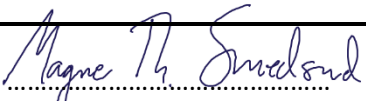




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Preface

This thesis is the finale of my master's program in Industrial Economics at the University of Stavanger, spring 2015.

Even though the work with this thesis has been very demanding and challenging at times, it has also been very exciting and educational. I have learned much on conducting quantitative research and working with empirical data. Little did I know about the challenges and efforts required to attaining the appropriate sample population before this thesis. However, with perseverance, I managed to get just enough information. One of the major lessons I have learnt is probably the importance of having a "carrot on a stick" when conducting such surveys (which I did not have). I have learnt a lot on Enterprise Resource Planners (ERPs), of which I will be working with after graduation, and the efforts required to perform robust Benefits Realization Management (BRM).

In this thesis, I have tried to identify how benefits realization is conducted in Norwegian ERP-projects. This was achieved through quantitative surveys. In conjunction with this, I would like to send my heartfelt thanks you to Christian Torp of the Norwegian Computer Society and Per Morten Hoff of ICT-Norway, whom helped distribute these surveys to thousands of possible participants, in addition to teaching me a whole lot throughout this period. This thesis would not have progressed without your assistance. Of course, a big thanks to everyone who took their time to answer these surveys.

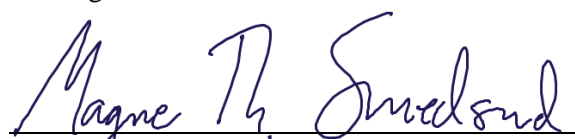
Thank you also Jens-Petter Karlsen, Elise Angen and Stian Ødegaard at Accenture Norway for assisting me out through this process, providing me with sound advice, and welcoming me to their work place with open arms.

I would also like to thank my roommate, Daniel Dahl, for keeping me motivated, pushing me through some of the more frustrating moments and being patient with me; and just to note, and I am sorry for being such a dull roomie these last few months. Furthermore, I would like to thank Chief Petty Officer Communications Lee Shaw of the British Royal Navy for being my Thesaurus.

Finally, I give my sincere thanks to my supervisor, Kjell Hauge, for giving me sound advice and constructive feedback throughout this project, and pointing me in the right direction so early on.

Thank you!

Stavanger, June 10, 2015



Magne Thorsell Smedsrud

Summary

Due to increasingly demanding business environments, many businesses choose to implement Enterprise Resource Planners (ERPs) in order to obtain an integrated business structure to support major business activities. These projects are costly, complex and very risky, though they have huge potential for business benefits. Unfortunately, research points towards poor benefits realization in such projects. Benefits realization management (BRM) is a project management methodology that aims towards securing realization of such benefits through systematic work and management. However, research also indicates modest focus on this methodology. This paper tries to identify as to what extent Norwegian ERP-projects focus on BRM and measurement of achieved benefits.

Little research is found on this matter, apart from a few qualitative studies that point towards the same results as mentioned above. Therefore, the author chose to use descriptive, quantitative surveys to investigate this matter further. Through cooperation with relevant Special Interest Groups (SIGs), two surveys were created and distributed to more than 2600 possible respondents, including both ERP providers and clients. Even though every effort was made to secure enough feedback, the surveys only received 42 responses in total. Due to this low response rate, the results are not generalizable, but they do give some interesting indications that will have to be confirmed through further research.

Overall, the results show little focus on BRM in Norwegian ERP-projects. These surveys also show that very few clients set specific requirements for BRM and measurements of benefits when initializing such projects.

Specifically, more focus is devoted to the work with identifying benefits (the first stage of BRM) and measurement of benefits post-implementation (as part of the fourth stage of BRM), compared to the other activities. However, this was still focused on to between “lesser” and “some” extent, on average. Few clients reported that they focus on measuring intangible benefits, and few projects set aside dedicated resources for BRM and appointing benefits realization managers.

The results did also show a significant difference between responses from clients and vendors, of which the latter undergo such projects more often. Overall, vendors report higher focus on BRM compared to the clients, though there is still significant room for improvement.

Furthermore, the majority of the respondents (both vendors and clients) are not satisfied with their own efforts with BRM, even though the majority clearly agrees that BRM is very important in such projects.

Common barriers and reasons for excluding BRM in ERP-projects are too little focus, priority and resources, in addition to reduced involvement from leadership. Few respondents reported difficulties with the methodology itself as a barrier, aside from quantifying the benefits for measurements.

This thesis concludes that there is significant room for improvement with BRM in Norwegian ERP-projects. The majority of the findings are aligned with previous research, where applicable. However, the findings will have to be confirmed due to reduced generalizability of the results because of the low response rates.

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1. Introduction

Due to a more demanding business environment, today's companies are forced to continuously improve the way they do business. The increased use and importance of electronic trading and activities leads to higher requirements of precision, speed and quality of information. Therefore, many companies choose to implement Enterprise Resources Planners (ERPs), with the goal to achieve an integrated business structure that supports major business activities, while providing an improved information flow and availability of information in the business (Olberg, 2013).

In general, a well-implemented ERP system is able to provide business benefits in several business dimensions, from the operational level all the way to the strategic and organizational levels (Shang & Seddon, 2000). On the other hand, ERP projects are also identified as very costly, complex and demanding. Research reveals an incredibly high Total Cost of Ownership (TCO) (Jutras, The Total Cost of ERP Ownership in Mid-Size Companies, 2007). The high consequence of poor implementation characterizes ERP projects as high-risk projects.

Recent research indicates that the business importance of having an ERP system has increased amongst Norwegian companies during the later years. The majority of companies stated that their ERP system is "very" or "highly" critical for their business (Olberg, 2013).

Despite this information, several research papers and articles point out that the majority of ERP projects fail to deliver the expected business value (Devoteam, 2010) (Ryvarden, 2005) (Skjelvan, 2014).

Benefit Realization Management (BRM) is a project management methodology that focuses on systematic realization of benefits. Through robust BRM, businesses can increase their chance of achieving business benefits resulting from their ERP implementations. Accurate BRM requires systematic work throughout the project, and should be an integral part of the project plan.

However, several studies and articles point towards a lack of focus on benefit realization as a process (Olhager & Selldin, 2003) (Mabert, Soni, & Venkataramanan, 2003) (Riksrevisjonen, 2015) (Jutras, Measuring the ROI of ERP in SMB, 2009). It is likely that poor benefits realization management is one of the contributors to a lack of achievement in ERP projects. Without the proper processes ensuring the achievement of expected benefits at reasonable cost, how can the company know whether the net benefit is positive? How would they know whether they can achieve maximum benefit or return of investment (ROI)?

The author has not succeeded in finding any quantitative research about how Norwegian companies work with regards to benefit realization and measurement of achieved benefits. A few qualitative

papers have been identified, but most with few sample companies, e.g. (Eltvik, 2013) & (Wiggen, 2009)

In order to get a broader perspective of the issue, the author has chosen to conduct a survey with a larger sample of companies. *The goal is to identify how benefits realization management have been conducted in Norwegian ERP projects.* In addition, the author hopes to identify what the companies feel are their major barriers, their own lessons learned as well as how important they feel benefit realization actually is concerning such ERP projects.

1.1. Research Questions

This paper will try to examine BRM in Norwegian ERP-projects. The research questions are as follows:

- *To what extent are Norwegian ERP projects working systematically with benefits realization and measurement of benefits in order to maximize benefits gained from ERP- implementations?*
- *What is the attitude or perception of benefits realization and BRM amongst Norwegian companies?*

A survey amongst a higher number of sample companies will be conducted to answer these questions. Special interest groups (SIGs) will be used to increase the chance of getting enough sample companies.

The study is based on a premise that systematic work with benefits realization is critical in order to realize expected benefits.

Through this study, the author hopes to identify some trends regarding the field of benefit realization in ERP-projects. Depending on the results of the survey, this paper may be used to highlight the importance of benefits realization and possibly contribute to further improvement of Norwegian ERP-projects. The study can also be used as a basis for more in-depth studies regarding some of the processes within benefits realization management in particular.

1.2. Personal Motivation

The author's main motivation behind this study is to gain informative and detailed knowledge on ERP-systems, as the author will be working with ERP-systems after graduation. ERP-systems have barely been covered during the author's bachelor's degree in Telematics and Master's degree in Industrial Economics. In order to learn as much as possible, benefit realization in ERP-systems is beneficially a good start. It is essential to understand why ERP-projects are implemented in the first place when working with such systems.

In addition, the preliminary research during this study revealed a possible potential for improvement in the industry itself, of which the author found very interesting, and the opportunity of improving future ERP-projects is very good motivation in itself.

1.3. Reader's Guide

This paper is structured chronologically. Following the introduction, relevant literature will be discussed in order to provide a knowledge basis for the following chapters. This part is intended for those who are unfamiliar with ERP-systems or benefits realization as methodology. The chapter also discusses previous research relevant to this study. The chapter ends with a summary for convenience. Next, the paper describes the method used to answer the research questions. The fourth chapter describes the survey that was used along with a description of the respondents. Chapter 5 through 7 show the results of the survey, followed by an interpretation of the results in chapter 8. Chapter 9 describes conclusions and recommendations.

Happy reading.

2. Relevant Literature

“The thesis should include enough information that a co-student of the writer can understand the content” (Det Teknisk-Natervitskaplege Fakultet, 2013). *The aims of this chapter is to facilitate this requirement. The following chapter includes theoretical information about Enterprise Resource Planners (ERPs), its definition and meaning, as well as theoretical findings about benefits realization and benefits realization management. The final sub-chapter includes findings in previous research relevant to this study. The report will refer to this sub-chapter several times, therefore it is recommended for the reader to familiarize him/herself with its content.*

2.1. Benefits Realization

Traditionally, a project is defined as a sequence of unique activities that have one goal or purpose, which must be completed by a specific time, within budget and according to specification (Wysocki, 2012). By this definition, a successful IT-project is a project that provides the specified functionality by a planned deadline and cost limit. However, even if the project meets these criteria it is possible for a project to be considered as a failure.

A “failed success” is a project that delivers the specified functionality, within time and budget, but still fails to deliver business value. A typical example of this, is a solution that fails to be adopted by the intended users; the users remain with the legacy system, and the new, “successfully” implemented system is avoided, thus failing to generate results for the business. Similarly, “successful failures” are projects that fails on paper, but turns out to deliver value to the company (Ryan Nelson, University of Virginia, 2006).

Based on the above, Wysocki (2012) chooses the following definition of a project:

“A project is a sequence of finite dependent activities whose successful completion results in the delivery of the expected business value that validated doing the project” (Wysocki, 2012).

The key here is the focus on business value and realized benefits. For a project to be deemed successful, i.e. provide business value, it must deliver planned benefits that are of strategic relevance for the organization. These particular benefits justifies the project in the first place. For IT-implementation-projects, there is also a prerequisite that personnel in the organization adopt and use the implemented system; the change in information system (IS) does not provide positive change alone.

A “benefit” can be described, amongst other definitions, as a positive outcome of a change. Even though it might be easily defined, several factors can make the management of benefits both time-consuming and difficult. Some benefits are easier to work with, as they are measurable, or “tangible”.

These benefits can be measured quantitatively, e.g. by using financial statements or key performance indicators (KPIs). Other benefits are harder to measure, or “intangible”. These benefits does not give a quantifiable result that can be measured, even though they can be just as useful, or even more suitable, e.g. increased employee morale.

In addition, benefits can be both short-term and long-term. Short-term benefits are quickly revealed after implementation and therefore easier to measure and manage. Long-term benefits, on the other hand, will not reveal themselves until quite some time after the implementation, which makes them more challenging to measure and manage (Letavec, 2013).

So far, benefits, as outcomes of an Information System (IS)-project, have been considered as purely positive. However, Delone & McLean (2003) argues that no IS-project outcome is purely positive, thus one needs to account for negative impacts of a project as well as positive ones. They refer to the term “net benefits” as the sum of all impacts related to the result of a project (Delone & McLean, 2003). Organizations can experience several positive benefits from a new IT-system, as explained further on in this report. However, some impacts of a new system can be damaging, e.g. when some of the employees experience fear of being replaced, which again results in resistance towards change.

2.1.1. Benefit Realization Management (BPM)

Benefit Realization Management (BRM) (or just “benefits management”) relates to the systematically realization of benefits through the execution of defined activities and processes in a project. A quick search for the term on Google.com reveals many different theoretical methodologies. However, most suggestions are somewhat similar in the way that they all include the following four steps, quite similar to other project management methodologies:

1. Identifying benefits
2. Planning benefits
3. Executing activities to realize benefits
4. Evaluating realized benefits

Identification of benefits relates to a systematic process; finding and evaluating potential benefits towards the project’s purpose or the company’s strategic goals. Benefits that are not in line with the purpose of the project or the company’s strategy will be of lesser value to the business, as explained earlier. Therefore, it is important to evaluate proposed benefits properly. In addition, one needs to assess the impact on different stakeholders (both users, investors and others). Current state, how to measure improvement, as well as financial arguments will also need to be considered in this step.

Once potential benefits have been identified, the work required to realize each benefit must be planned for. The benefits realization plan focuses on the specific actions required achieve each benefit. This

will help to ensure that the technology delivery is synchronized with the organization's ability to deploy the technology successfully. The plan also allows responsibility to be allocated to the different benefits and changes.

The third step includes implementing the benefits realization plan. The plan is executed preferably as a part of the project plan, a balanced scorecard or similar (Rambøll Management Consulting, 2014).

In order to achieve maximum delivered benefits, it is essential to evaluate the result of the project. This includes measuring the achieved benefits against prior performance measurements and initial expectations. This step also includes actions to recover information on failed or missed benefits.

Benefits realization management can be done by the customer itself, by the provider or as a joint effort. Most importantly, benefits realization management should be sourced through a benefits realization manager, as this will enhance the company's ability to realize planned benefits, see new opportunities and exploit non-planned benefits (Rambøll Management Consulting, 2014). As a project management methodology, and due to the fact that major IT/IS changes require organizational changes in addition to the technology changes, it is a necessity that the benefits realization manager is educated in the field.

A common barrier in benefits realization management is dealing with how to actually measure the achieved benefits. Some benefits are easily quantifiable, as mentioned earlier. Typical financial methods to be used for such benefits, such as Return on Investment (RIO); cost/benefit analysis and total cost of ownership (TCO), or benchmarking methods like measuring key performance indicators (KPIs). These methods are easier to utilize and communicate. However, one needs to ensure that the underlying assumptions are reliable, making sense and backed up by documentation. Regarding intangible benefits, the organization needs to assess whether the benefits can be quantified in some way, or whether methods such as surveys or checklists will capture the business change properly. The requirements for assumptions in terms of reliability, sense and documentation persists.

2.1.2. The Benefits Management Process Model (Ward, De Hertogh, & Viaene, 2007)

To further specify the above theory about benefits realization management, the following benefits realization management model will be discussed: The Benefits Management Process Model (Ward, De Hertogh, & Viaene, 2007).

The model was developed and tested during the 90s by Ward, De Hertogh, & Viaene (2007). The model was an attempt to address the lack of assessment of delivered benefits and organizational focus in current methodologies.

The model consists of five stages organized as an iterative process, as shown in the figure below:

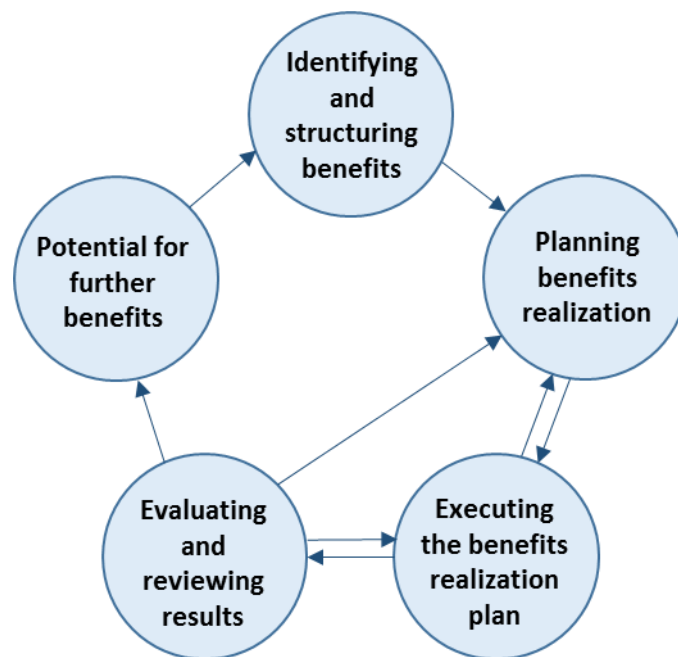


Figure 1 The Benefits Management Process Model (Ward, DeHertogh, & Viaene, 2007)

The first stage is similar to the four steps above; identifying benefits, their potential, measuring current state, determining how to measure improvement, financials, etc. In addition, the model emphasizes “*that achieving a fair balance of benefits between the organization and its stakeholders helps to create a common understanding of what the investment will achieve, and how.*” (Ward, De Hertogh, & Viaene, 2007).

The second stage is also similar to the four steps earlier mentioned. Ward argues that it is the organizational, process and relationship changes that create the greatest eventual business benefits. That means that the planning stage needs to prepare for all aspects of benefits realization, i.e. process changes, organizational changes, and benefits delivery (Ward, De Hertogh, & Viaene, 2007).

The third stage includes the execution of the benefits plan. Ward argues that “*Most benefits are the result of a combination of technology and business changes. Managing the organizational factors has*

become critical to the success of most IS/IT implementations (...). Therefore, creating and enacting a common understanding, connecting the necessary technology implementations with progress in the required business changes, becomes a crucial iterative activity.” (Ward, De Hertogh, & Viaene, 2007).

The fourth stage, evaluation and review of benefits, is the same as explained earlier, i.e. measuring achieved benefits, comparison of improvement, lessons learned, etc.

However, Ward also included a **fifth stage**. This stage focuses on the potential for further benefits. Even though the project might be completed and handed over, and the users having started using the systems, this does not necessarily mean that there is no room for further benefits realization. Some benefits might be created by minor changes, while others might need further investments. Nevertheless, the model focuses on continuous revision of benefits, which is illustrated by the continuous life cycle in figure 1.

2.2. Enterprise Resource Planners (ERP)

2.2.1. The Definition of an Enterprise Resource Planner (ERP)

Monk & Wagner (2007) defines Enterprise Resource Planners (ERPs) as “*core software used by companies to coordinate information in every area of the Business. (...) ERP programs help to manage company-wide business processes, using a common database and shared management reporting tools. (...) ERP software supports the efficient operation of business processes by integrating business tasks related to sales, marketing, manufacturing, logistics, accounting and staffing.*” Other sources define an ERP system as “*a set of integrated business applications, or modules, that carry out common business functions such as general ledger accounting, accounts payable, accounts receivable, material requirements planning, order management, inventory control, and human resources management.*” (Brown, Dehayes, Hoffer, Wainwright Martin, & Perkins, 2012). Though many different definitions of ERP exists, the key takeaway is that an ERP is a single computer system that attempts to integrate all departments and functions across a company (Wailgum, 2007).

2.2.2. A Brief Historical Perspective

Enterprise Resource Planners evolve from the 1970s Material Requirement Planning systems (MRPs) and the 1980s Manufacturing Resource Planning systems (MRP IIs). Essentially, MRPs addressed single tasks within a manufacturing operation. Large quantities of materials and complex sub-assembly to assembly processes led to large inventories and difficult planning of material. By using computing processing power, MRPs brought order to the process of material planning. MRP IIs added scheduling and loading into the planning process. Manufacturers were now able to determine the feasibility of a production *schedule*, and not only from a material point of view (Sadagopan, 2003).

Previously, during the 1970s and 1980s, information systems related to the organization were organized in *silos*. This was a result of the information system’s requirement to follow the expansion of the company. Exchange of information between the lower levels of the organization was limited, while the information between the operating groups were handled by top management, whom might not be knowledgeable enough in functional areas. E.g., a product order did not lead to an additional item sold in the financial reports; the information had to be transferred from one silo to the other through top management (Monk & Wagner, 2007).

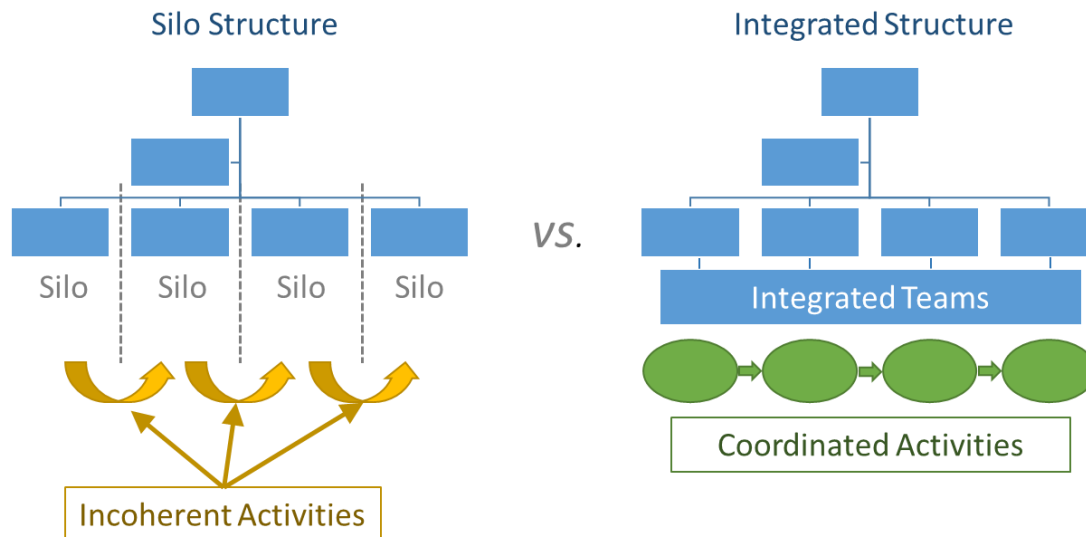


Figure 2 Silo vs. Integrated Structure

During the 1990s, companies shifted towards increased customer focus, shorter product production life cycles and global competition. This again led to the requirement of integrating manufacturing with other functional areas, e.g. integration with marketing allowed for adaption of manufacturing needs, and the integration with accounting allowed for calculating costs based on *activities* (Sadagopan, 2003). This meant that the information systems had to evolve similarly. Through 1980-1990s German, American and Dutch software companies developed integrated software packages where several functional applications shared by the same underlying database (Folke-Olsen, 2012). This allowed for an *integrated* information system structure, making it easier to gather data, presenting a coherent picture of a particular situation, and to make informed decisions and plans. The Y2K problem also forced many companies to abandon their legacy systems in favor of adopting to ERP-systems during the 1990s. (Brown, Dehayes, Hoffer, Wainwright Martin, & Perkins, 2012). The *term* Enterprise Resource Planner was defined by the Gartner Group (GG) during the 1990s (Mabert, Soni, & Venkataramanan, 2003).

