SAP's solutions?
 - o What do you experience as the most common user-problems for those using the solutions?
- How do you think SAP is able to resolve the variations required by a large organization such as Statoil within one system?

Beyond Budgeting in Statoil:

- In 2005 Statoil decided to abandon budgets and implement the principles of Beyond Budgeting, and thereby use dynamic management without budgets.
 - o How is flexible financial management and control facilitated in the SAP system?
 - What tools are used in this regard?
 - Do Statoil use other systems in this regard?
 - What systems?
 - o How does these work? What tools are used in these?
 - o How is the connection between these and the SAP system?
 - o What changes was necessary to go through with in your department when Statoil implemented BB?
 - Was it necessary to do any changes in the SAP system in relation to this?
 - What changes? Why?
 - What was the biggest challenge?
 - Was it mainly changes in the SAP system, or did you also have to develop additional system?
 - o Do you have specific SAP modules to handle BB/dynamic management and control?
 - What modules?
 - How are these built?
 - How do these function?
- Most companies going beyond budgeting still uses budgets to some extent.
 - o Do you know if this is the case for Statoil?
 - o Do you have to deal with a budget in your daily work?
 - o Do your department have to develop and use a budget?
 - Why? Why do you think, despite BB, that Statoil wants to use budgets?

Appendix 2

Interview guide 2: Managers/VP

Interview candidate:

Current position:

E-mail:

Location:

Date:

Time available:

Remember :

- Ask why
- Ask if something is unclear
- Ask for examples

Introduction:

- Explain the project briefly
- Ask if there is any question related to the project or the purpose of the interview
- Explain that the interview will be anonymous, and that his/her personal opinions are desired.
- Ask if it is okay to record the interview.

General:

- How long have you been working at Statoil?
- What is your current role, and how long have you been in this role? (Previous roles?)
- What is your responsibility? What does this entail?
- Could you describe the business area of your department?
- What is on top of the agenda for your department?

The oil and gas industry:

- Doing business within the field of oil and gas, what do you believe is the biggest challenge Statoil has to face?
 - o What challenges affects you and your area of responsibility?
- Would you say that the oil and gas industry requires a large extent of flexibility concerning its management and management accounting?
 - o How? Explain.
 - o How is such flexibility facilitated in Statoil?

Beyond Budgeting in Statoil:

- As of 2005, Statoil decided to abandon budgets and go beyond budgeting by implementing the principles behind this philosophy. What do you believe was the main reason why Statoil chose to do this?

- Do you believe there existed other reasons as well?
- How is these new principles able to facilitate the flexibility required in this industry?
- What tools and processes replaced budgets in Statoil?
- How do you think BB works for Statoil today?
 - It there anything you believe should have been done differently?
- During the implementation of BB, what was the biggest challenges in your opinion?
 - How did Statoil manage to solve these?
- What changes had to be made in your department during the implementation?
 - Did Statoil integrate the new tools and processes into existing IT systems, or did Statoil develop new systems?
 - If 'yes':
 - What systems? How did these work?
 - How was the connection between these and the SAP system?
 - Did Statoil have to make changes in the SAP system?
 - What changes?
 - How did it turn out?
- Looking at the systems today, do SAP provide you with systems that make Statoil able to continue using the principles of BB?
 - What modules do they offer in this regard?
- If Statoil needs to do changes, such as implement new management tools etc., how is this possible as the system is today?

ERP-system:

- Statoil uses SAP as their ERP system. What are your immediate thoughts about SAP as a system?
- What systems does your department use? Only SAP or other as well?
 - If several systems:
 - What systems?
 - Why several? Are these connected to SAP? How?
- Do your department use/work with specific SAP modules?
 - If yes:
 - What modules?
 - What does this work entail?
- What do you believe are the biggest advantages of using SAP's solutions?
- What do you believe are the biggest disadvantages of using SAP's solutions?
 - What do you experience as the most common user-problems for those using the solutions?
- How do you think SAP is able to resolve the variations required by a large organization such as Statoil within one system?

Appendix 3

Interview guide 3: Controller

Interview candidate:

Current position:

E-mail:

Location:

Date:

Time available:

Remember :

- Ask why
- Ask if something is unclear
- Ask for examples

Introduction:

- Explain the project briefly
- Ask if there is any question related to the project or the purpose of the interview
- Explain that the interview will be anonymous, and that his/her personal opinions are desired.
- Ask if it is okay to record the interview.