A few years later, industry reports stated that at least 30,000 companies worldwide had implemented ERP-systems (Mabert, Soni, & Venkataramanan, 2003). Even though the number of ERP systems in use today is hard to predict, one can with confidence assume that their number has increased significantly.

“ERP II” was coined in 2000 by Bond et al. in their article “ERP is dead – Long live ERP II” (Bond, et al., 2000). The article was referring to how companies were redesigning their ERP-systems to include outward-facing elements in addition to the traditional elements. The new “generation” of ERP systems were focusing on “deep industry domain expertise” and inter-enterprise, rather than just enterprise business processes (ibid). ERP systems were evolving to facilitate connections with external parties, increased flexibility, higher transparency and facilitating globalization. The changes were driven by

the increased connectivity and use of the Internet in daily business processes. The article summarizes the changes in the following figure:

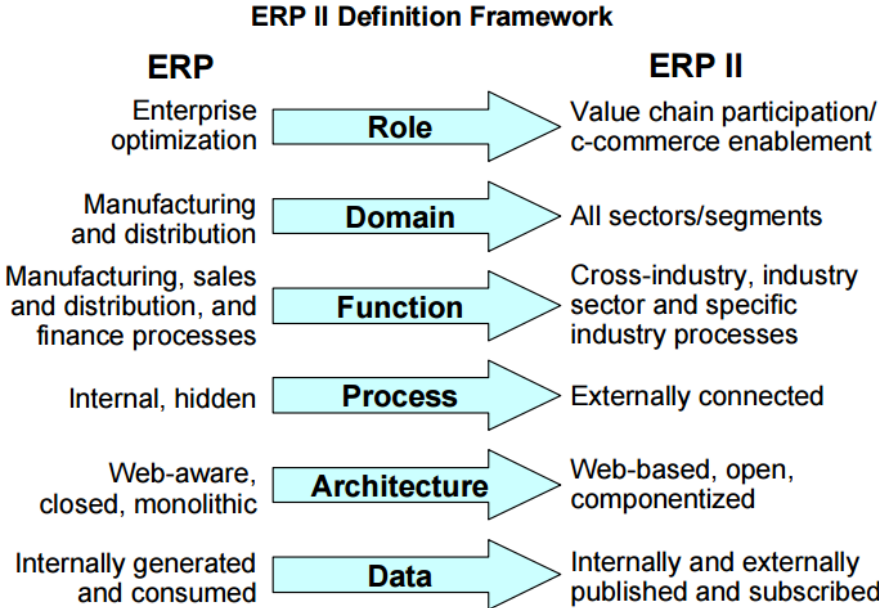


Figure 3 ERP II (Bond, et al., 2000)

Even though Bond et al. define ERP II as the new ERP-generation, the term ERP is popularly used interchangeably between both versions. This paper will use the term ERP for both ERP “I” and ERP II.

2.2.3. About ERP Systems and the ERP’s Role in a Company

As already mentioned, ERP is a package software solution that meets a business’ enterprise needs by integrating enterprise functions, using common databases maintained by a database management system (Sadagopan, 2003).

An ERP package is typically generic from the vendor, i.e. the package is not custom-made specifically for the company. As described earlier, the ERP vendors aim at understanding the business processes and the business needs of the companies. Many of the processes that comes with the solution are core processes such as order processing, order fulfillment, shipping, production planning, etc. These processes are common to most industry segments. Industry-specific solutions are typically offered by ERP-providers, which are focused towards a particular industry, or by bigger ERP-vendors, who target toward offering all-in-one solutions. Company-specific needs can be met through customization of the ERP-package, as explained below (ibid). ERPs do not merely aim to address the needs of a specific function or department within an organization, but it aims to meet the needs of the *entire* organization, across functions. This is described further in the next sub-chapter.

The modules of an ERP-system are tightly integrated. This does not just include exportation and importation of data between the functional modules, but it also means that the integration ensures that

the logic of a process that cuts across functions is captured genuinely. If data is entered once in a functional module, the data is also made available to any other module that might need this data. (ibid).

With an ERP-package comes a set of processes pre-defined as “*best practices*”. These are business processes, implementation procedures, ways of doing business, etc., of which the vendor has developed according to own experiences and industry knowledge. These best practices are a result of lessons learnt by the vendors and its customers through many previous implementations. Therefore, it may be more correct to call them vendor best practices (Olberg, 2013). The implementation of best practices alone could be a motivation to implement an ERP-system.

When a company chooses to implement an ERP, the company could choose to maximize the benefit from the vendor-provided best practices, given that few changes are made to the software package. On the other hand, the company could choose to customize the ERP-software to meet company-specific needs. However, this comes with significant “costs”. The standard ERP-package will have to be modified to meet the company-specific needs, which costs time, resources and money. In addition, future updates and modifications will be more complicated and/or costly as future upgrades of the software might need similar customization. On the other hand, adopting the ERP-software “as-is” might result in greater changes on an organizational level as business processes will have to be aligned with the processes designed by the ERP; e.g. increased need for extended employee training. Costs related to these changes will have to be considered in addition to the “business disturbance”. Regardless of the level of customization, an ERP-implementation is extremely difficult as the company will have to change the way it does business, to various degrees (Brown, Dehayes, Hoffer, Wainwright Martin, & Perkins, 2012)

The ERP purchaser will also have to be aware that the implementation might involve a certain degree of “vendor commitment” (Folke-Olsen, 2012). There are strong arguments for choosing a single vendor, such as the standardization of common processes and the tight integration of the applications that will be purchased. On the other hand, choosing a single vendor might also reduce the flexibility of available solutions for the adapting company. A best of breed¹ or a mix-and-match approach might enable the company to meet more of its unique needs and reduce the reliance of a single vendor. However, this also means more complex implementation projects, as well as more time-consuming and complicated system maintenance (Brown, Dehayes, Hoffer, Wainwright Martin, & Perkins, 2012).

¹ Best of Breed (BOB): BOB systems are systems that aim towards supporting a limited number of business processes. These BOB-systems can then be integrated onto the ERP-system. A typical example are financial systems for salary and vacation, which are often affected by local regulations. (Olberg, 2013)

Even though the benefits of an ERP-implementation can be spectacular, as shown in the next sub-chapter, the benefits are far from cheap. The total cost of ownership (TCO)² is a significant factor that influences the decision of investing in an ERP-system. In 2007, Aberdeen Group conducted a survey amongst 1,680 manufacturing companies and found a correlation between company size and the total cost of ERP ownership in terms of software, services and maintenance. A company with less than \$50 million in revenues should expect to pay an average of \$384,295 in total ERP costs, while a company with revenues between \$50 and \$100 million should expect to pay about \$1 million. Companies between \$100 and \$500 could expect to pay up to \$2 million, and even bigger companies should expect up to \$6 million in average in total ERP costs, according to the survey (Jutras, The Total Cost of ERP Ownership in Mid-Size Companies, 2007). Another survey, conducted by Meta Group (now a part of Gartner Group), investigated TCO amongst 63 companies of different sizes. This TCO survey accounted for hardware, software, professional services and internal staff costs. Initial installation costs and costs related to the two-year period that followed (which includes maintenance, upgrades and optimization) was also taken into account. The study found the average total costs of ERP ownership for the period to be \$15 million (Wailgum, 2007).

Both surveys mentioned above concludes the same thing: ERP is expensive, regardless of company type or size. Due to the high costs related to an ERP solution, there is a significant consequence if not implemented or managed properly, thus there is a significant risk related to these projects. In order to manage this risk, proper benefit realization management is important to ensure the heavy investments are paid for, as discussed earlier.

“(...) implementing an ERP system is a very complex, challenging task that needs the best minds and careful attention of internal IS specialists, internal business managers, and external consultants. The potential payoff of an ERP system, in terms of better information for strategic and operational decision making and planning, and greater efficiency, profitability, and growth, makes the efforts and the costs worthwhile.” (Brown, Dehayes, Hoffer, Wainwright Martin, & Perkins, 2012).

2.2.4. Generating Benefits with ERPs

As previously explained, ERP-implementations can generate huge business value, the projects are costly with a significant risk, and this is true for all company sizes. Due to the criticality of such projects, it is important to understand the benefits of ERP-systems.

A study by Davenport, Harris, & Cantrell (2004) identified the 10 top benefits to be gained by ERPs and enterprise solutions:

² “Total cost of ownership (TCO) is a financial estimate intended to help buyers and owners determine the direct and indirect costs of a product or system.” (Wikipedia.org - Total Cost of Ownership, 2015)

Table 1 Top 10 ERP Benefits (Davenport, Harris, & Cantrell, 2004)

Top 10 ERP Benefits	
1.	Improved management decision making
2.	Improved financial management
3.	Improved customer service and retention
4.	Ease of expansion/growth and increased flexibility
5.	Faster, more accurate transactions
6.	Headcount reduction
7.	Cycle time reduction
8.	Improved inventory/asset management
9.	Fewer physical resources
10.	Increased revenue

1. A comprehensive ERP solution makes it possible for management to view what is happening in each area of the company. Aided with this information, management are able to make more informed decisions and choices. This means that the ERP solution needs to be tailored for the business in order to provide the most useful information (Accent Software Inc., 2015).
2. An integrated structure with a single data database allows for more visibility throughout the enterprise, including assets, business processes and other financially related data. This improves reporting, as well as increasing financial management quality.
3. *“Many organizations have found that CRM [Customer Relationship Management] software improves customer service by making customer-facing business processes more efficient and effective. From a customer’s point of view, this translates to sales messaging and outreach targeted directly to their needs which increases the value of every interaction.”* (Aldrich, 2013).
4. By implementing an ERP-solution, a company is able to standardize its IS-platform. This allows for easier growth and expansion of the company. This also allows for easier integration with other software. The “module approach” also gives companies the control over which functionality they want implemented as well as differentiation in functionality between locations.
5. An integrated structure with a single point of data storage allows for more streamlined business processes and real-time transactions, even across entities, divisions and locations. This helps towards faster, improved business processes as well as more informed and diligent decision making (as explained in 1.).
6. Automation and removal of redundant processes allows for task reduction and less reliance on staff (Shang & Seddon, 2000).
7. The improved business processes gained by ERP leads towards cycle-time reduction in areas such as billing, production, customer services, delivery, including reporting and month-end closing, payroll and financials, etc. (ibid)

8. Improved inventory turns, stock allocation, better inventory information, just-in-time ordering, etc. allows companies to improve inventory management with ERPs. Similarly, ERPs improve asset management through better information about costs and depreciation, maintenance records, physical assets, etc. (ibid)
9. Better supply chain management, inventory management, asset management and production schedules as well as removal of redundant processes allows companies to reduce their number of physical resources with a well implemented ERP solution.
10. As an indirect result of many of the benefits gained with ERP, including most of the above, many companies experience increased revenues due to cost reduction and/or increased profits.

In addition to Davenport, Harris, & Cantrell's (2004) top 10 ERP benefits, Shang & Seddon (2000) studied 34 ERP cases and 233 ERP-vendor success stories published on the Web. The result was a consolidated framework for classifying ERP benefits. The paper presents 5 dimensions of benefits:

Operational benefits (Dimension 1). Streamlining processes and automating transactions improves business processes by speeding up the processes themselves, substituting labor and increasing operational volumes. This leads to benefits such as cost reduction, improved productivity and better customer service.

Managerial benefits (Dimension 2). Centralized database and information, and better data-analysis capabilities provide informational benefits to management. These informational benefits help companies to improve resource management, improved decision making and planning, as well as increased performance throughout the organization.

Strategic benefits (Dimension 3). The large scale of business involvement in combination with the internal/external integration capabilities, allows ERP-systems to provide strategic benefits such as easier growth/expansion, tighter connection with business alliances, product differentiation, improved innovative capabilities, etc.

IT-Infrastructure benefits (Dimension 4). IT-infrastructure consist of shareable and reusable IT resources that provide a foundation to enable present and future business applications. Through an integrated structure and standard application architecture, ERP systems can provide increased flexibility for future changes in IT, reduced IT costs, and increased capability for quicker and economic implementation of new applications.

Organizational benefits (Dimension 5). Organizational capabilities includes tools and processes for employee "common vision" communications, facilitating flatter organizational structures, empowering employees and facilitating a learning behavior throughout the organization. The integrated information

processing capabilities and flexibility of ERP-systems can affect the establishment of such organizational capabilities.

The paper resulted in the following framework based on the case studies, the success stories and the five dimensions (see (Shang & Seddon, 2000) for further details):

Table 2 ERP Benefits by Dimension (Shang & Seddon, 2000)

Dimensions	Sub-dimensions (benefits)
Operational Benefits (Dimension 1)	1.1. Cost Reduction
	1.2. Cycle Time Reduction
	1.3. Productivity Improvement
	1.4. Quality Improvement
	1.5. Customer Services Improvement
Managerial Benefits (Dimension 2)	2.1. Better Resources Management
	2.2. Better Decision Making
	2.3. Better Performance Control
Strategic Benefits (Dimension 3)	3.1. Support Current and Future Business Growth Planning
	3.2. Support Business Alliance
	3.3. Build Business Innovation
	3.4. Build Cost Leadership
	3.5. Generate or Enhance Product Differentiation
	3.6. Build External Linkage
	3.7. Enable Worldwide Expansion
	3.8. Enabling E-Business
IT-infrastructure Benefits (Dimension 4)	4.1. Increased Business Flexibility
	4.2. IT Cost Reduction
	4.3. Increased IT Infrastructure Capability: Stable and Flexible for current and future business changes
	4.4. Increase IT Infrastructure Capability: Stable and Flexible for current and future business changes
Organizational Benefits (Dimension 5)	5.1. Support Business Organizational Changes
	5.2. Facilitate Business Learning and Broaden Employee Skills
	5.3. Empowerment of Employees
	5.4. Change Culture with Common Visions
	5.5. Change Employee Behavior with Shifted Focus
	5.6. Better Employee Morale and Satisfaction

As shown above, the list includes both tangible and intangible benefits, arguing that one needs to account for both categories when assessing benefits of an ERP-implementation. O'Leary (2004) performed research on 25 case studies in order to understand the key benefits of an ERP system. The study found significant benefits from both categories. More interestingly, the study found that generally tangible benefits are similar between industries, while intangible benefits varied between industries, thus enhancing the importance of including intangible benefits as part of an ERP evaluation or selecting criteria (O'Leary, 2004).

2.3. The Importance of Managing Benefits in ERP Projects

Despite the huge investments and potential business value of implementing ERP-systems, reports state that many ERP-projects fail to deliver business value or benefits. Devoteam daVinci Norway reported in 2009 that as many as 75% of Information & Communications Technology (ICT) investments failed to deliver the expected benefits (Devoteam, 2010). Ward, De Hertogh, & Viaene (2007) found similar numbers in their research: “...it is likely that up to 75% of IS/IT projects do not yield the benefits expected.” Further research reveals similar numbers for ERP-projects alone (Skjelvan, 2014) (Ryvarden, 2005) (Jutras, Measuring the ROI of ERP in SMB, 2009) (IBM, 2010).

A company’s capability of benefits realization means its capability of planning, realizing, exploiting and evaluating benefits. Benefits realization management requires systematic work, stakeholder analyses, as well as awareness of the connection between project deliveries, business changes, expected benefits and strategic goals (Rambøll Management Consulting, 2014). High quality BRM is correlated with a higher degree of benefits realization in ICT projects (Riksrevisjonen, 2015).

“Best-in-class [companies] are 219% more likely [...] to use advanced analytics and Business Intelligence (BI), along with reporting capabilities of ERP to monitor business benefits.” (Jutras, Measuring the ROI of ERP in SMB, 2009).

2.4. Previous Research

Mabert, Soni, & Venkataramanan (2003) conducted a case study amongst 12 different manufacture companies and 6 consulting firms to investigate the impact of organizational size on ERP- implementations. The 12 companies consisted of four small, three medium and five large-sized companies. The case studies were conducted through a preliminary questionnaire followed by a more detailed interview of at least one key executive, one member of the implementation team and one key user. To confirm the findings in the first phase of the study, a survey of a larger sample of companies was undertaken in order to obtain a broader perspective of ERP practices and experiences. In total, 193 companies responded to the survey, spread across all company sizes.

Amongst other things, the study found that approximately 30% of the companies surveyed did not do a Return on Investment (ROI) analysis or any form of investment analysis during their ERP implementation. An approximate weighted ROI for those companies who responded is approximately 20%. There were no statistical differences across company sizes (Mabert, Soni, & Venkataramanan, 2003).

In 2003, Olhager & Selldin (2003) presented a survey of ERP implementations in Swedish manufacturing firms. The survey covered ERP system planning, the pre-implementation process, implementation experience, ERP-system configuration, benefits, and future directions. In total, 158 usable responses were received, which included manufacturing companies that had implemented ERP-systems or were in the process of installing an ERP-system.

Olhager and Selldin found that merely 41.8% reported that they had a formal evaluation for their ERP-system. Of the formal evaluation analysis approaches, the payback method was most commonly used (66.7%) followed by Return on Investment (ROI) (30.3%), none of which accounts for intangible benefits to a high degree (Olhager & Selldin, 2003).

In 2009, Cindy Jutras of the Aberdeen Group published the report “Measuring the ROI of ERP in SMB³” (Jutras, Measuring the ROI of ERP in SMB, 2009). The report was based on Aberdeen Group’s “the 2008 ERP in Manufacturing Benchmark Report” which “*explores the feedback provided by over 1200 manufactures...*” (Jutras, The 2008 ERP in Manufacturing Benchmark Report, 2008). Based on five different performance criteria, Aberdeen distinguished the Best-in-class (top 20%) from the industry average (middle 50%) and the Laggard organizations (bottom 30%).

Jutras reports that SMBs spend between \$290,370 and \$1,381,431 on software and ERP-systems, yet 12% of the respondents report that they never estimate ROI in order to cost justify ERP projects and 24% never measure ROI after completion of an ERP-project. Furthermore, Best-in-Class are 219%

³ SMBs: Small and medium-sized businesses

more likely than Laggards to use advanced analytics, Business Intelligence (BI), along with reporting capabilities within ERP to monitor benefits of ERP-projects (Jutras, Measuring the ROI of ERP in SMB, 2009). In more detail, the report presents the following results:

Table 3 ROI and benefits realization (ibid).

	Best-in-Class	Average	Laggards
Processes	ROI is estimated to cost justify ERP-projects.		
	100%	91%	75%
	ROI is calculated after the completion of an ERP -project.		
	94%	83%	55%
	ROI of an ERP project is calculated periodically even after it has been achieved.		
	42%	24%	7%
Technology	Tools used to monitor the business benefits derived from ERP implementations.		
	<ul style="list-style-type: none"> • 58% use dashboards displaying data from installed application in real-time. • 79% use advanced analytics and BI. • 74% use reporting capabilities of the installed applications. 	<ul style="list-style-type: none"> • 52% use dashboards displaying data from installed application in real-time. • 50% use advanced analytics and BI. • 70% use reporting capabilities of the installed applications. 	<ul style="list-style-type: none"> • 25% use dashboards displaying data from installed application in real-time. • 25% use advanced analytics and BI. • 50% use reporting capabilities of the installed applications.

Table 3 clearly shows a higher focus on ROI and monitoring of business benefits amongst the Best-in-Class companies, compared to the Laggard companies. The importance of benefit realization management is clearly highlighted by comparing the above results with the reported performance amongst the same companies:

Table 4 Performance of manufacturing companies (ibid)

	Best-in-Class	Average	Laggards
Performance	Successfully achieved ROI on the projected timeline at the Divisional level.		
	58%	30%	13%
	Successfully achieved ROI on the projected timeline at the Corporate level.		
	53%	30%	6%

Table 3 and Table 4 show a connection between measuring ROI and business benefits during the ERP project, and the actual ROI of the project. However, the author of this paper would like to point out the limitations of using purely financial analytics to determine achieved benefits, as argued earlier in this paper (chapter 2.1).

In 2009, on behalf of Devoteam daVinci Norway, Synovate conducted a survey of approximately 200 Norwegian decision makers that had been involved in ICT-projects in the last three years. The respondents were chosen from both government and public organizations. The results did show a low degree of benefits realization. The study revealed that (Jørgensen, 2011)

- Almost 4 out of 10 ICT projects lack plans and goals for benefits realization.
- Amongst the respondents that made plans for benefits realization, only 2 out of 10 followed up/evaluated the plans and kept the momentum.

IT in Practice 2014 (“IT i Praksis 2014”) published by Rambøll Management Consulting in collaboration with the Norwegian Computer Society (Norwegian: “Den Norske Dataforening”) aims at presenting effects, challenges, trends and experiences following the use of ICT-systems of 500 major public and governmental businesses in Norway. The report is based on surveys conducted amongst top IT officers (CIOs, IT managers, etc.) and top business managers (CEOs, directors, etc.) (Rambøll Management Consulting, 2014).

A part of the report investigates how IT managers evaluate top and middle leadership’s expertise concerning BRM. The IT-managers state that 57% of top leaders and 42% of middle leaders has high or some degree of expertise on the field (ibid).

IT in Practice 2014 also reports that 67% of best-practice companies and 37% of worst-practice companies work systematically to identify and specify potential benefits through cost/benefit analyses. The gap also highlights the importance proper benefits realization management. In addition, the report states that 60% of public companies identify benefits with regard to their ICT-projects, while only 34% of governmental businesses do the same. In other words, there is a clear difference between public and governmental businesses in this area (ibid).

The report also mentions the work with describing benefits in detail. This includes specifying what business changes are needed, what roles who have special responsibility and what actions are required. The delivery of this process his process is referred to as “benefit profiles”. IT in Practice 2014 reports that few companies include this process. In addition, few businesses root the responsibility of managing benefits to a benefits realization manager (11%) (ibid).

The report states that only 18% of private companies and 7% of governmental businesses include a benefits realization plan as an integral part of the project or business plan. This decreases the likelihood of systematic reports and possibility of proper evaluation. (ibid).

In February 2015, the Norwegian Supreme Audit Institution (Norwegian: “Riskrevisjonen”) released their investigation of benefits realization in governmental ICT projects. The study was based on 11

governmental ICT projects between year 2007 and 2013 with a total net cost of more than 1bn NOK. The report states that only a few of the projects can document that the work with benefits realization had been systematic and dedicated through the whole process. The examination also illustrates that systematic work with benefits realization increases the possibility of documenting realized benefits (Riksrevisjonen, 2015).

All of the examined projects had established a preliminary plan for systematic work with benefit realization, but few of the projects followed up this plan in order to identify and operationalize the expected benefits. The majority of the projects had conducted measurements of achieved benefits after the completion of the projects. However, these measurements were more focused on status of delivery rather than actual achieved benefits. Two of the ICT-projects were able to document measurement of achieved benefits that could be traced back to expected benefits identified in the beginning of the project. These two projects had also included a benefits realization plan as an integral part of their project plan (ibid).

2.5. Summary Chapter 2

This chapter has summarized what Enterprise Resources Planners (ERPs) are and how these systems generate business benefits through supporting major business fields such as finance, HR, production, sales and customer services. Through an integrated structure, the ERP allows companies to gather business information from the entire enterprise, allowing for better reporting and more informed business decisions. ERPs also generate several other important benefits, in all five business dimensions, which are highlighted in this chapter.

Benefits from ERPs can be significant. However, ERPs also have a very high time-consuming cost, and usually require large investments. The process of implementing an ERP is a very complex effort, and requires significant changes in multiple business dimensions. In combination with a high business criticality (Olberg, 2013), one can easily argue that ERP implementations have high risk.

Despite the heavy investments and the huge potential benefits, research points towards low benefits realization amongst ERP projects.

By having proper benefits realization management, businesses can increase their chance of achieving business benefits from their ERP implementations. Proper BRM should be an integral part of the ERP-implementation's project plan, requiring systematic work through four general steps: Identification, planning, execution and evaluation. Several methodologies and models exist to aid this process. Wards Benefit Management Process Model is one of them (Ward, De Hertogh, & Viaene, 2007).

Previous research points towards poor benefit realization and little focus on BRM in ICT-projects. Additional studies point towards the same trend in ERP-projects. The author has found some studies of Norwegian IS/IT-projects, which show similar results. However, the author has not succeeded in finding any major studies with a larger sample of companies that confirms this. Nevertheless, the research is unified: Benefits realization and BRM in ERP-projects have huge potential for improvement.

3. Research Method

This chapter contains a description of the research perspective, the method used, research design, as well as data gathering and analysis. In addition, the chapter will describe challenges encountered and limitations/scope of the study.

3.1. Research Perspective and Method

In order to concretize and operationalize this thesis, it is important to assess what one actually want to find, and how to find it.

There is previous research on the subject of benefits realization in Norwegian ERP-projects. However, the most detailed research is mostly qualitative. As shown in the previous chapter, the author has not succeeded in finding any quantitative, detailed and current research about this subject.

Due to a lack of research on this particular field, one can either choose to perform another qualitative analysis to confirm or challenge the current findings, or one can try to perform a quantitative analysis based on the previous qualitative research and investigate the matter further. The author found it more useful to do the latter. In order to investigate to what extent Norwegian ERP-projects work systematically with benefits realization, the author has chosen to perform a quantitative analysis of a larger sample of companies.

This paper will attempt to identify work done with benefits realization on a broader scale.

Furthermore, the results can be used as a basis to perform a more in-depth analysis of specific fields within the benefits realization methodology, specific groups of respondents and similar. Further research based on this study will also depend on whether this study confirms or challenges previous findings.

3.2. Research Design

Research will be conducted as a descriptive, quantitative study based on a survey sent out to a larger group of companies. The goal is to capture a broad picture of how BRM is performed in Norwegian ERP-projects.

Previous research indicate that many companies do not perform proper BRM *at all* during their own ERP-projects. In order to capture and identify how much Norwegian companies actually focus on benefits realization, if at all, it is important to investigate all four generic steps of BRM. As many important ERP benefits are intangible, intangible benefits must be investigated as well. Usage of the ERP-system is a prerequisite to achieve benefits with ERP-systems, and should also be included in the survey. This part of the survey aims at answering the first research question.

In order to answer the second research question, it is of interest to investigate how the respondents would rate their own benefits realization management and how important they feel benefits realization is to an ERP-project. To investigate the underlying reasons behind their answers, the respondents will also be asked to identify what barriers they encountered, what lessons were learned and how important they think BRM is in relation to an ERP-project. In order to help future ERP-projects, the respondents are also asked to write down their recommendations on how to increase focus on benefits realization management.

According to the author's own observations and reading, getting enough respondents is a challenge. Therefore, there is a balance between the number of details and questions in the survey, and the likelihood of getting enough respondents. This study is a university thesis, which means that the timeframe is a factor that must be taken into account. Due to these challenges, the survey questions are kept generalized and not too detailed. A more detailed survey/analysis can be conducted based on the results of this survey.

Further details about the surveys themselves are described in chapter 4.

3.3. Data Gathering

The challenge with data gathering is two-fold:

First, there is a challenge with getting *enough* respondents to draw respective conclusions. In order to keep the margin of error as low as possible, a higher sample size is needed.

Second, the *right* respondents need to answer the survey. In order to investigate benefits realization in Norwegian ERP-projects, the respondents need to have had a relevant position in their ERP-project or possess a certain level of knowledge about their project.

In order to cope with these challenges, the author chose to gather data through special interest groups (SIGs) relevant to ERPs. This ensures that the survey is distributed to a certain amount of possible respondents (first challenge) as well as making sure the respondent group fits the intended respondent profile (second challenge). In addition, the respondents might feel a bit more obligated to answer a survey sent out by their own SIG compared to a "random student".

The survey population was defined as "any person that has played a leading or key role in an ERP-implementation in a Norwegian company". As mentioned earlier, O'Leary (2004) found significant differences in intangible benefits between industry groups. However, this study focuses on the work done in order to generate benefits, and not the benefits themselves, thus there is no need to distinguish between industry groups.

3.3.1. Distribution of Survey

Many ERP-projects are delivered through a vendor of some sort. In order to capture whether there is a difference in opinion between ERP customers and vendors, it was decided to split the initial survey into two separate surveys – one for each group. The two surveys were almost identical to allow for comparison between the two groups.

After a few weeks of contacting different SIGs, the author managed to establish a cooperation with the Norwegian Computer Society (“Dataforeningen”) and ICT-Norway (“IKT-Norge”). The Norwegian Computer Society represents IT-professionals and advanced IT-users. This means that many of their members will fit the defined population for this study as the IT-professionals and advanced IT-users are likely to have played a key role in their company’s ERP-implementation. Similarly, ICT-Norway represent providers of ICT-systems, meaning that their members are likely to fit the vendor side of the defined population.

The representatives from both SIGs were quite busy at the time and progress was slow. However, eventually both SIGs agreed to distribute the provided surveys. ICT-Norway distributed the survey to their members as a part of an email newsletter sent out regularly. The newsletter was distributed 27 March 2015 to 1267 possible respondents, and a follow-up was distributed 23 April 2015.

When the first newsletter from ICT-Norway resulted in zero responses (see below), the author started to contact member companies of ICT-Norway directly. One company agreed to distribute the survey internally to their ERP-departments. The survey was distributed 6 May 2015 with a deadline of 15 May to approximately 40 relevant respondents. The company wished to remain anonymous, and will be referred to as “Company X” throughout this report. Company X is an international consultant company, and are involved in many Norwegian ERP-projects, thus being relevant to this project.

The Norwegian Computer Society identified possible respondents and sent out an invitation by email personally to each member through their Chief Operations Officer. The invitation was sent out 17 April 2015 to 997 possible respondents. Another email invitation was sent out to 1300 people 26 May 2015.

3.3.2. Survey Responses

The Norwegian Computer Society’ survey was open from 17 April to 30 May 2015. Of the total 1300+ possible respondents that got the invitation, 134 opened the hyperlink to the survey. Forty-three respondents answered some of the questions, and 42 completed the entire survey. Based on a total 1300 possible respondents, the answer rate is 3.2%. However, this answer rate is possibly lower as not all of the 997 respondents who got the first invitation might be represented amongst the 1300 who got the second email invitation.

ICT-Norway’s survey amongst vendors and providers of ERP-systems was open from 27 March to 20 May 2015. Of the total 1267 that received the newsletter with the survey invitation twice, 25 respondents opened the URL to the survey. None of the possible respondents actually completed the survey, giving the ICT-Norway survey a 0 % answer rate.

However, Company X’s internal distribution resulted in 15 respondents. In addition, one respondent from the Norwegian Computer Society’s survey was redirected to ICT-Norway’s survey, giving the survey a total of 16 respondents.

The number of survey responses are summarized as follows:

Table 5 Response Rates

Survey	Possible Respondents	Responses	Response Rate
The Norwegian Computer Society	> 1300	26	< 3.2%
ICT-Norway	1267	0	0 %
Company X	40	15	37.5 %
Others	1	1	-
Total	> 2608	42	< 1.6 %

In total, more than 4900 survey invitations were distributed during the course of this study. Neither the author nor the SIG representatives, whom are experienced in working with surveys, expected such low response rates.

3.3.3. Generalizability

Generalizability means to what extent the sample population represents the population at large. The larger the sample population, the more one can generalize, i.e. be sure that the findings of the sample population are true also for the entire population.

Due to the low number of respondents, one can not guarantee that the findings are generalizable. In order to generalize, more respondents are required. However, the author hopes to identify some trends and phenomena that can be used for further research in the field.

Both the cooperation with relevant SIGs, the survey invitations and the welcome pages on the surveys all aim at making sure that the correct people are responding to the survey. However, one cannot guarantee that all of the respondents fit the defined sample population.

3.4. Data Analysis

Data will be analyzed mainly through Microsoft Office Excel. The survey tool that is being used allows for export of the data to Excel for further analysis. The survey tool does provide some analysis functionality, but not with the same flexibility as MS Excel.

Data will be analyzed and presented by visualizing the information, using a variation of graphs. The author feels that by visualizing data, compared to presenting various statistical values and calculations, the information is communicated more clearly and efficiently. The decision is influenced by the low response rate and lack of generalizability. This thesis aims to investigate how Norwegian ERP-projects work with BRM at an overall level; therefore, we are more interested with patterns rather than specific statistical values. In addition, previous research dictates little statistical data for comparison, thus supporting this decision.

Closed questions will be analyzed in a standard manner through basic Excel functionality. Open-ended questions, like comments from respondents and lessons learned, will be exported to a spreadsheet and then categorized in one or more categories. This allows for some statistical analysis in addition to gathering the given information.

3.5. Challenges and Limitations with the Research Method

As mentioned earlier, obtaining a sample population that is large enough remains to be the major concern with choosing survey as a research method. Unfortunately, the survey did not succeed within the given timeframe. Therefore, the method has a limitation with not being able to generalize the population adequately.

Furthermore, 15 of the 16 respondents of ICT-Norway's survey are from the same company. This makes the sample population of the vendor-side of this report less representable for the larger population. As a result, more focus will be given towards the Norwegian Computer Society's survey instead. However, some of the responses give valuable insight with regards to the consultants' view of benefits realization in ERP-projects. Even though the respondents mostly represent the same company, they are likely to not be involved in the exact same projects, which increases the value of their answers.

Another challenge is the balance between having enough questions to answer the research questions, and the likelihood of getting respondents to complete the survey. As the goal is to examine and identify how companies work with benefits realization management at an overall level, the author feels that the survey is detailed enough for this task.

The survey will not focus on continuous revision of benefits and possible future work to identify and realize *more* benefits after the immediate revision of the implementation. This is to concretize the thesis. This thesis aims to identify as to what extent companies work with benefits realization in ERP-projects and the possible lack of it, thus focusing on the work before, during and immediately after the project. Further work for future realization of benefits based on the already implemented benefits are outside the scope of this project.

4. Survey Design

This part will describe the distributed survey in more detail. The aim of this chapter is to give the reader a higher understanding of what questions the respondents have answered, before reading on to the “results” chapters.

4.1. Technology

SurveyXact.dk provided by Rambøll Management Consulting will be used to facilitate this survey. SurveyXact is a web-based survey tool that allows the user to create electronic surveys and questionnaires, custom layout and easy-to-use data collection. The tool also allows for anonymous respondents by automatically generated respondent profiles through URL access.

The University of Stavanger owns the license used.

4.2. Survey Layout

The surveys themselves are quite similar as the initial idea was to compare the results between ERP-vendors and clients. As the target respondents are Norwegian, the surveys are written in Norwegian as well. Olberg (2013), Rambøll Management Consulting (2014), and Riksrevisjonen (2015) are used for inspiration when designing the questionnaires. The surveys are divided into three parts:

Part 1 consists of a quick welcome screen as well as a few control questions about the ERP-system that the respondent is using or providing. This information includes type of ERP, the level of customization, how old the system is, and what the main initiators behind the project were and/or typically are. The questions in this part will be used as control questions to draw a picture of the ERP-systems of the sample population as well as identifying whether these variables will affect the projects' benefits realization. All questions are closed-ended with one or multiple choices.

Part 2 consists of the main part of the surveys. This part aims to answer the initial research questions. The first page includes questions to identify prerequisites for BRM; such as prior knowledge and to what extent the work with benefits realization is done by the provider or the client. For the project to extract maximum potential benefits through BRM, there is a requirement that the project leadership is knowledgeable on the methodology, and what this involves. It is also interesting to investigate whether the client specifically requires measurement of achieved benefits from the very beginning of the project. This will help towards drawing a picture of whether the client or vendor is focused on achieving maximum documented benefits or not. The use of the vendor's competence on benefits realization is also of interest as this can affect the quality of BRM. Benefits realization involves organizational and process changes, which means that a certain amount of understanding of the company and its business is required. This is typically harder for someone external, where external consultant companies might have higher focus on results rather than the effects of the changes made.

However, using external competence for BRM can also be quite beneficial if managed properly, as discussed earlier.

Furthermore, the next page of the survey endeavors to identify the work done with benefits realization according to the four general steps of BRM (as described in chapter 2 of this report). As this study aims towards identifying how work is done with regards to benefits realization at an overall level, the number of questions to answer is kept fairly low (10 questions). This is also based on a balance between the number of questions and the likelihood of the respondents completing the survey. Each question aims at identifying as to what extent the companies are executing specific processes, relating to the four steps in BRM. The questions are answered on a 1-4 scale (“in no extent”, “in lesser extent”, “in some extent”, “to great extent”). Example given:

Identifisering av gevinster		I ingen grad	I mindre grad	I noen grad	I meget høy grad
I hvilken grad ble det jobbet systematisk for å identifisere gevinster og effektmål?		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I hvilken grad ble det jobbet systematisk for å kartlegge berørte grupper og interessenter ifm identifiserte gevinster?		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I hvilken grad ble det utarbeidet en lønnsomhetsanalyse (anslåtte kostnader og nyttevirkninger) av identifiserte gevinster?		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Styring og oppfølging av arbeidet med gevinster		I ingen grad	I mindre grad	I noen grad	I meget høy grad
I hvilken grad ble det satt av dedikerte midler til gevinstrealisering og måling av gevinst?		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I hvilken grad ble arbeidet med gevinstrealisering forankret i en «gevinstansvarlig»?		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I hvilken grad ble det opparbeidet en gevinstrealiseringsplan (altså et helhetlig opplegg for styring og oppfølging av arbeidet med å		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 4 Survey Question Example (Norwegian)

This method allows for easy comparison between the different respondents. However, this format will only capture the respondent’s own assessment of the work done. In order to get more detailed information and even less biased answers, a larger, more in-depth survey would have to be conducted. In order to achieve this within the given timeframe, the survey would have to be guaranteed a certain amount of responses as a bigger survey is likely to decrease the response rate. For this study, the respondents own assessments would suffice, as this study will form the basis for a more in-depth study later on. Whether these questions could be open-ended was also assessed, but to allow easier comparison and standardized answers it was decided to use close-ended questions.

The respondents were also asked to describe in further detail about how they would rate their own BRM efforts, as well as describing the most significant barriers and how important they think BRM is to an ERP-project. These questions will try to capture the respondents own opinions and attitudes towards benefits realization in ERP-projects. For future reference they were also asked to describe

what they think is the reason behind poor benefits realization in Norwegian ERP-projects, as well as stating their own lessons learned and recommendations for future ERP-projects. In order to capture the respondents own views on the subject and not restraining them to a fixed set of answer alternatives, most of these questions were open-ended.

Part 3 consists of control questions about the respondent and the respondent's company, similar to part 1. This allows for ascertaining whether the entire population is represented in the sample population, in addition to identifying whether some of these variables would affect the answers in the survey; such as company size, role in the company and whether the company/company's customers are in the public or private sector.

4.3. Survey Questions – The Norwegian Computer Society

The previous sub-chapter can be summarized in the following table:

Table 6 Survey Questions (the Norwegian Computer Society)

Survey Part	Page	Question Type	Question
1	1		Welcome
	2	Closed – Single Choice	Which ERP-System is used?
		Closed – Multiple Choice	What were the reasons for the ERP-implementation?
		Closed – Single Choice	To what extent did you have to customize your ERP-solution?
	Closed – Single Choice	When was the ERP-system put into use for the first time?	
2	3		Prerequisites for Benefits Realization
		Closed – Single Choice	To what extent do you think the project-team and/or leadership possessed the necessary knowledge about benefits realization and measurement of benefits?
		Closed – Single Choice	To what extent were there requirements with regards to benefits realization as a part of the ERP-project, or measurement of benefits post-implementation?
		Closed – Single Choice	To what extent were the work with benefits and benefits realization done by the provider/vendor?
	4		Identification of Benefits
		Closed – Single Choice	To what extent were benefits and effect goals identified systematically?
		Closed – Single Choice	To what extent were affected parties identified systematically with regards to identified benefits?
		Closed – Single Choice	To what extent was a cost/benefit-analysis, or similar, made based on the identified benefits?
			Monitoring and Management of Benefits Realization
		Closed – Single Choice	To what extent were dedicated resources set aside for benefits realization and measurement of benefits?
		Closed – Single Choice	To what extent were the work with benefits realization sourced from to a benefits realization manager?
		Closed – Single Choice	To what extent was a benefits realization plan developed?
			Measurement of Benefits
		Closed – Single Choice	To what extent did you make a plan for measurement of benefits?
		Closed – Single Choice	To what extent did you actually measure benefits that can be traced back to expected benefits?
	Closed – Single Choice	To what extent did you focus on measuring intangible benefits?	
		Use of the ERP-system	
	Closed – Single Choice	To what extent did you focus on users and usage of the system post-implementation in order to generate benefits?	
	5	Closed – Single Choice	Generally speaking, how would you rate the work done with benefits realization and measurement of benefits?
Open		What did you experience as the biggest barriers/challenges with regards to benefits realization?	

		Open	What do you think are the major reasons for poor benefits realization in Norwegian ERP-projects?
		Open	What are your most important “lessons learned” concerning benefits realization?
		Closed – Single Choice	Please consider the following statement: “Systematic and targeted work with benefits realization through the entire ERP-project is a <i>critical</i> prerequisite to realize planned benefits.”
	6	Open	Do you have any recommendations on how to increase the focus on benefits realization and measurement of benefits in Norwegian ERP-projects?
3	7	Closed – Single Choice	My role in the company is:
		Closed – Single Choice	How many employees does your company have?
		Closed – Single Choice	Is your company in the public or private sector?

Full printouts of the survey from SurveyXact.dk can be found in the Appendix section.

4.4. Survey Questions – ICT-Norway

Table 7 Survey Questions (ICT-Norway)

Survey Part	Page	Question Type	Question	
1	1		Welcome	
	2	Closed – Multiple Choice	Which ERP-system(s) do you provide?	
		Closed – Multiple Choice	What do you perceive as the most common reasons for ERP-implementations?	
		Closed – Single Choice	To what extent do you usually have to customize the ERP-solutions you provide?	
2	3		Prerequisites for Benefits Realization	
		Closed – Single Choice	To what extent do you feel the client possesses the necessary knowledge about benefits realization and measurement of benefits?	
		Closed – Single Choice	To what extent do you feel that the provider or service partner of the ERP-system possess the necessary knowledge about benefits realization and measurement of benefits?	
		Closed – Single Choice	To what extent do you use your own established processes for benefits realization?	
		Closed – Single Choice	To what extent were there requirements with regards to benefits realization as a part of the ERP-project, and measurement of benefits post-implementation?	
		Closed – Single Choice	To what extent were the work with benefits and benefits realization done by the customer?	
	4			Identification of Benefits
		Closed – Single Choice	To what extent do you work systematically to identify benefits and effect goals?	
		Closed – Single Choice	To what extent do you identify affected parties systematically with regards to the identified benefits?	
		Closed – Single Choice	To what extent do you develop a cost/benefit-analysis, or similar, based on the identified benefits?	
				Monitoring and Management of Benefits Realization
		Closed – Single Choice	To what extent are dedicated resources set aside for benefits realization and measurement of benefits?	
		Closed – Single Choice	To what extent is the work with benefits realization sourced from a benefits realization manager?	
		Closed – Single Choice	To what extent do you develop a benefits realization plan?	
				Measurement of Benefits
		Closed – Single Choice	To what extent are plans for measurement of benefits developed?	
		Closed – Single Choice	To what extent do you actually measure benefits that can be traced back to expected benefits?	
		Closed – Single Choice	To what extent do you focus on measuring intangible benefits?	
				Use of the ERP-system
		Closed – Single Choice	To what extent do you focus on users and usage of the system post-implementation in order to generate benefits?	
		5	Closed – Single Choice	Look back to the previous ERP-project you were a part of. Generally speaking, how would you rate the work done with benefits realization and measurement of benefits?