General:

- How long have you been working at Statoil?
- What is your current role, and how long have you been in this role? (Previous roles?)
- What is your responsibility? What does this entail?
- What is on top of the agenda for your department?

Tools and processes:

- Concerning your tasks, has there been any changes in processes, methods or other changes?
 - o If 'yes':
 - What kind of changes?
 - Why do you believe these changes were made?
 - How did Statoil implement these changes?
 - Did Statoil have to change its existing IT systems in order to implement these changes?
 - Did you experience any problems concerning this?
 - o If 'no':
 - What do you believe is the reason why no changes has been made?
 - o By your opinion, is there any changes that should have been made?
 - What changes?
 - Why is this?

- Why do you believe these changes hasn't been made?

The IT system:

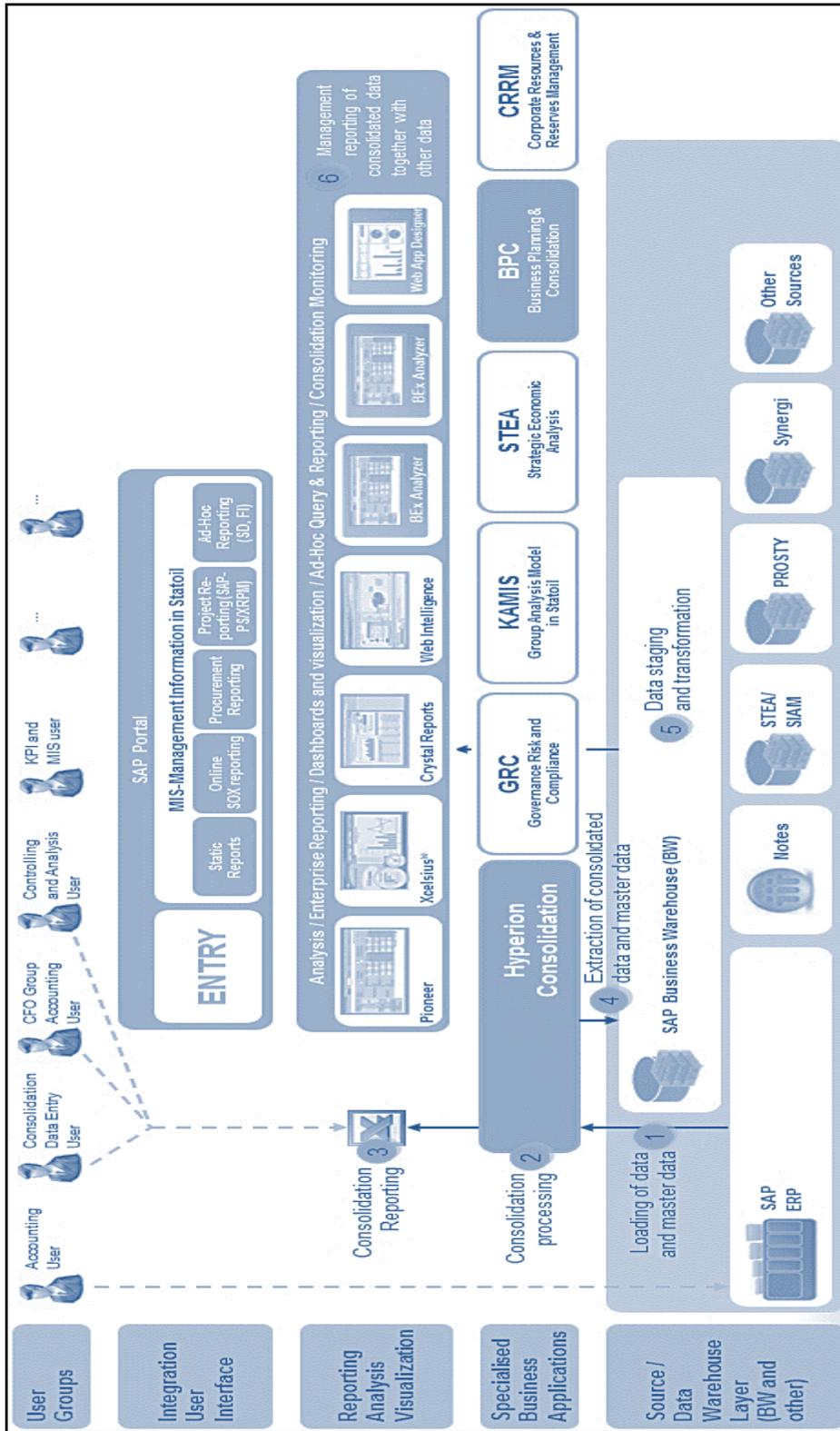
- What IT systems do you use in order to do your job?
- How well do these system work?
 - Do you get all the relevant information you need in order to do a good job directly from the systems?
 - Do you need to use other systems in addition, such as self-produced excel-sheets etc.?
- What do you think is the positive sides of these systems?
- On the contrary, what are the negative sides?
- Do you experience any problems concerning user-friendliness of the systems?
- Has there been any changes in these systems?
 - How do this happen?
 - Are you affected by upgrades etc. of the systems?
- Would you say that these systems are flexible enough to be able to make changes happen if there is a desire to change processes or methods?