		Open	What did you experience as the major barriers/challenges with regards to benefits realization?
		Open	What do you think are the major reasons for poor benefits realization in Norwegian ERP-projects?
		Open	What are your most important “lessons learned” concerning benefits realization?
		Closed – Single Choice	Please consider the following statement: “Systematic and targeted work with benefits realization through the entire ERP-project is a <i>critical</i> prerequisite to realize planned benefits.”
	6	Open	Do you have any recommendations on how to increase the focus on benefits realization and measurement of benefits in Norwegian ERP-projects?
3	7	Closed – Single Choice	My role in the company is:
		Closed – Single Choice	I have been working with ERP-systems for [years]:
		Closed – Single Choice	Can you estimate your company’s yearly revenue [MNok]?
		Closed – Single Choice	Customers of your company are mainly in the [sector]:

Full printouts of the survey from SurveyXact.dk can be found in the Appendix section.

5. Results – The Norwegian Computer Society

The following chapter will present the results from the survey distributed to relevant members of the Norwegian Computer Society. More focus will be devoted to this particular survey, as the respondents are more representative to its population compared to the respondents of ICT-Norway’s study. Chapter 6 will present the results of ICT-Norway’s survey more briefly, while Chapter 7 will present a combined result of the two surveys. A discussion of the findings will be presented further on in this thesis, followed by a short conclusion chapter towards the end.

Due to a limited number of respondents, only the sector control variable will be used to compare answers throughout the chapter. Other control variables; in particular, ones with more alternatives, will have decreased value due to the limited sample population. However, the control variables that do seem to have an impact on the results will be discussed briefly towards the end of this chapter.

5.1. The Sample Population

In order to obtain the relevant information from respondents that have had key roles in their ERP- implementations, the respondents were asked to state their role in their company. The respondents are distributed as follows:

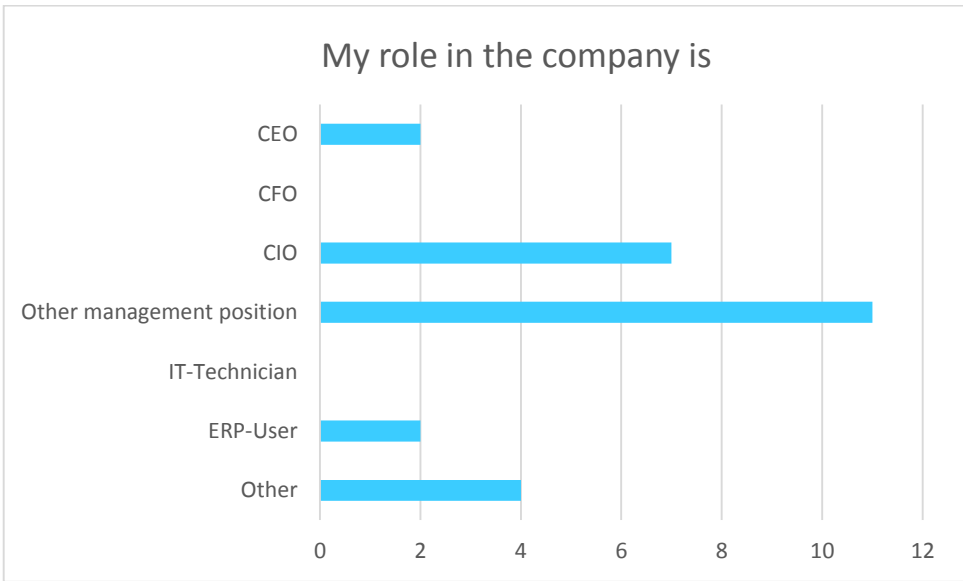


Figure 5 Respondent Roles

Respondents that stated “other” roles includes sales, senior advisor, etc. After assessing their answers during the survey, the author is confident that their roles fit the respondent profile for this study.

Generally, most respondents are in a leading and/or IT-managerial role.

The size of the company is likely to affect the ERP-implementation project. A larger company is likely to have a more complex system, more modules, more affected parties, higher risks and returns; but

also have more resources and financial backing to support the project. The sample company sizes were distributed as follows:

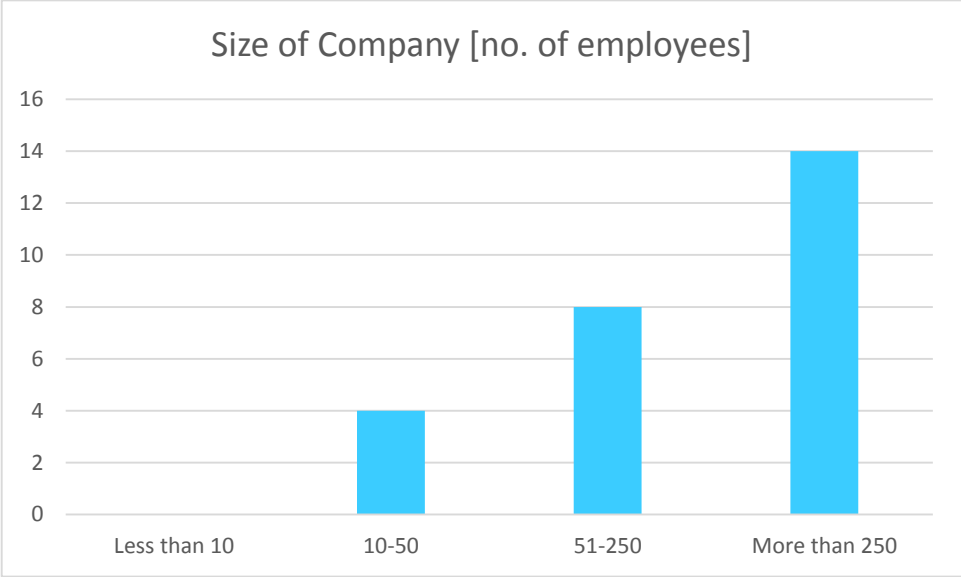


Figure 6 Company Sizes

The companies are divided by the number of employees according to the European Union’s definition of company sizes (European Commission, 2014). Revenues and profits are not included as this might be harder to answer by the respondents.

Similarly, whether the company is public or private is also likely to affect the results of this study. The companies are distributed as follows:

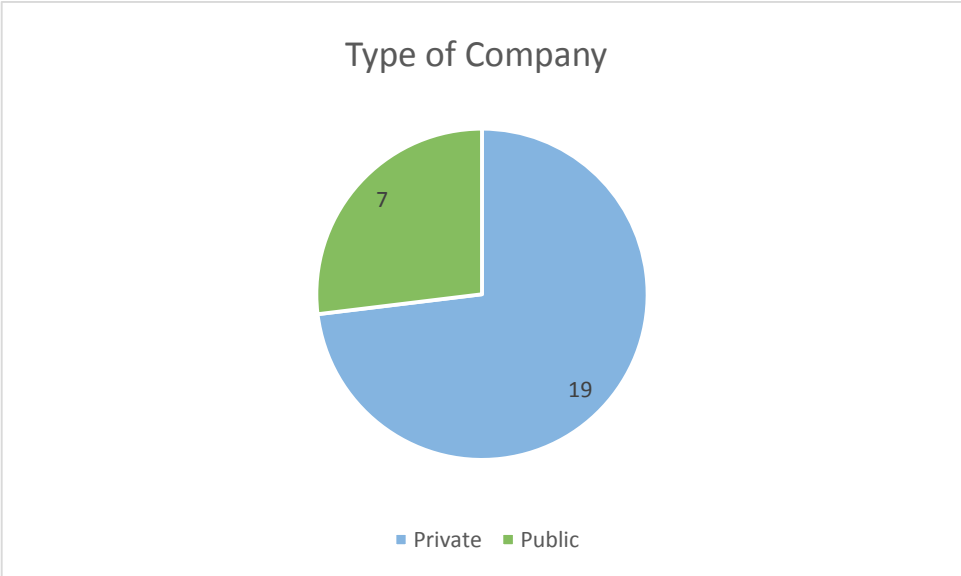


Figure 7 Company Sector

As shown above, the majority of the respondents belong to private companies, but some public companies are represented.

5.2. ERP-Systems

The ERP-system which is implemented, the when, how and why, may affect how benefits realization is conducted in an ERP-implementation project. The following results show how the ERP-systems of the respondents are distributed. The results are able to give the reader an idea of the sample population, in addition to being used for a comparison of the results further on (see chapter 5.7.7.).

What ERP-system is implemented might affect benefits realization, as the different types of ERP-systems have different target groups, level of complexity, possibilities for customization, and modules, etc.

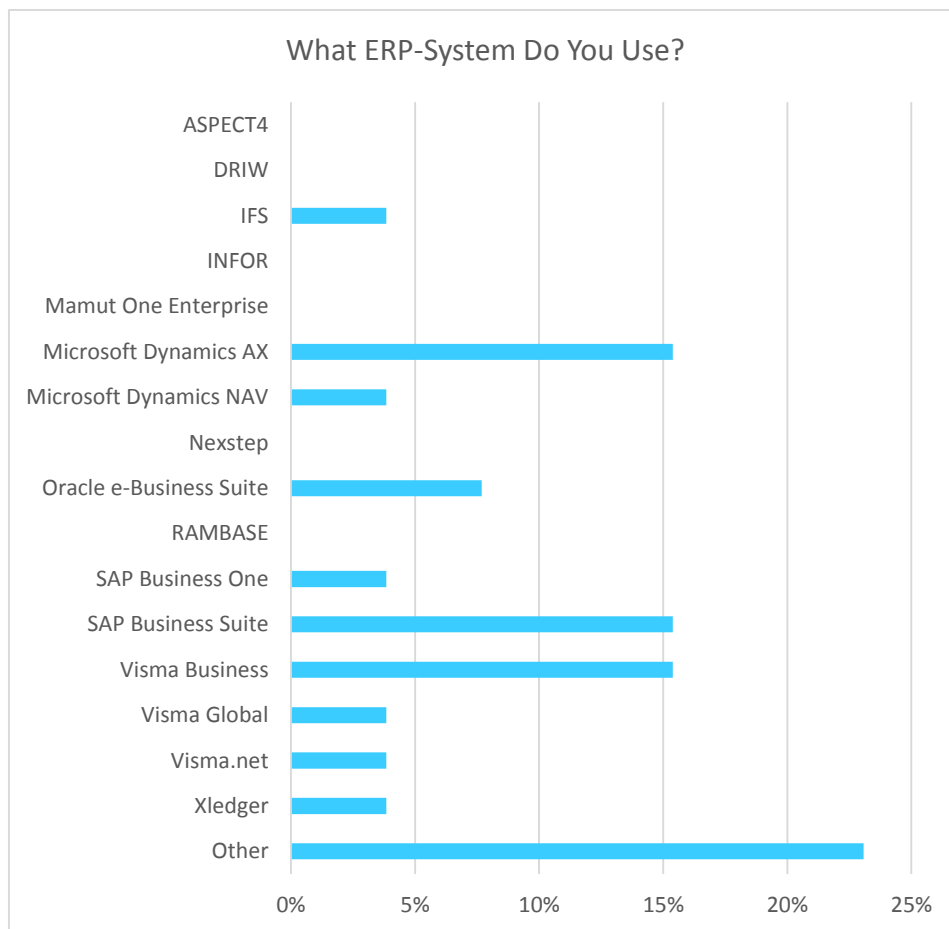


Figure 8 ERP-systems

Not surprisingly, the four major ERP platforms in Norway (SAP, MS Dynamics, Oracle and Visma) make up the majority of the systems reported in the survey. In addition, six other systems are represented.

Level of customization might affect a project in different ways, as explained earlier in this report. For example, increased customization might lead to more complexity as standardization of the solution decreases. However, this may also increase alignment with the company's business processes. The level of customization is likely to affect how BRM is conducted, and how benefits are measured:

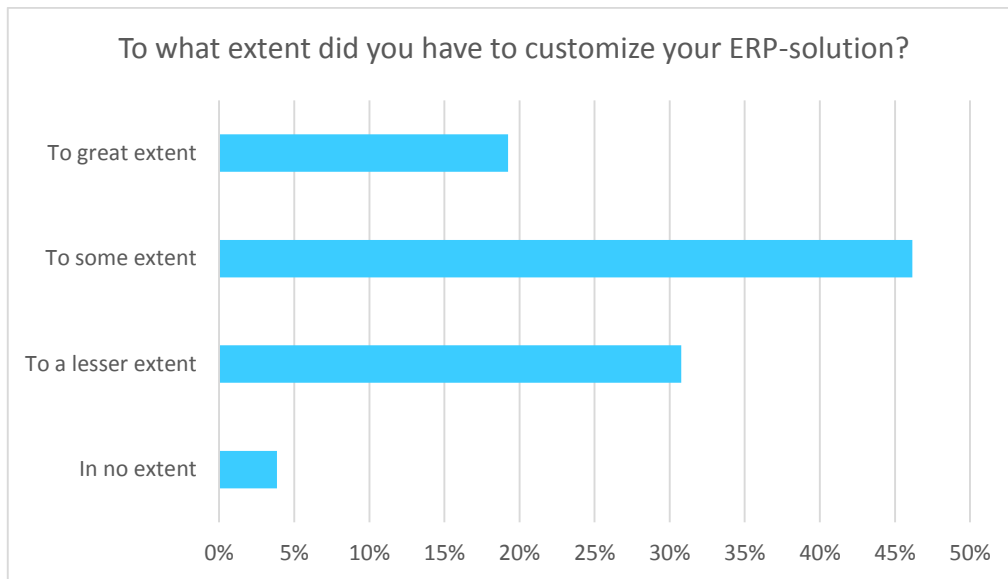


Figure 9 Level of customization

The majority of the respondents' ERP-systems were customized, but to various degrees.

Age of the ERP-system might give an idea of whether benefits realization has improved or worsened during the last years.

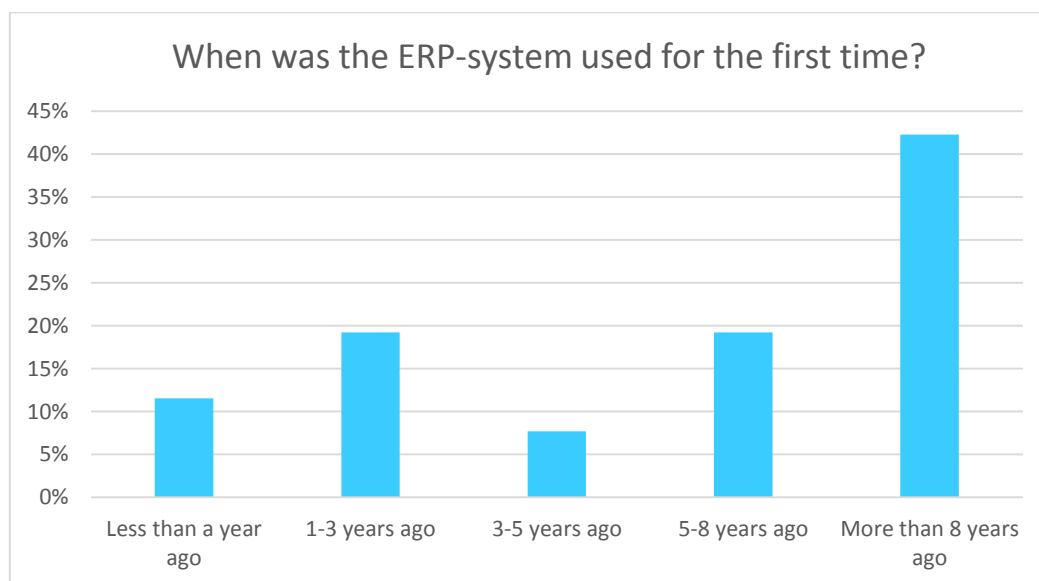


Figure 10 Age of ERP-system

The majority of the sample ERP-systems are older than 5 years, but all ages are represented.

Different reasons for implementing ERP-systems might lead to different focus on benefits realization. Companies that are implementing ERP-systems in order to improve business processes, may have a higher incentive to measure benefits (in terms of improvement of processes), compared to someone that merely needs to solve the Y2K problem. Still, there is potential for huge business benefits resulting from a successfully implemented ERP-system, regardless of initial reasoning. The respondents were asked to identify what their own reasons behind their ERP-implementation were:

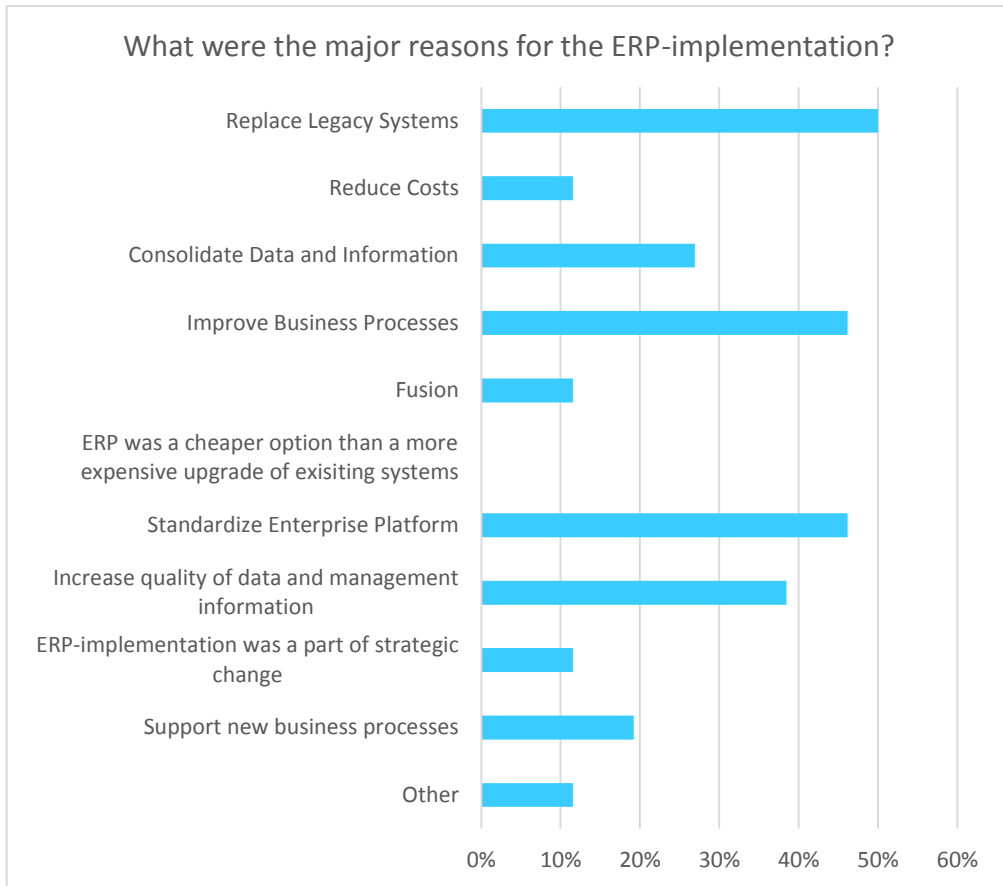


Figure 11 Major reasons for implementing ERP

Typically, four reasons for implementing ERP stand out: Replacing legacy systems (50%), standardizing the enterprise platform (46%), improving business processes (46%), and increasing the quality of data & management information (38%).

5.3. Prerequisites for Benefits Realization

Large organizational changes require involvement from leadership. Large changes also mean high risk, high involvement of personnel, and huge reward potentials. The same applies to ERP projects. In order to maximize benefits through BRM, it is beneficial for the leadership to have an understanding of the importance of benefits realization and the methodology. The respondents rated the project team’s and leadership’s knowledge on benefits realization as follows:

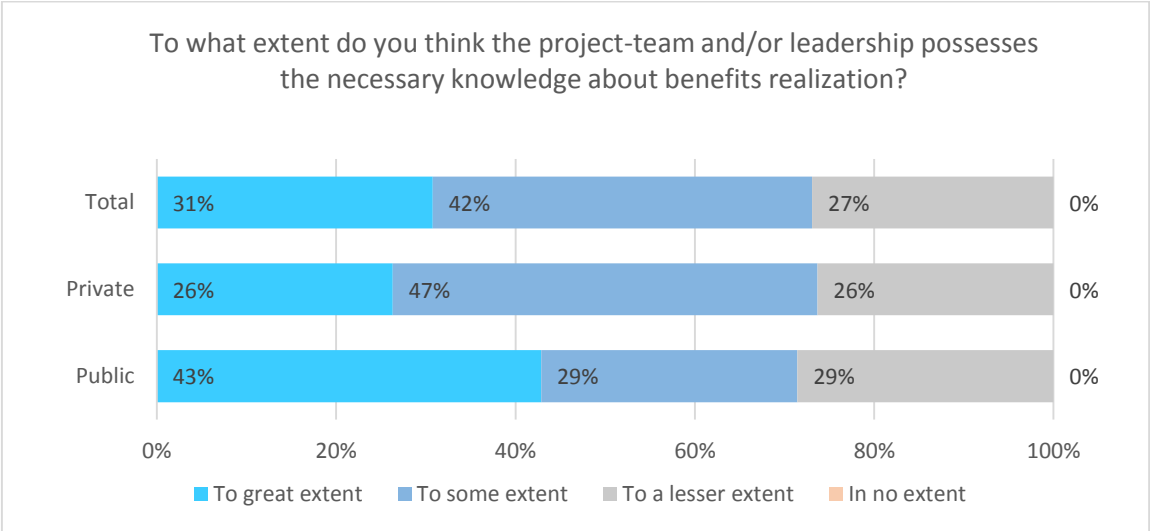


Figure 12 Knowledge about BRM

Almost three quarters of the respondents reported that the project team and/or leadership has some or a high degree of necessary knowledge about benefits realization. Thirty-one percent reported that the project team and/or leadership (to a high extent) possessed the necessary knowledge. There were no major differences between public and private companies.

Another factor that might influence the use of the benefits realization methodology in ERP-projects, is to what extent the clients themselves specifically requires BRM and measurement of benefits. This also shows how committed the client is to achieving specific benefits resulting from the ERP-implementation.

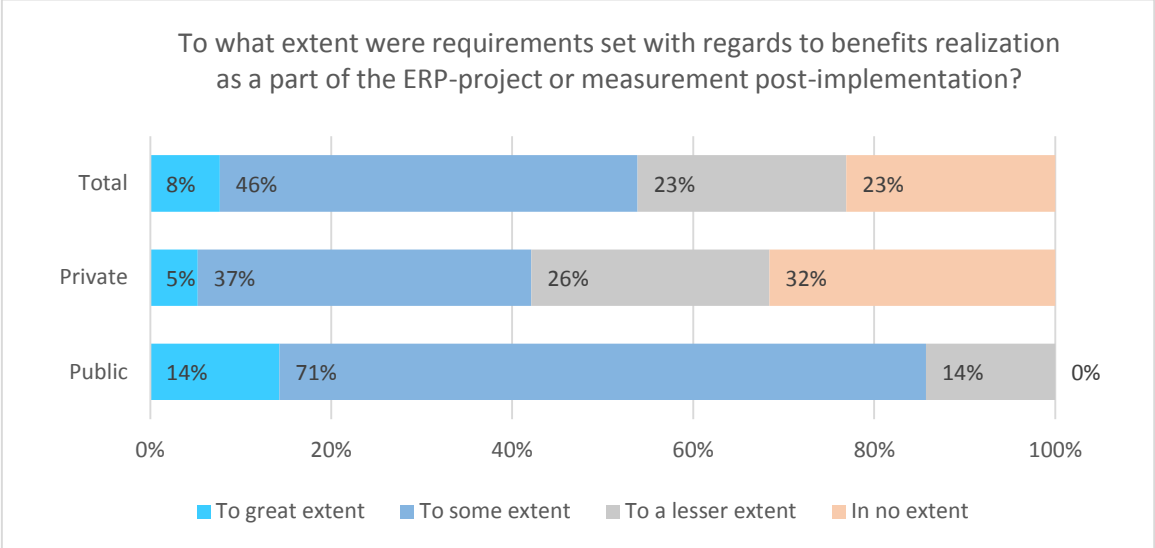


Figure 13 Requirements for BRM

Only 54% of the respondents stated that benefits realization management was required to some or a high extent. Merely 8% of the respondents required this to high extent. The numbers also show that focus on benefits realization and measurements of benefits is somewhat higher amongst public projects compared to private ERP-implementation projects.

As stated earlier, ERP benefits realization does not only cover positive changes in IT; it also covers organizational and business process changes. In order to manage these benefits, one needs to know the company, its culture and its organization. External expertise are likely to be less knowledgeable about this particular information, therefore internal expertise should be included to at least some extent when conducting BRM in an ERP-project. In addition, hired expertise might have different methodologies for benefits realization that might not follow the client company’s internal methods or processes. Furthermore, focus might be on results rather than effects, and ownership of benefits post-implementation can be harder for external expertise as external parties might be dismissed when the project ends (typically due to costs). On the other hand, using external expertise for benefits realization might be an asset if managed properly; and might add to knowledge sharing, quality of the solution, and the quality of benefits realization practices. Therefore, it is interesting to understand as to what extent the respondents used external expertise for BRM:

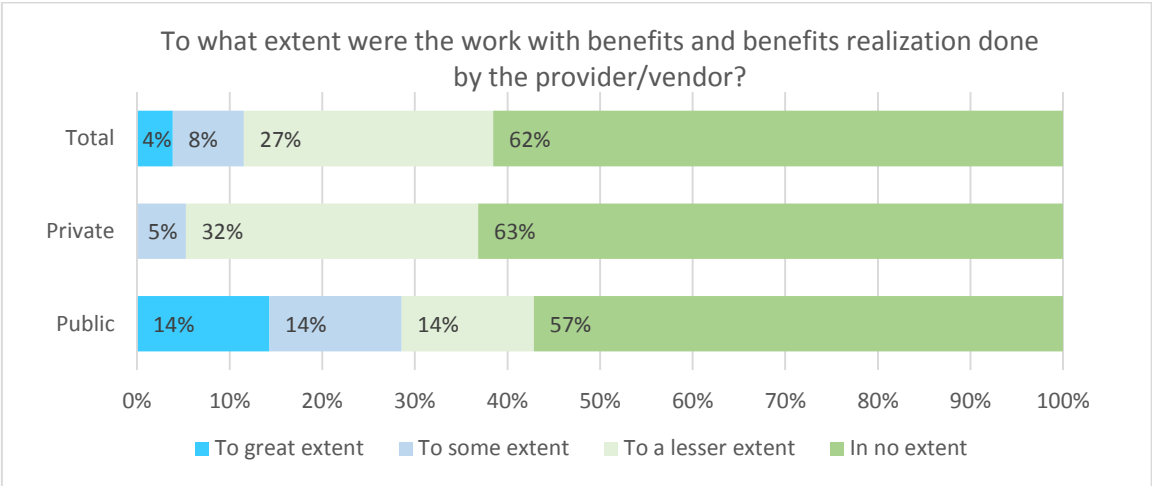


Figure 14 Use of external expertise

The majority of the respondents reported that external personnel to little or no degree performed benefits realization management in their ERP-projects. Only one respondent in the private sector reported that this was done by external personnel to some extent, while this seems to be a little bit more common amongst public companies.

5.4. Benefits Realization

5.4.1. Identification of Benefits

One might be able to generate benefits with ERP by just installing the system blindly. However, in order to specifically achieve maximum effects resulting from the ERP-implementation, one needs to identify which specific benefits and effects are needed, and then work towards these systematically. As shown previously in this report, many are dissatisfied with their ERP-solutions. This means that you are likely to be unsuccessful when just installing an ERP-system and hoping for the best, without considering effects and benefits. By systematically identifying which effects and benefits are desired from the ERP-solution, you increase the chance of project success and return of one’s investment.

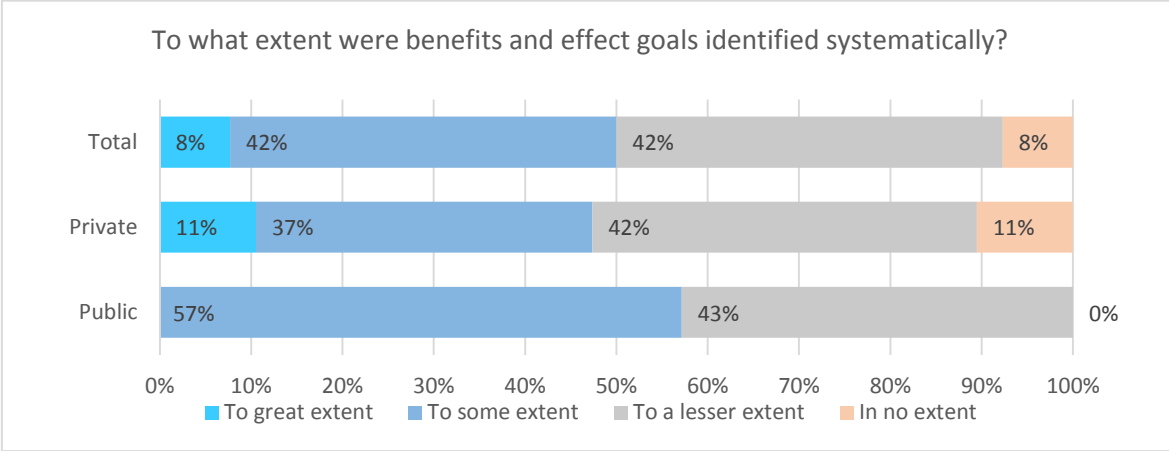


Figure 15 Identification of benefits and effect goals

Approximately 50% of the respondents reported that they tried to identify benefits and effect goals systematically during the ERP-project to some or great extent. This shows that the majority are focused on achieving benefits, and are not considering the ERP-system to be the solution itself. Two respondents reported that benefits and effect goals were not identified systematically at all.

Furthermore, the project team can try to identify affected parties and stakeholders based on the initially identified benefits. These are groups of people that are affected by the project in positive or negative ways. This helps to ensure that identified benefits are covered and documented properly, it allows for discovering further benefits, and it also allows for involving some of the user groups and to delegate ownership of the identified benefits; thus improving management of project expectations.

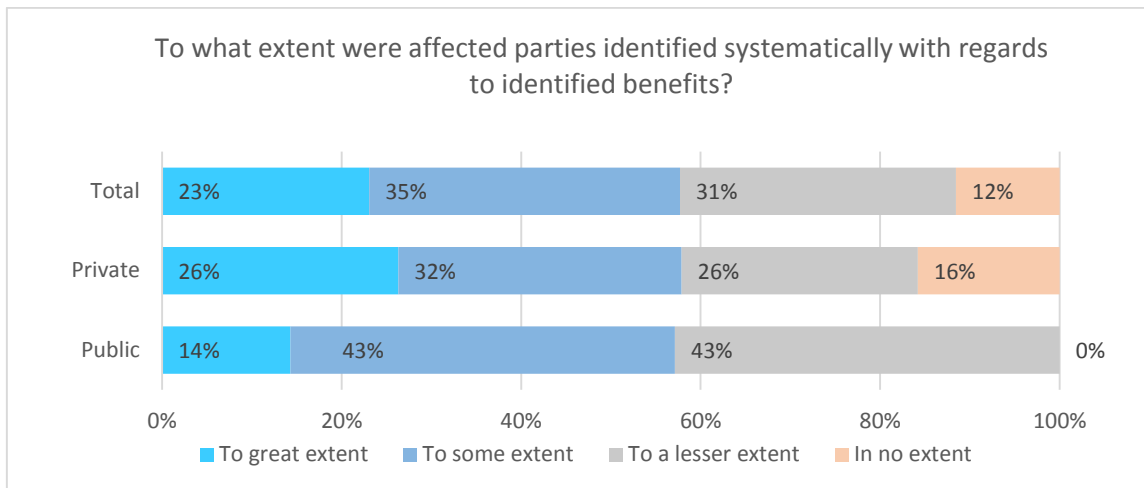


Figure 16 Identifying stakeholders

Approximately 58% of the respondents reported that they identified affected parties systematically to some or great extent. The results were slightly better amongst private companies compared to public companies.

By developing cost/benefit-analyses for the identified benefits, the project team is able to predict the expected net utility of each benefit, i.e. reduction of costs or improvement in customer service, compared to cost of implementation or the level of required organizational changes. This is done as part of the work with identifying benefits.

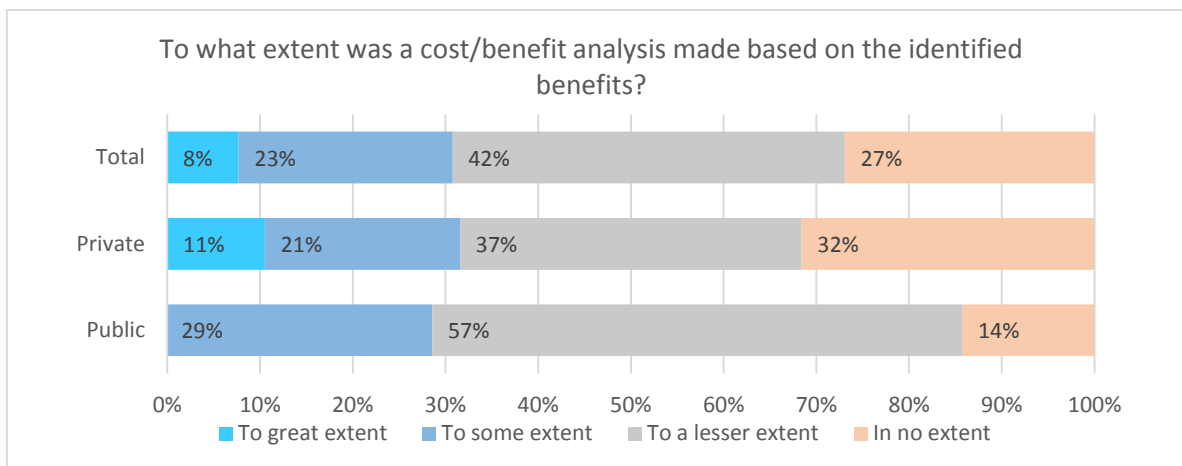


Figure 17 Cost/benefit-analyses

As shown above, approximately one third of the respondents reported that cost/benefit analyses were developed to analyze the potential utility of the identified benefits to some or great extent. The numbers were slightly better for private companies, compared to public companies.

5.4.2. Planning and Managing Benefits Realization

In order to plan for benefits realization, the project teams need to create plans for BRM. In addition, benefits realization is further enhanced if the work with BRM is facilitated properly; such as setting aside dedicated resources for BRM, and appointing a benefit realization manager. The following sub-chapter investigates to what extent the project teams did plan for, and manage benefits (as covered by step 2 and 3 in the benefits realization life cycle).

BRM can be time-consuming and a rather demanding process, especially for big projects such as ERP- implementations. Many potential benefits, stakeholders, and organizational changes, combined with relatively high cost, can make it hard to get enough time and resources to perform BRM. Precise BRM requires priority from leadership.

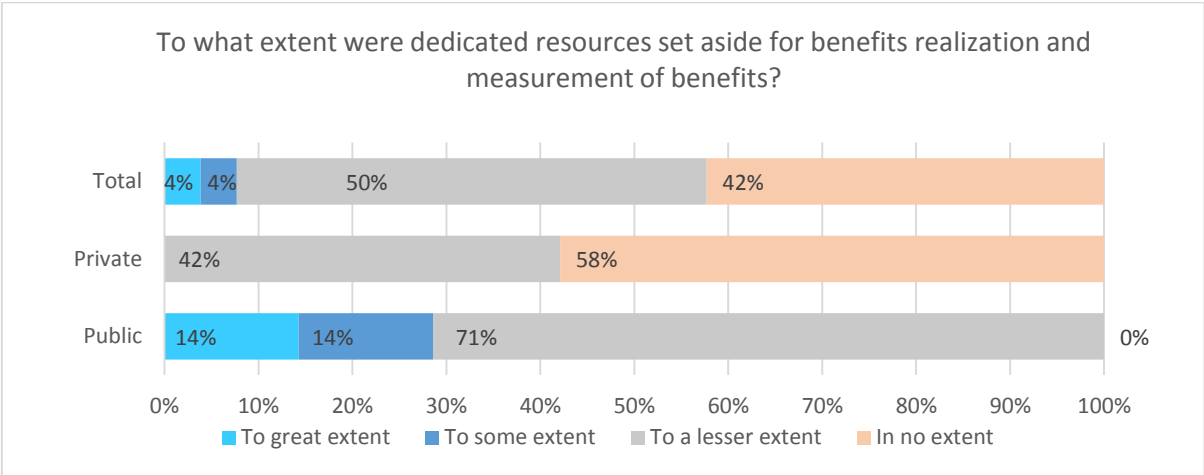


Figure 18 Use of dedicated resources

As shown above, only two respondents from public companies reported that they set aside dedicated resources to some or a high extent. The rest of the respondents, including private companies, did this to lesser or no extent.

Furthermore, appointing a benefits realization manager helps to ensure realization of the initially identified benefits. The larger the project gets, the more demanding management of benefits gets. By appointing a benefits realization manager, one ensures that someone has ownership over the entire benefits realization life cycle, from identification to evaluation of benefits.

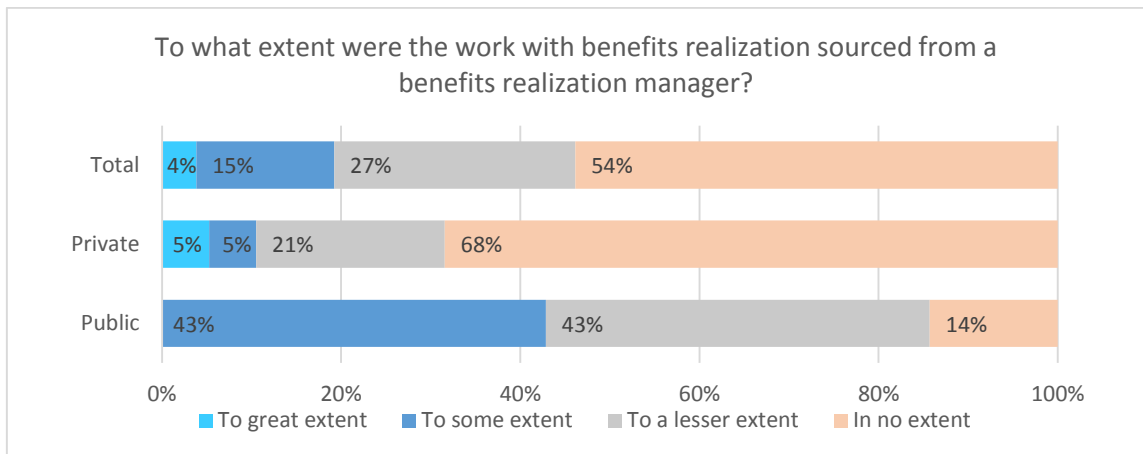


Figure 19 Benefits realization manager

Only a 19% of the respondents reported that they had appointed a benefits realization manager in their ERP-project to some or great extent. The numbers are better for public companies compared to private companies, as the majority of the private companies (68%) reported that this was done in no extent. In addition, many respondents from public companies reported that a benefits realization manager was appointed to lesser extent (43%), or to no extent at all (14%).

The respondents were also asked “to what extent the project had a benefits realization plan (i.e. a holistic plan for managing and monitoring the efforts of realizing benefits)”. Based on the previous questions, a benefits realization plan like this would include all the activities mentioned up to now: From identifying benefits, its cost/benefits analyses, identification of relevant stakeholders, to delegating ownership of benefits and activities, benchmarking current practices, and plans for measuring and evaluating benefits, etc.

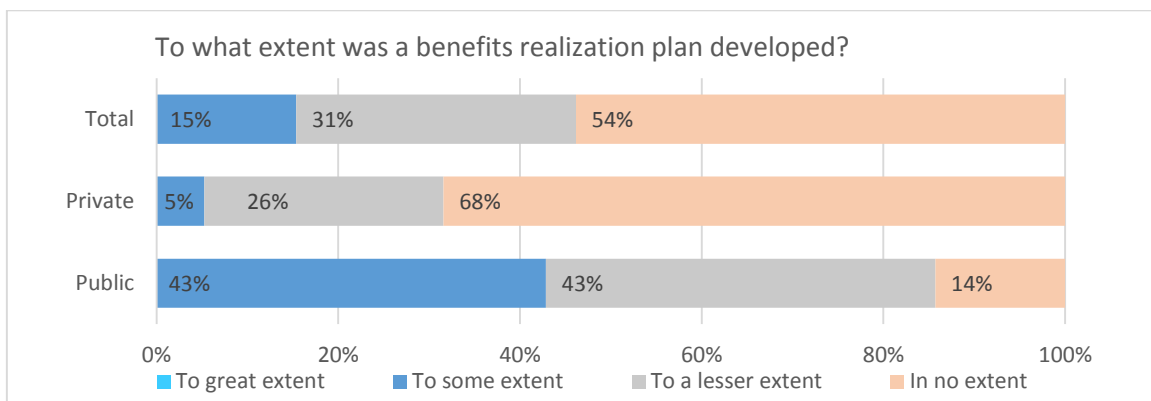


Figure 20 Development of benefits realization plans

Merely 15% of the respondents reported that they developed benefits realization plan to *some* extent. The numbers are better for the public sector alone (43%), compared to the private sector (5%). The remaining 85% of the total sample population reported developing such plans to lesser or no extent.

5.4.3. Measuring Benefits

The previous sub-chapter illustrated how the sample ERP-projects planned for benefits realization, and to what extent they facilitated this through appointing benefits realization managers and setting aside dedicated resources. In addition, it is interesting to look specifically on how the sample population actually measured achieved benefits, as this is a very essential part of BRM: How can one know whether goals were achieved or maximum benefits gained without measuring? This part of the process belongs to the “execution” and “evaluation” stage of the benefits realization management life cycle.

The benefits realization plans should also include plans on how to measure benefits. This means that they have to look at not only how to measure achieved benefits post-implementation, but also what they need to compare the measurements to, and what work needs to be done prior to execution to facilitate this, etc. These plans are traced back to the already identified benefits.