Beyond Budgeting in Statoil:

- Would you say that the oil and gas industry requires a large extent of flexibility concerning its management and management accounting?
 - How? Explain.
 - How is such flexibility facilitated in Statoil?
 - What tools are used?
 - Would you say Statoil is well suited to adapt to changes in the environment?
- What does the term 'Beyond Budgeting mean for you?
- Despite the fact that several companies has decided to go Beyond Budgeting, they still use budgets to some extent. Is this the case for Statoil?
 - Do you need to deal with a budget in your work?

Appendix 4

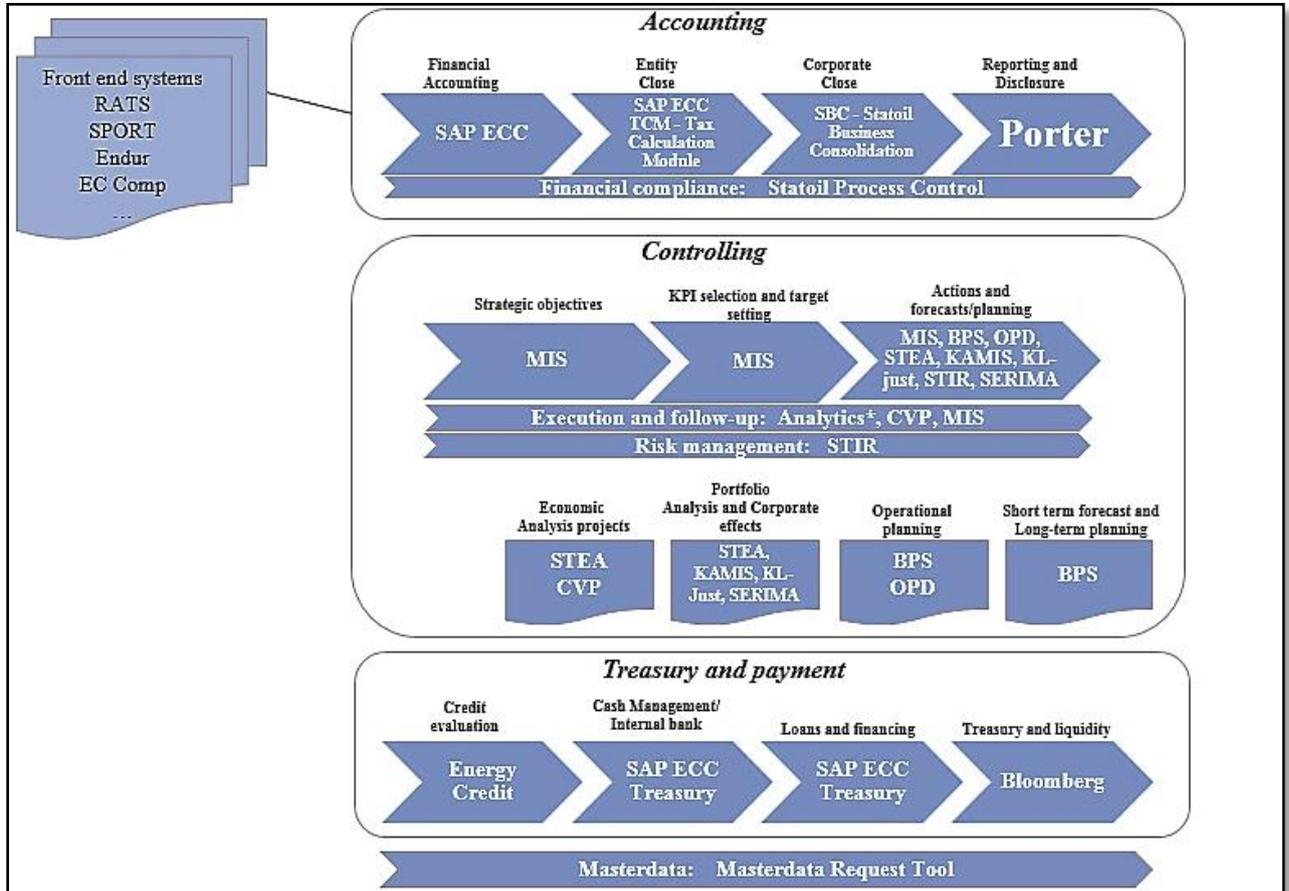
IT architecture at Statoil:



(Statoil, 2011)

Appendix 5

Finance and Control processes in Statoil:



(Statoil, 2013)

Overview of applications used in the Finance and Control business unit in Statoil:

Application	Statoil name	Description
SAP ECC		
•SAP ECC FI	Financial accounts	
•SAP ECC CO	Controlling	Statoil General Ledger and Financial Closing Cockpit
•SAP ECC PCA (functionality)	Profit Center Accounting	
•SAP ECC AM	Asset management	Solution for balance sheet values and depreciation calculation.
•SAP ECC JV 1, JV2	Joint venture accounting	Two standards: Europe/global (JV1) and North America (JV2)
•SAP ECC SD	Service Work Order	Solution for documenting intercompany agreements and charging intercompany costs
•SAP ECC TR	Statoil Internal Bank	Treasury system: solution for banking operations, hereunder payments in/out and loans.
•SAP PSC/PSA (functionality)	Production sharing contract	Not in use, users consider it too complicated.
SAP PRA	Production revenue accounting	US onshore solution for calculating revenue to property owners
SAP EPM		
•SAP BPC	SBC – Statoil Business Consolidation	Solution for consolidation and financial reporting for all companies and entities in the Statoil Group
•SAP GRC	SPC – Statoil Process Control	Solution for Financial Compliance follow-up of key controls.
•SAP BW	SAP BW	Enterprise data warehouse and data integration layer for F&C solutions
•SAP BW reporting and IP	FA – Statoil Financial Analytics and Forecasting	Solution for controlling analysis of actual income and costs.
•SAP BPS	BPS	Solution for forecasting, short term and long term.
•SAP BPC	Hourly Rate Model	Solution for calculating hourly rates (cost allocation)
Masterdata Request Tool	Masterdata Request Tool	Custom solution based on SAPWebDynPro
STEA (.net/Meridio)	Standard Tool for Economic Analysis	Investment analysis of projects and portfolios
Excel	Tax Calculation Module (TCM)	Solution for calculating tax provisions for financial statements.
Xait Porter	Porter	Solution for compiling financial statements in numbers and text. User: corp staff
Excel	KAMIS/ KL–Just	Solution for analysis of corporate effects for business plan. User: corp staff
Bloomberg	Treasury	Solution for treasury operations. User: corp staff
STIR (.net)	Statoil Tool for Illustrating Risk	Solution for making risk matrices at corporate and BA management levels
Serima	Serima	Solution for risk modelling

(Statoil, 2013)

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Today, several companies are implementing Beyond Budgeting (BB) in order to become more flexible. At the same time, most companies also invest heavily in Enterprise Resource Planning systems (ERPs) because of a need for a standardized and stable information system. By adopting a case study approach, this thesis aims at expanding our knowledge about the relationship between ERPs and BB. The study has been conducted in one of the leading oil and gas companies in Europe. The main findings of this study are that first, ERPs facilitate the implementation of the BB principles, i.e. transparency allowing companies to improve their communication and coordination leading to a stronger decentralization of organizations. Second, the ERPs act as a facilitator by providing organizations with more accurate and integrated data, which in turn improves the planning and resource allocation process. Third, Statoil solved the practical challenge of inflexibility and rigidity of ERPs by moving some parts of the management control system outside of the ERPs. To conclude, this case study has shown that ERPs can play an enabling role in implementing and making Beyond Budgeting ideas work in organizations.

SNF



Samfunns- og næringslivsforskning AS

Centre for Applied Research at NHH

Helleveien 30
NO-5045 Bergen
Norway

P +47 55 95 95 00
E snf@snf.no
W snf.no

Trykk: Allkopi Bergen