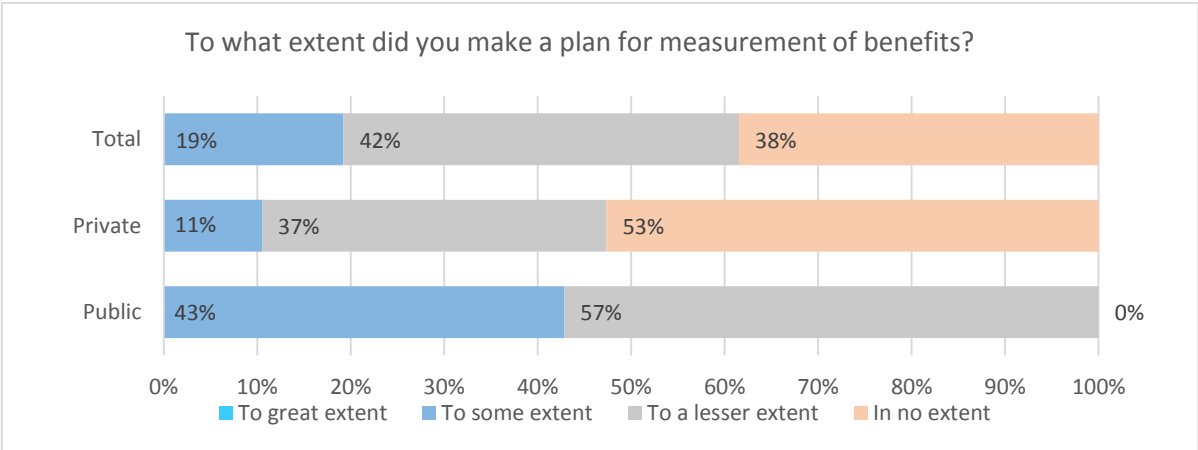


Figure 21 Plans for measurement of benefits

Only 19% of the sample population reported that they included such plans for measurement of benefits to *some* extent. The remaining 81% reported that this was done to lesser or no extent. The numbers also show a slightly higher focus on this activity amongst public companies, compared to private; 43% reported some extent of developing plans for measurement, versus 11% respectively.

Lack of plans for measurement of benefits does not necessarily mean that achieved benefits were not measured at all. The respondents were also asked to what extent they measured benefits that could be traced back to expected benefits:

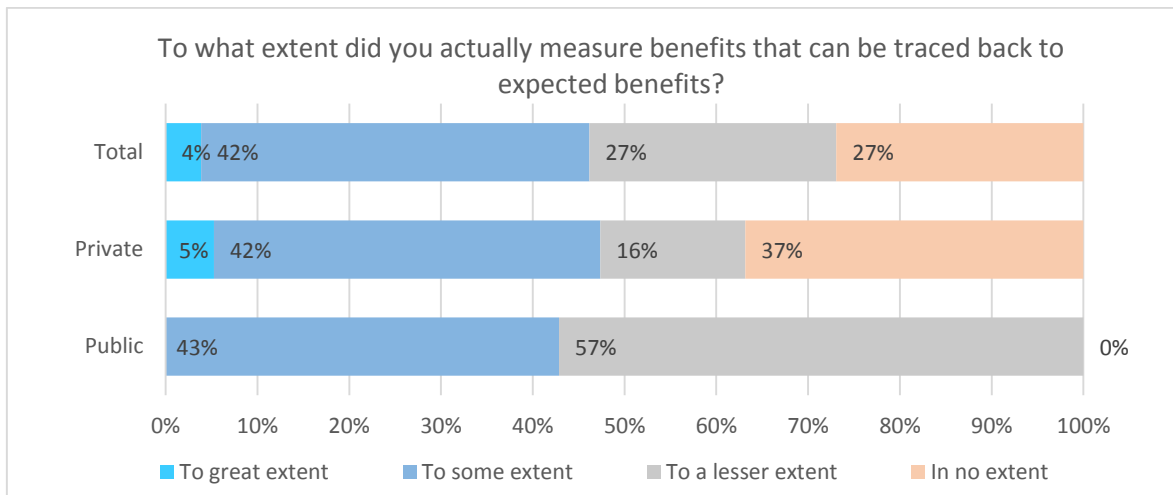


Figure 22 Measurement of benefits post-implementation

Quite a few respondents reported that benefits were measured to some or great extent, compared to the number of sample projects that had plans for this. Approximately 46% of the sample population reported that they measured expected benefits to some or great extent. However, only few of these reported doing this to great extent.

In addition to investigating the sample population’s work with measuring benefits, the respondents were also asked to report how much they paid attention to measuring *intangible* benefits. As stated earlier, intangible benefits are significantly harder to quantify and measure, even though they can be just as beneficial or even better. E.g. improved information for decision-makers, better customer satisfaction, higher employee morale, easier globalization, etc.

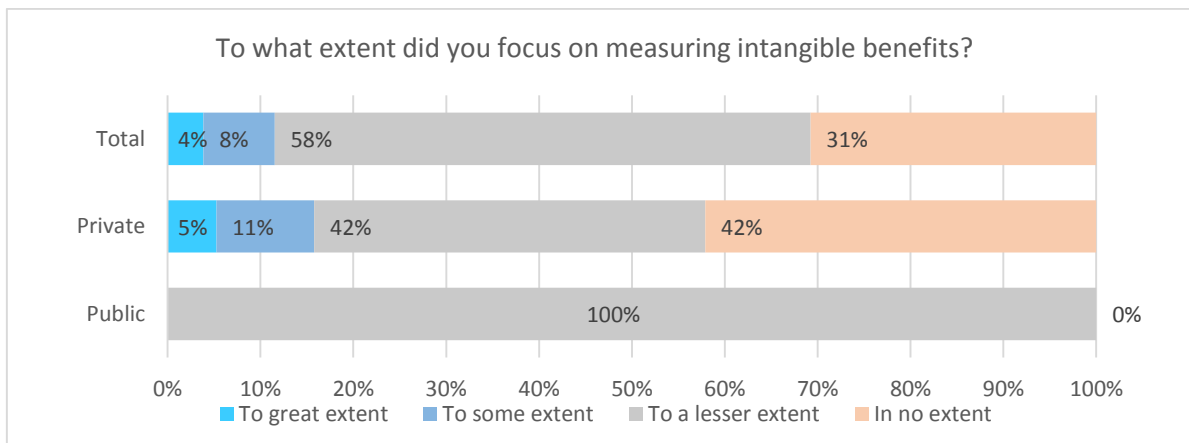


Figure 23 Intangible benefits

As shown above, barely 12% reported measuring intangible benefits to some or great extent. Amongst the few that reported doing this, all of them were employees of private companies. One hundred percent of the public companies reported that they focused on intangible benefits to lesser extent. Forty-two percent of the private companies did not focus on intangible benefits at all.

5.4.4. Usage of the ERP-system

As stated earlier in this report, usage of an IS-system is essential to determine the success of an implementation project. If an ERP-system is installed successfully, but not used or adopted by the intended users, then the system holds no value.

The respondents were asked to what extent they focused on the usage and users of the system post-implementation to generate benefits.

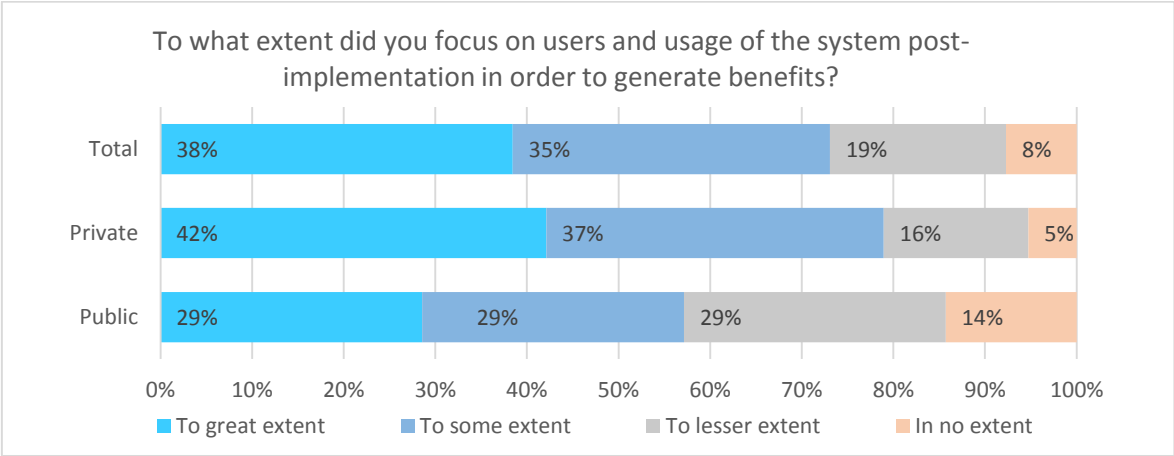


Figure 24 Focus on usage of the ERP-system

As shown above, the majority of the sample population (73%) reported that they focused on users and usage of the system to some or great extent. The numbers are clearly in favor of private companies: Seventy-nine percent reported this, compared to 58% of public companies.

5.5. Respondents' Perception of Benefits Realization

To allow the respondents to elaborate on their answers in the previous section of the survey, they were asked to assess their own efforts with BRM, state what major barriers they encountered, what lessons they have learnt, as well as recommendations for future ERP-projects.

5.5.1. Assessment of Own Benefits Realization Management

Despite the previous questions, the respondents were asked to rate their own BRM. This would ascertain how satisfied they were with the work done, which is interesting in itself. Additionally, how their satisfaction with benefits realization management is in line with the previous answers would indicate how necessary they believe benefits realization is. This will also indicate to what extent the respondents themselves feel there is a need for improving BRM in such projects.

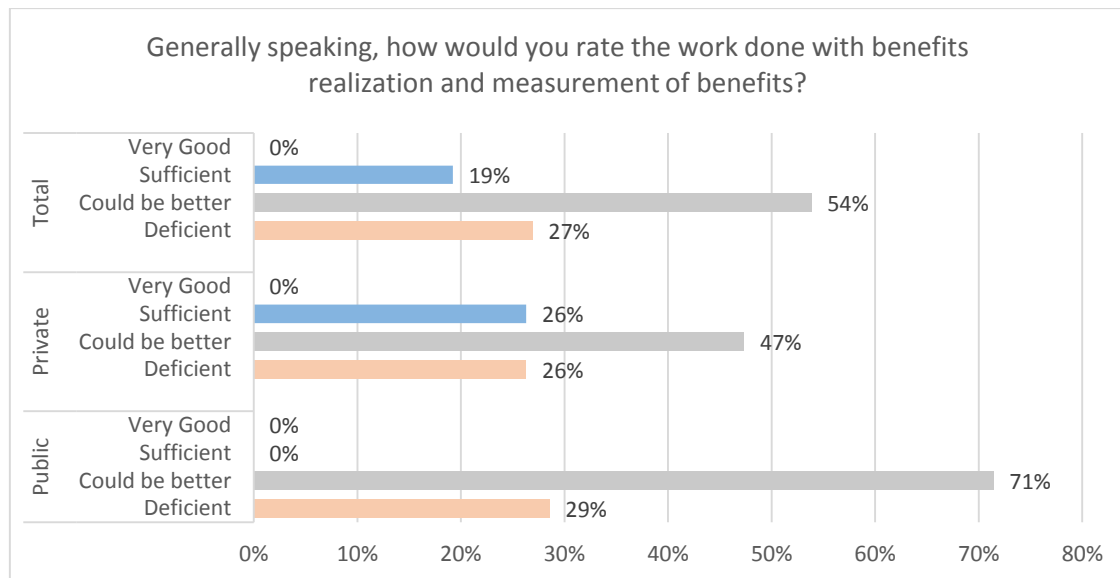


Figure 25 Assessment of own BRM

Eighty-one percent of the respondents reported that their own efforts with BRM was deficient or could be better. This is aligned with the results from previous questions. Nineteen of the total sample population rated their own BRM as sufficient; all of them from private companies. No respondents rated their own BRM as “very good”.

5.5.2. Barriers and Challenges with Benefits Realization Management

The respondents were given the chance to describe what they perceived was their major challenges and barriers concerning BRM. This was an open-ended question where the respondents could answer as detailed as they pleased. The answers were then analyzed and categorized in order to summarize the given answers:

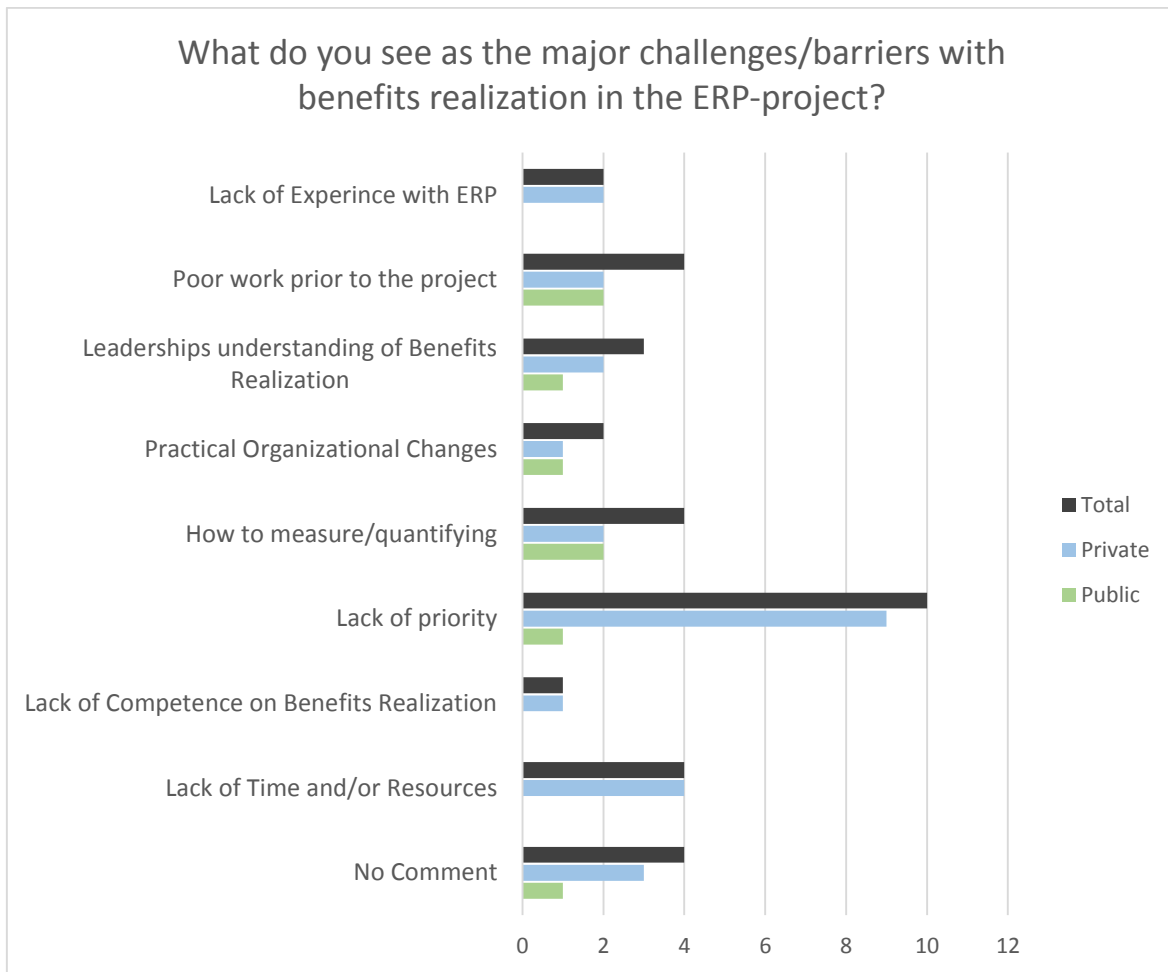


Figure 26 Barriers with benefits realization

Most interestingly, almost half (9 out of 19) of the private companies reported lack of priority on benefits realization as one of their major barriers. This was only reported by one of the respondents from the seven public companies. This barrier clearly stands out as the most common amongst the total sample population.

Furthermore, a lack of time and/or resources is the second most common challenge reported by respondents from private companies (4 of 19). Together with a lack of priority, this clearly indicates that systematic work towards realizing benefits is considered as less important amongst the majority of private companies. Responses from 10 of the 19 private companies fall in either group.

The following quotation shows that a lack of focus on benefits realization can be rooted from different parts of the project, even from leadership and vendors: *“The changes of the system were absolutely necessary. The customer was unaware of the extent of work [that needed to be done]. The provider [of the system] was focused on pleasing the customer and smoothing over challenges. The customer did not have ‘time’ to participate in the work with agreeing on specifications and verifications, etc.”*

None of the respondents from public companies reported any challenges related to priority or lack of resources/time. On the other hand, these respondents reported that most of their challenges with

benefits realization were related to the quality of the BRM that was undertaken; such as how to measure/quantify benefits, leaderships understanding of benefits realization, and the work that was done during the initial phases of the project.

Only one respondent reported lack of competence on the field of benefits realization as a major challenge.

Three respondents from private companies and one from a public company did not mention any particular challenges (the “no comment” group). Two of these (private) reported that benefits realization was not necessary given the nature of the project – “the reason for the ERP-implementation was ‘obvious’ and did not require focus on benefits realization”. The last respondent from the private sector stated that they did not encounter any particular challenges, while the respondent from the public sector left no comment.

5.5.3. Reasons for Excluding Benefits Realization Management

The respondents were also asked to write down what they think were the major reasons for lack of focus on BRM in Norwegian ERP-projects, based on their own experiences. This is somewhat related to the previous question. However, this might help to explain why many projects omit systematic work with benefits realization, as shown in previous research. As with the previous question, this question was open-ended, and was analyzed in the same manner.

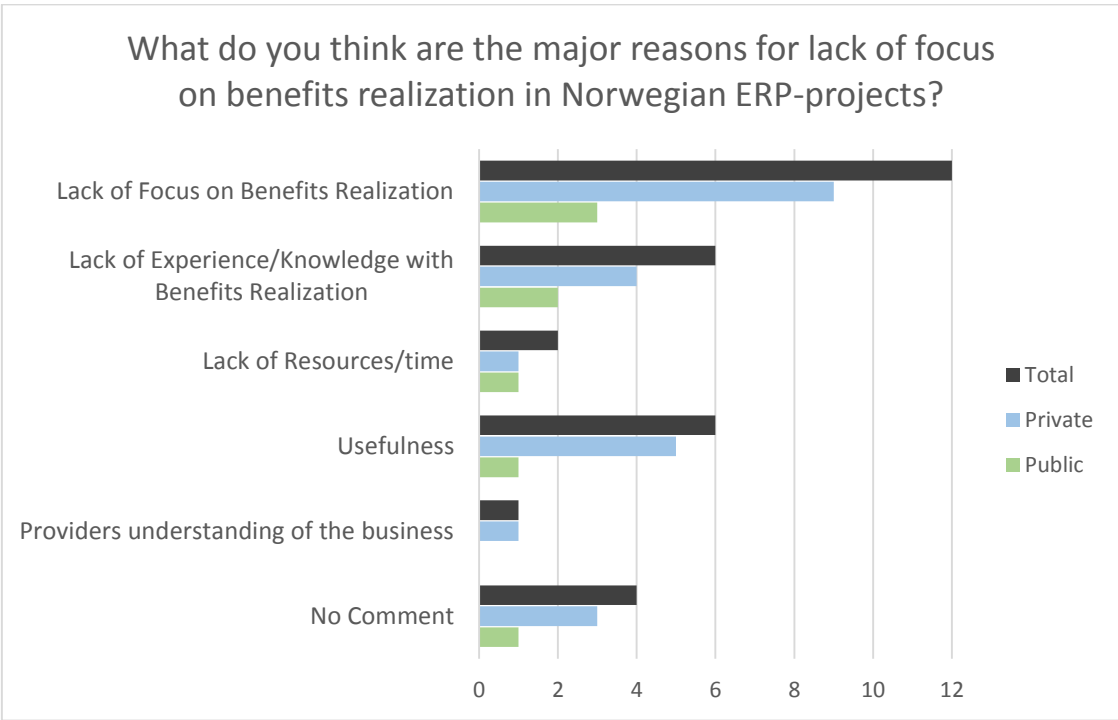


Figure 27 Reasons for excluding BRM

Clearly, half of the respondents (12 out of 22 that left a comment) stated that they think a lack of focus on benefits realization is the main reason why BRM is excluded from Norwegian ERP-projects. A typical example of this is that the project was initiated based on other factors than the ERP-benefits themselves, such as imposed change in technology, organization or functionality. Documenting improvement or making sure expectations were met seemed to be of less priority. *“The benefits came automatically with the solution, and that was considered as satisfactory.”*

Second in line was a lack of experience/knowledge with benefits realization, and the usefulness of it. Six of the total respondents reported that a lack of knowledge of benefits realization was a reason for not including proper BRM.

Six respondents reported that measurement of benefits were excluded as they did not see any usefulness with it. Some of the respondents reported that the benefits came automatically, thus measurement of benefits was unnecessary. Some also stated that they only think measurement of benefits is for “academic purposes”. Only one of the respondents that considered measurement of benefits as useless worked in the public sector.

Only two respondents reported resources, as in time and money, to be a reason for excluding measurement of benefits. One respondent reported that the vendor’s lack of understanding for the company’s business processes was a reason for excluding measurement of benefits.

Four respondents left no comment.

5.5.4. Lessons Learned and Own Recommendations

In order to get a feel for what the respondents felt could be done in order to increase the quality of their own efforts with benefits realization, in addition to improving the focus on this practice, the respondents were asked to write down their most important lessons learnt, and what recommendations that had for increasing focus on BRM. Both questions were open-ended.

The results were somewhat diverse, and will be discussed later in this report along with a summary of the report’s conclusions and recommendations.

5.6. Respondents’ Assessment of Importance

Finally, the respondents were asked how important they thought benefits realization is during an ERP-project. If the respondents feel benefits realization is unimportant, that could mean poor knowledge on benefits realization, poor or little experience with the methodology, or it could simply mean that they disagree with the premise of the study itself; that systematic work with benefits realization is a prerequisite to obtain maximum benefits of an ERP-investment. The results may also be used to emphasize or deny the importance of this study. The respondents were asked how much they agree

with the following statement: “Systematic and targeted work with benefits realization through the entire ERP-project is a critical prerequisite to realize planned benefits.”

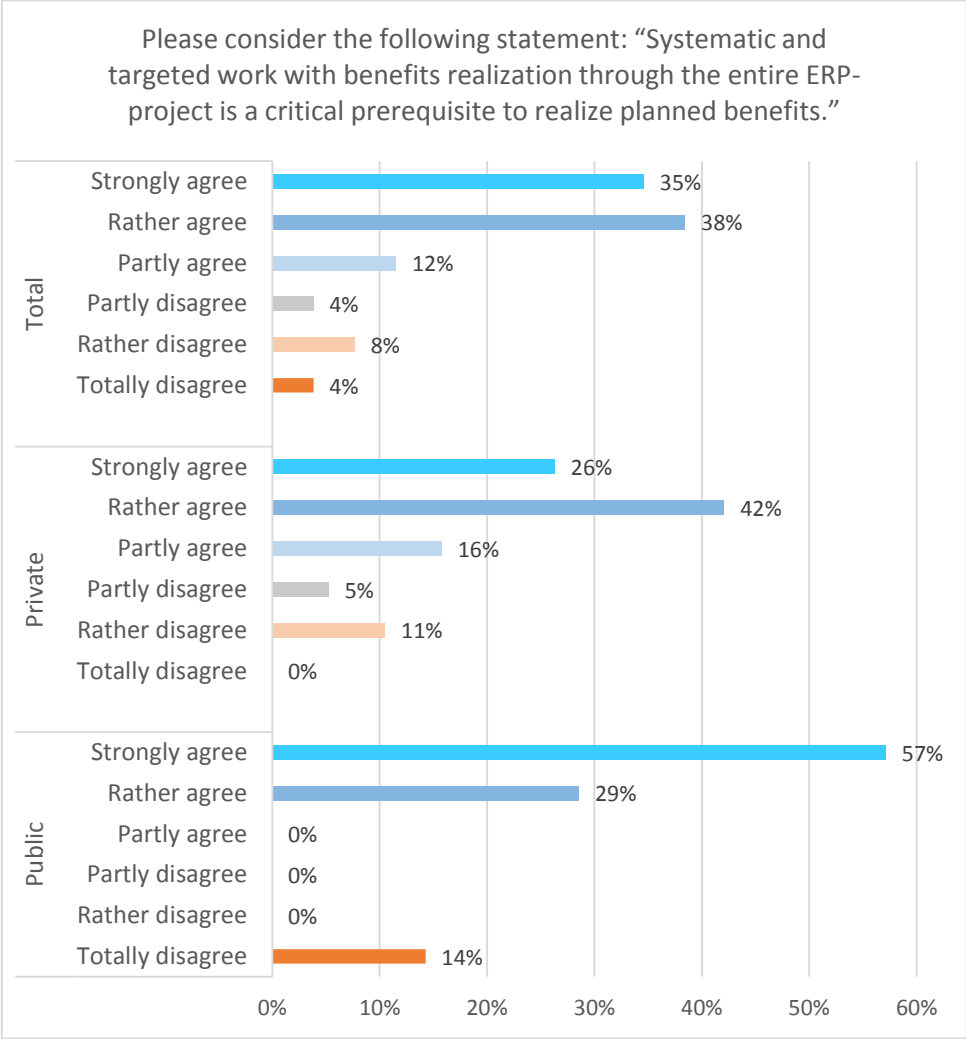


Figure 28 Importance of BRM

The vast majority (73%) strongly or rather agree with the term (meaning that most of the sample population of this survey agree) that BRM is important in order to achieve expected benefits of an ERP-implementation.

5.7. Other Control Variables' Influence

So far, only sector has been used to compare these results. The following subchapter will have a look at the other control variables to see how these influence the results. The results will not be presented as detailed as with the previous sub-chapters, and some variation will be of lesser value due to the low number of respondents. Findings with significance will be presented.

Each close-ended question is analyzed using an average score, e.g. "In no extent" equals a score of 1, "to lesser extent" equals 2, "to some extent" equals 3, and "to great extent" equals a score of 4. The results are then cross-referenced with the given control variable to show how the control variable influences the responses at an overall level.

5.7.1. Leadership's Knowledge about Benefits Realization

None of the respondents reported that leadership and/or the project team in no extent possessed any knowledge about benefits realization. The responses were somewhat evenly divided amongst the three other alternatives (in lesser extent, in some extent, to great extent).

Not surprisingly, the results show that the level of knowledge on benefits realization amongst leadership and the project teams significantly influences efforts with BRM. The respondents who reported that leadership had a lesser degree of BRM knowledge also reported less focus on other benefits realization activities, compared to the ones reporting some or great degree of knowledge amongst leadership.

Firstly, the lesser degree of knowledge indicates a lesser degree of set requirements for benefits realization as a part of the implementation plan. Furthermore, the same respondents also reported significantly lesser degree of systematic work with identifying benefits, and analyzing stakeholders with regards to the identified benefits, as shown below.

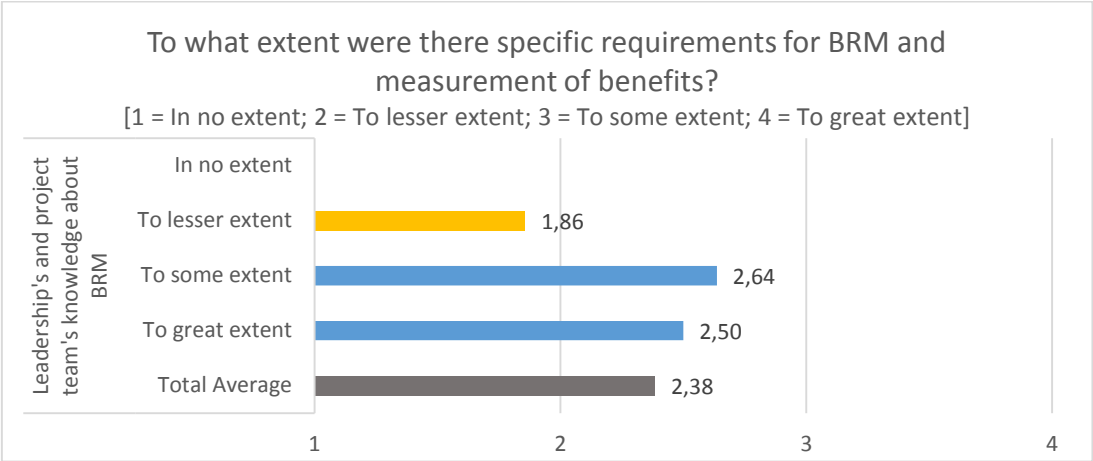


Figure 29 Requirements for BRM cross-referenced with leadership's knowledge

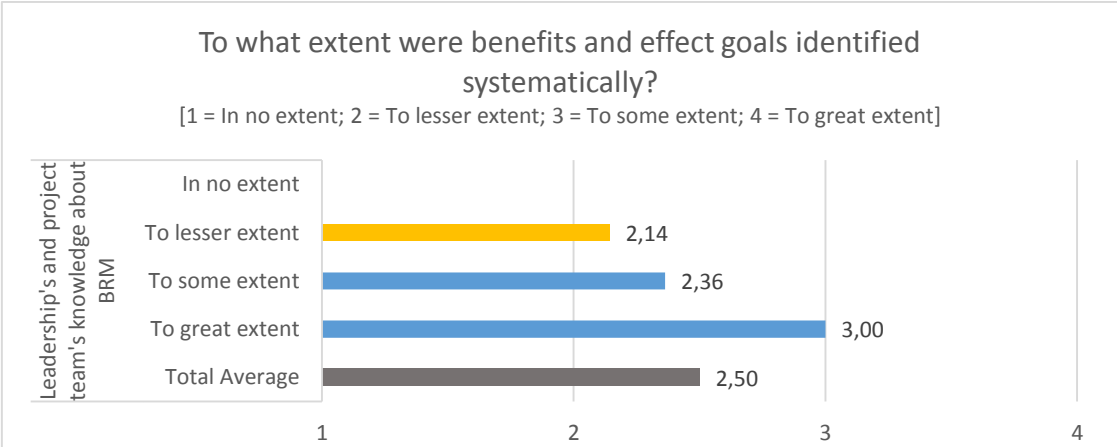


Figure 30 Identification of benefits cross-referenced with leadership's knowledge

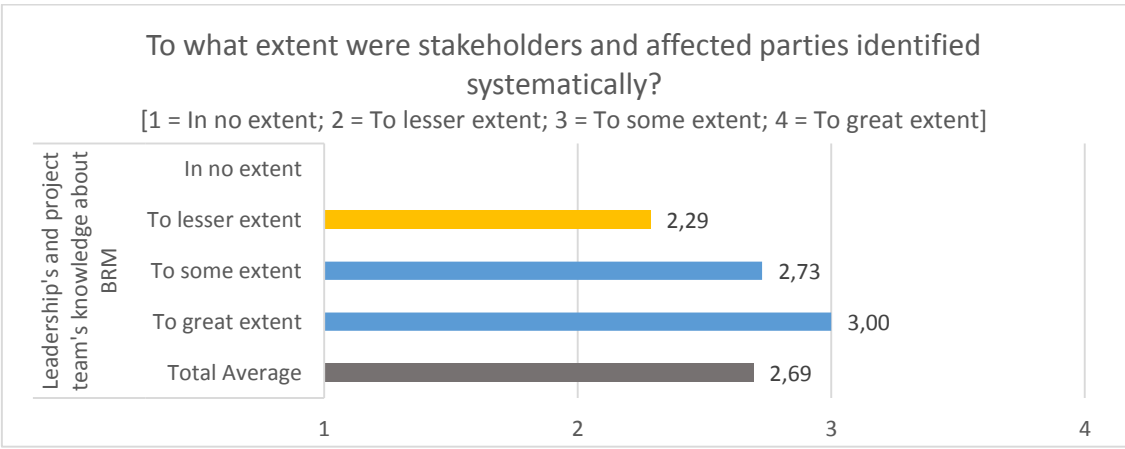


Figure 31 Identifying stakeholders cross-referenced with leadership's knowledge

The same respondents also displayed a significantly lesser use of benefits realization managers and development of benefits realization plans. In addition, they were worse at measuring benefits post-implementation compared to the respondents reporting some or great degree of BRM knowledge amongst leadership, though not significantly. They were also less focused on usage of the system post-implementation.

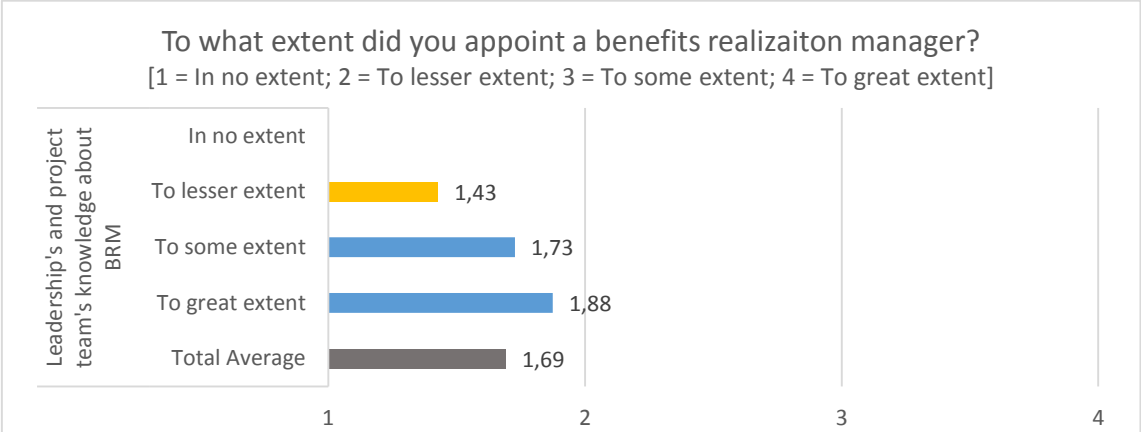


Figure 32 Use of benefits realization managers cross-referenced with leadership's knowledge

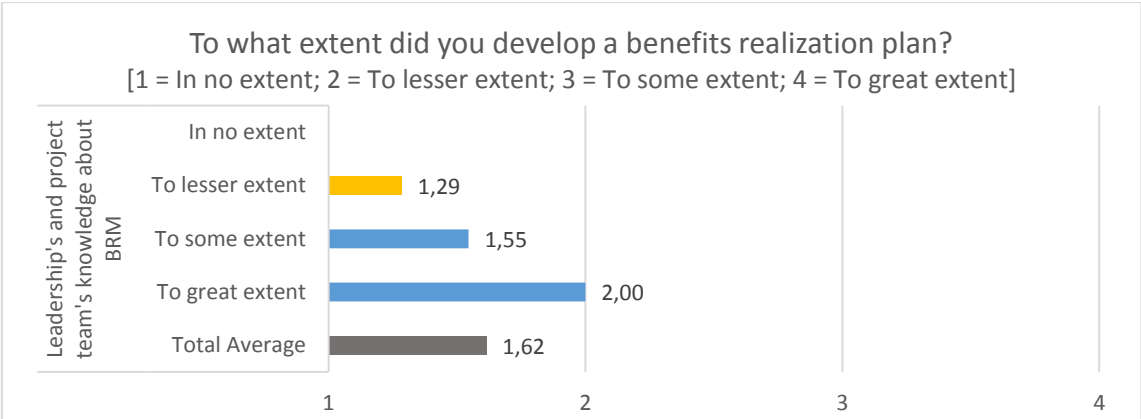


Figure 33 Developing plans for benefits realization cross-referenced with leadership's knowledge

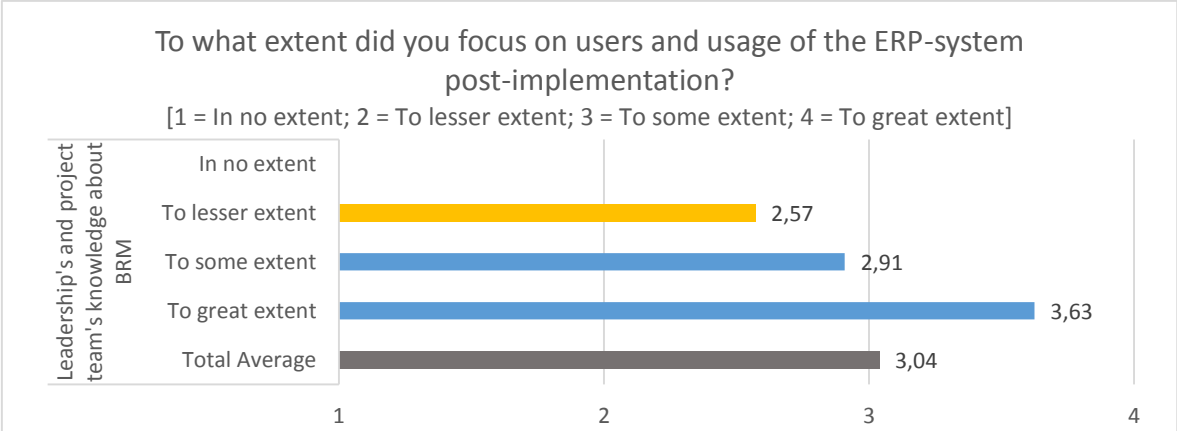


Figure 34 Focus on usage cross-referenced with leadership's knowledge

Overall, lesser knowledge of BRM indicates lesser satisfaction with benefits realization efforts.

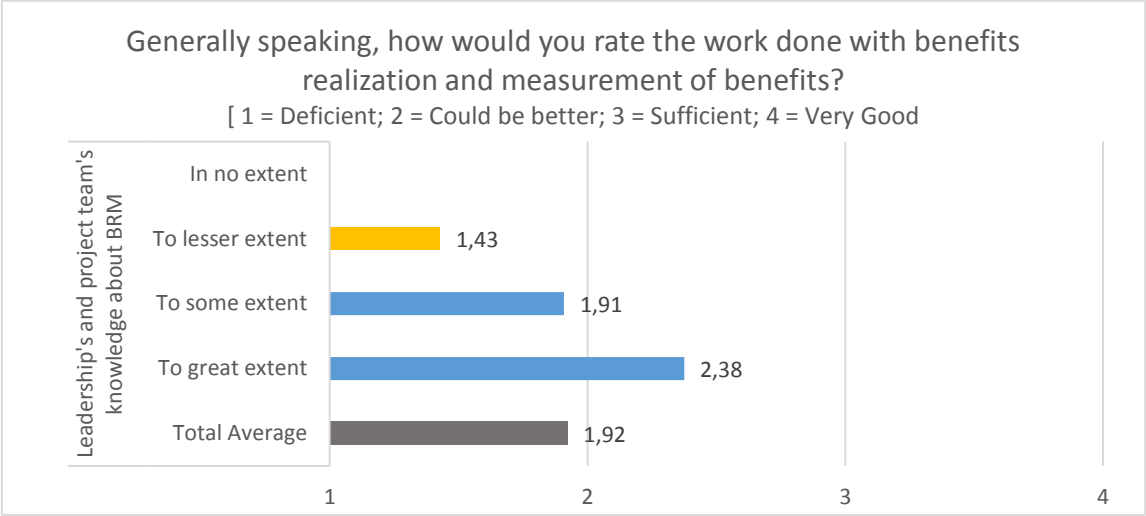


Figure 35 Satisfaction of BRM cross-referenced with leadership's knowledge

5.7.2. Size of Company

Generally speaking, the size of the company that the respondents represented did not influence the results significantly. However, there were some questions where the results varied based on company size.

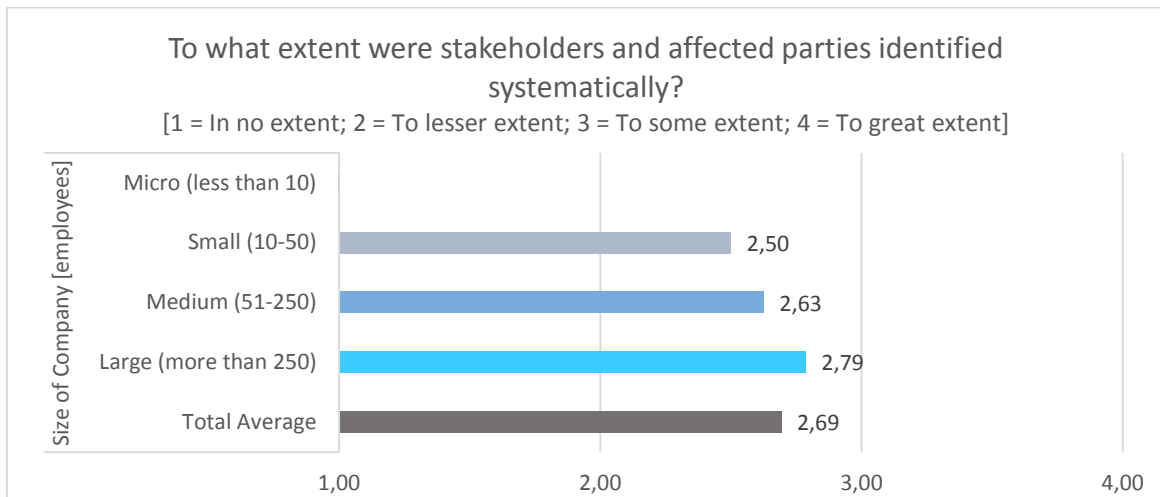


Figure 36 Identification of stakeholders cross-referenced with company size

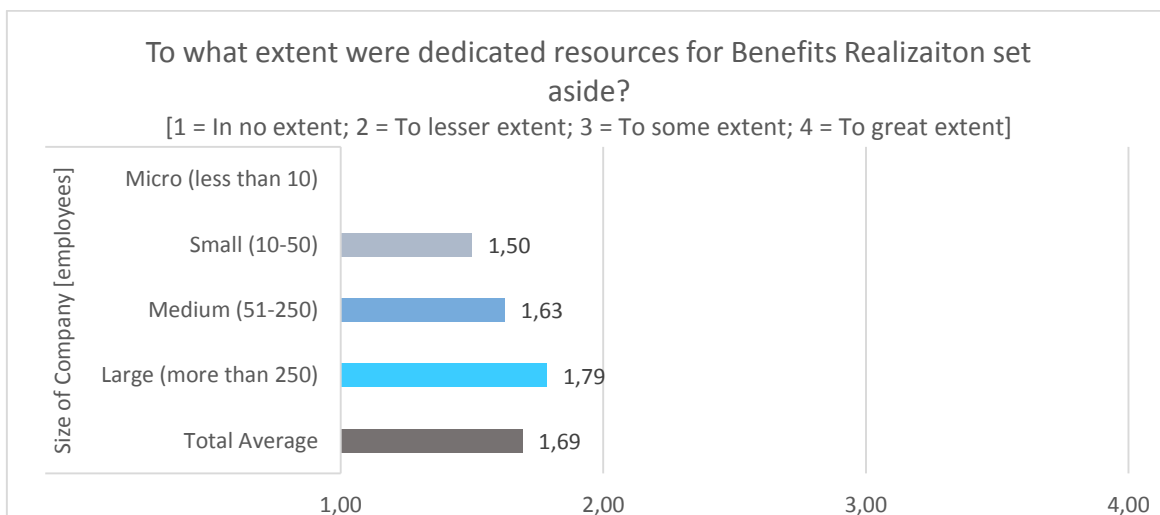


Figure 37 Use of dedicated resources cross-referenced with company size

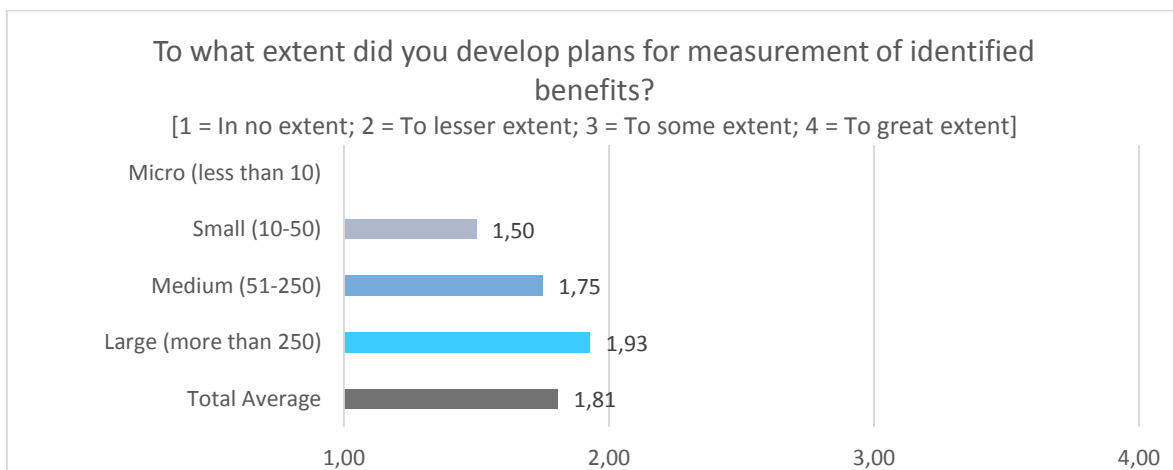


Figure 38 Plans for measurement cross-referenced with company size

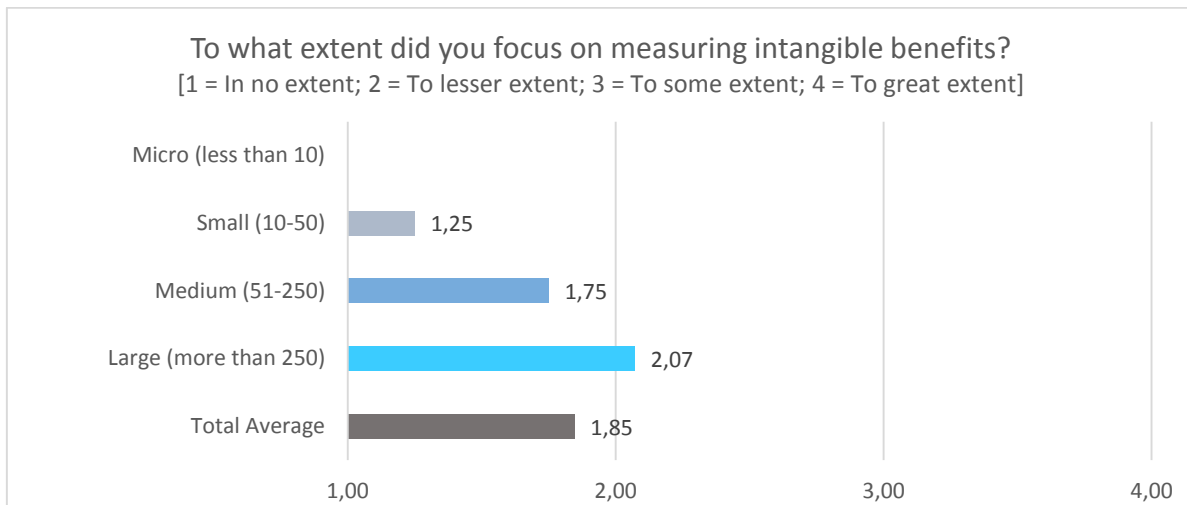


Figure 39 Focus on intangible benefits cross-referenced with company size

Compared to SMBs (Small & Medium Businesses), large companies (above 250 employees) were more focused on analyzing affected stakeholders when identifying benefits. They were also more robust at setting aside dedicated resources, and planning for measurement of benefits. Even though few companies were focused on measuring intangible benefits, large companies were far more focused, than especially smaller companies, on measuring such benefits.

On the other hand, large companies were less happy with the BRM knowledge of leadership and their project team. They were also less satisfied with own BRM efforts, compared to SMBs.

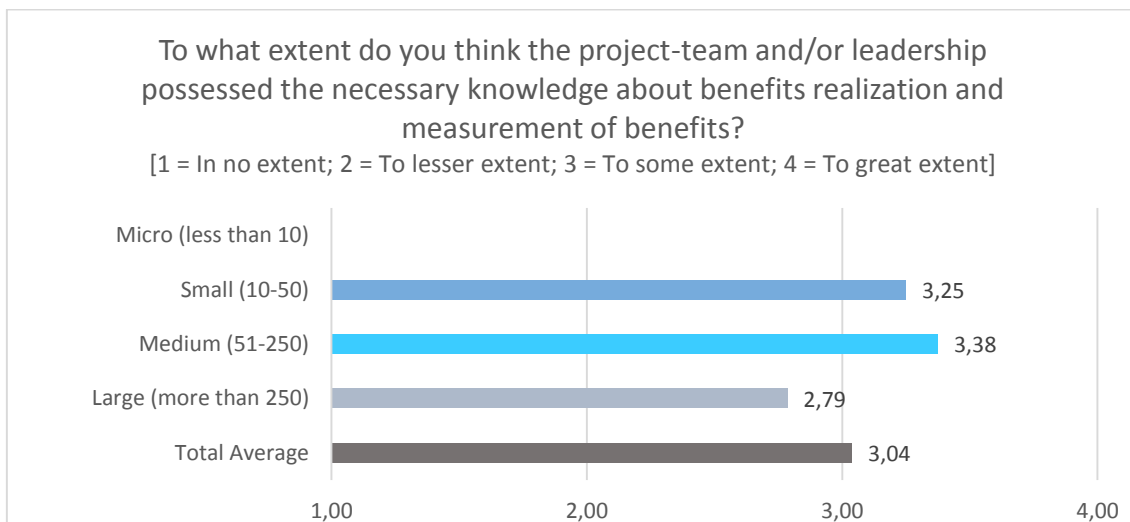


Figure 40 Knowledge of leadership cross-referenced with company size

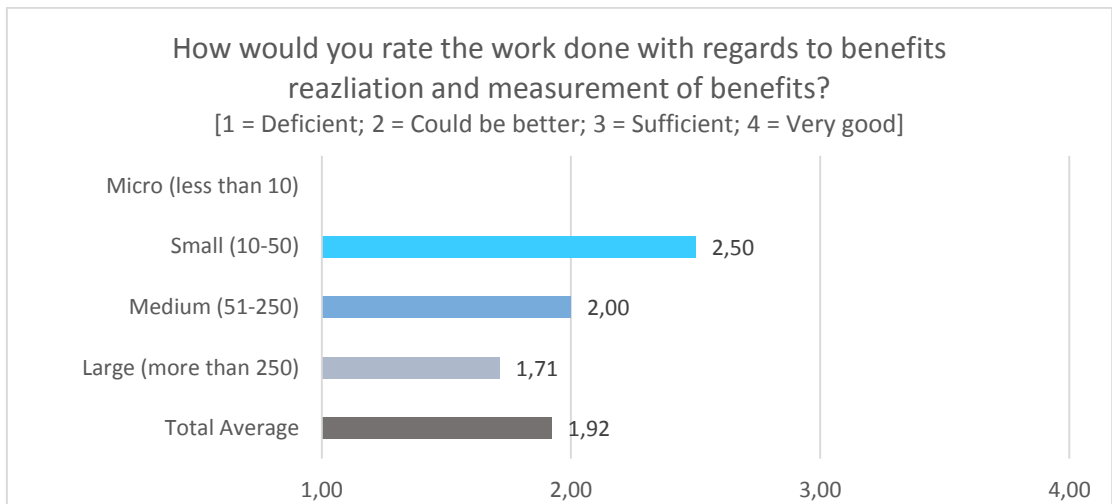
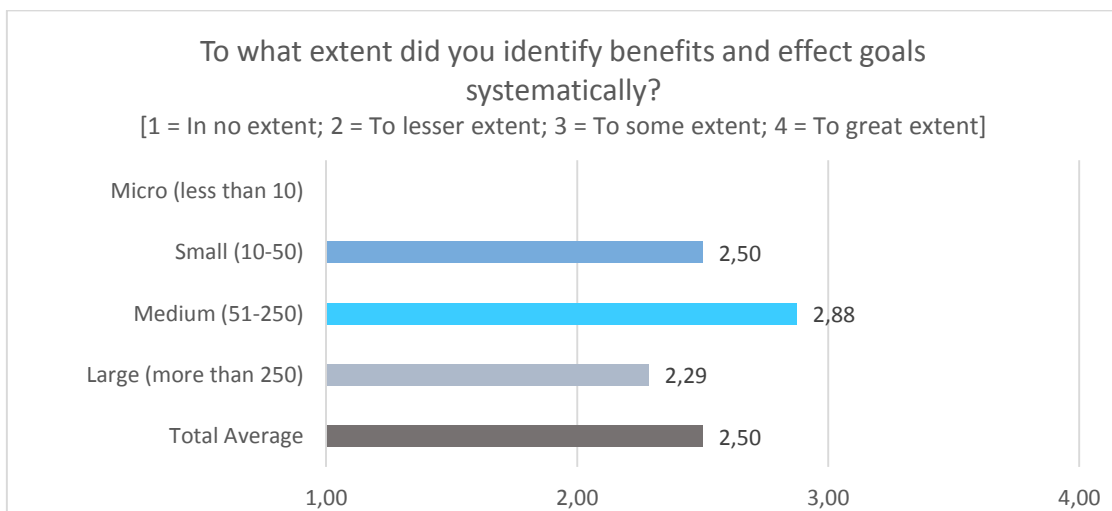


Figure 41 Assessment of own BRM cross-referenced with company size

Medium sized companies (50-250 employees) were better than the other companies at identifying benefits and effect goals systematically.



5.7.3. Role

The respondents' roles had no significant influence on the results of this survey. However, IT-responsible roles were least positive to benefits realization: When asked how much they agreed with the statement “Systematic and targeted work with benefits realization through the entire ERP-project is a *critical* prerequisite to realize planned benefits”, the average response for IT-responsible roles were 4.4, between “Partly Agree” (4) and “Rather agree” (5).

5.7.4. Customization

The level of customization did affect the results, especially when looking at measurement of achieved benefits and focus on usage post-implementation, but not significantly. As only one respondent reported no customization at all, he/she will not be considered in this particular analysis.

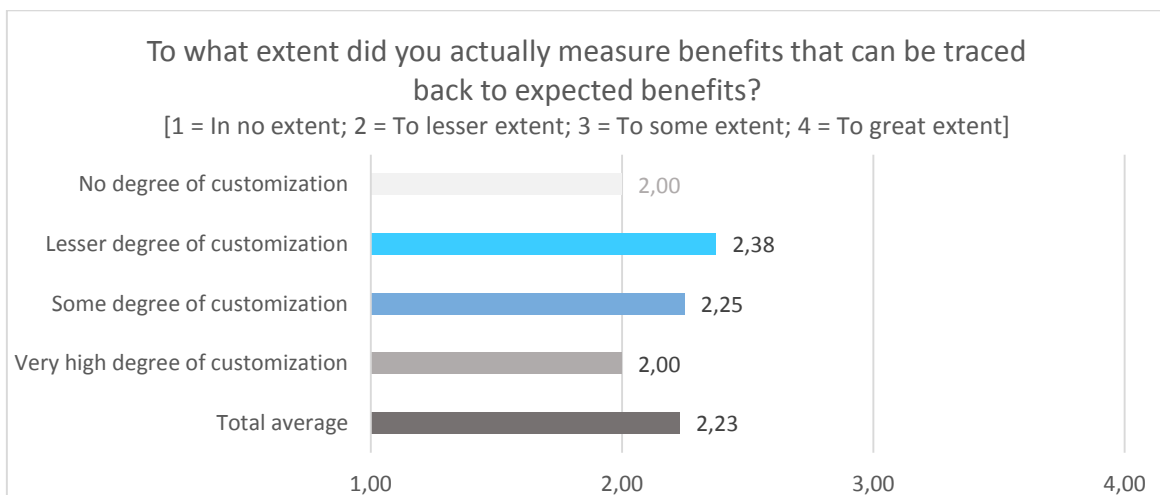


Figure 42 Measurement of benefits cross-referenced with level of customization

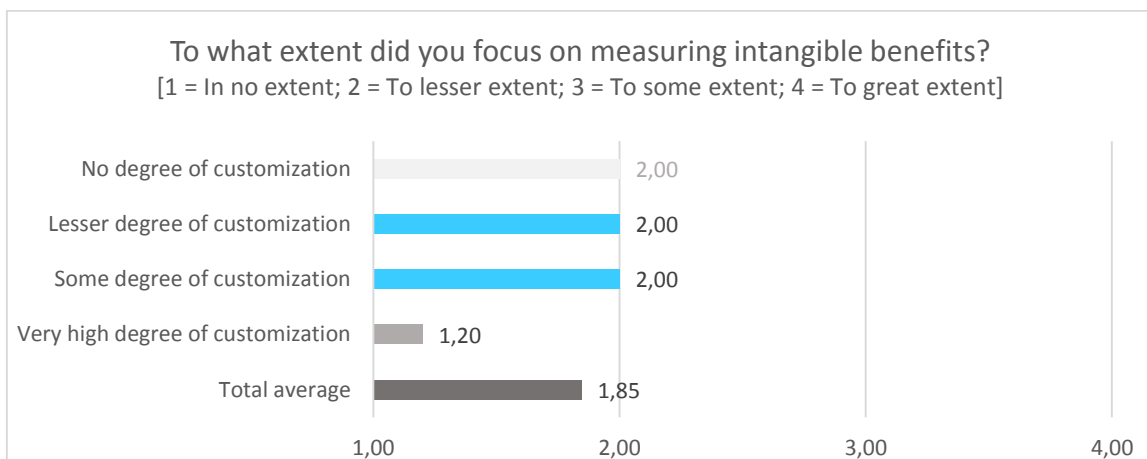


Figure 43 Focus on intangible benefits cross-referenced with level of customization

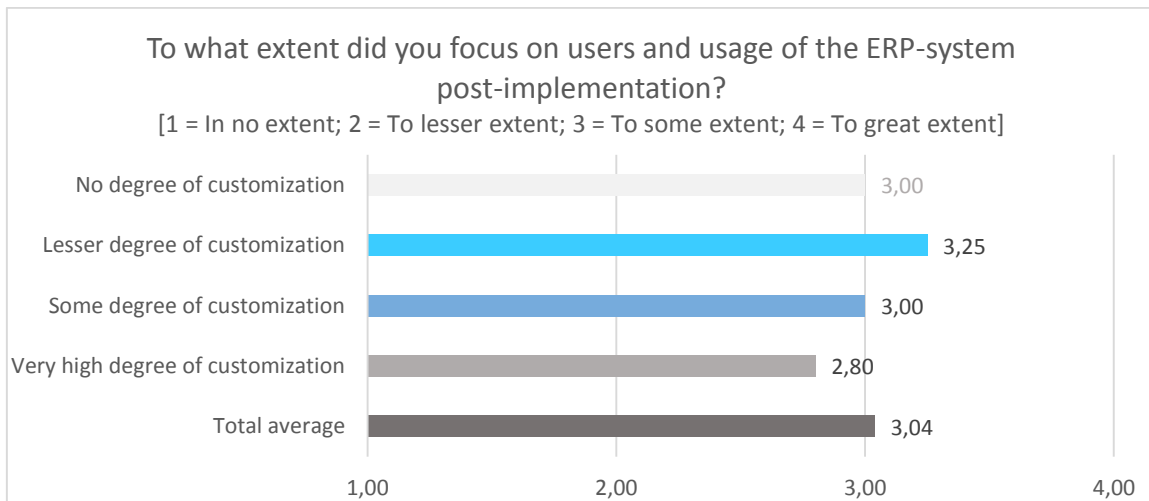


Figure 44 Focus on usage of the ERP-system cross-referenced with level of customization

As shown above, customers with less customized ERP-solutions were more focused on measuring benefits, measuring intangible benefits and usage of the system post-implementation.

5.7.5. Initiator

The reason(s) behind the ERP procurement did not affect the results significantly. However, due to the number of options in this control variable, combined with the low number of respondents, these findings will have to be confirmed.

5.7.6. Age of System

This control variable was included for two reasons: (1) To help draw a picture of the sample population, and (2) to see whether the results have improved or deteriorated during recent years.

According to the survey, there has been some improvement regarding the work with identifying benefits during recent years. Especially when comparing the results to systems that are older than 8 years. When identifying benefits and effect goals, analyzing affected stakeholders and developing cost/benefits-analyses, projects older than 8 years did considerably worse than newer systems.

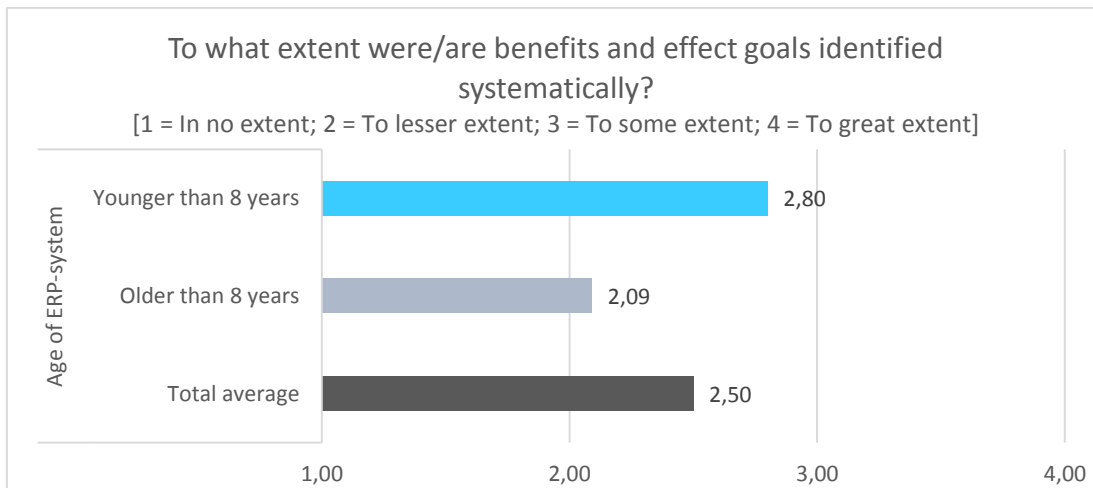


Figure 45 Identification of benefits and effect goals cross-referenced with age of ERP-system

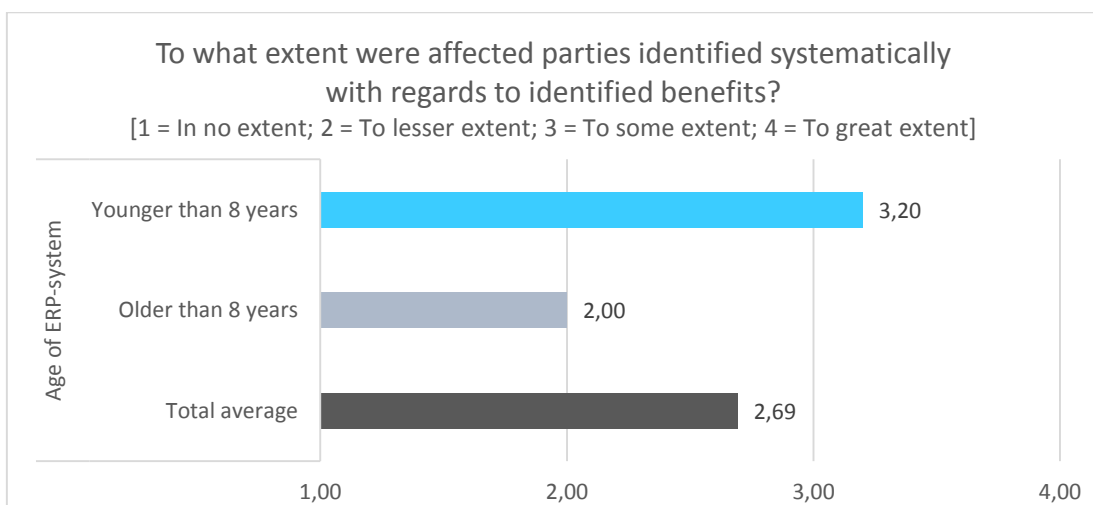


Figure 46 Identification of stakeholders and affected parties cross-referenced with age of system

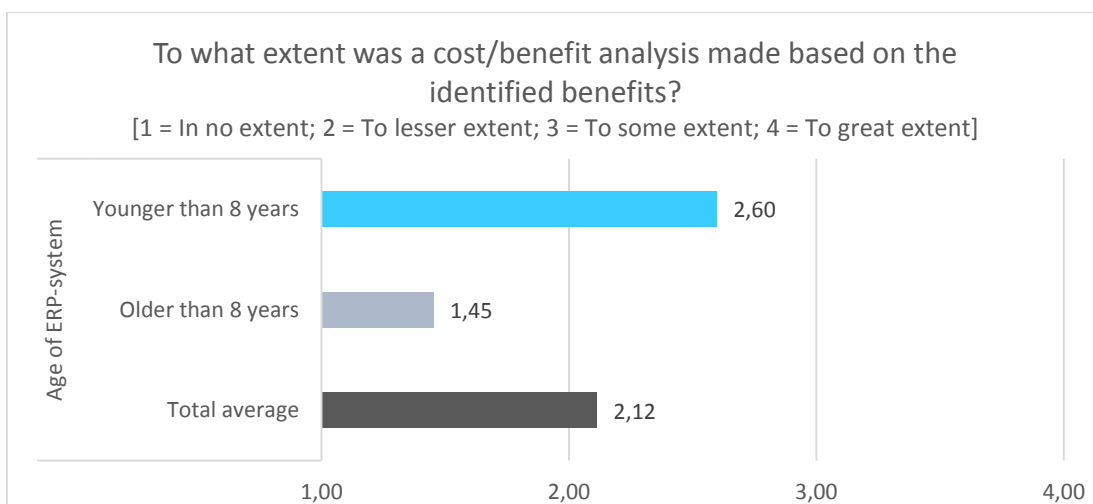


Figure 47 Development of cost/benefit-analyses cross-referenced with age of ERP-system

When specifically splitting the results between systems older than five years or newer, it is clear that it is more common amongst new systems to measure achieved benefits post-implementation. The average for systems older than 5 years is 2.0, which equals focusing on measurement “to a lesser degree”. Systems newer than 5 years score 2.6 on average, which is closer to “some degree”.

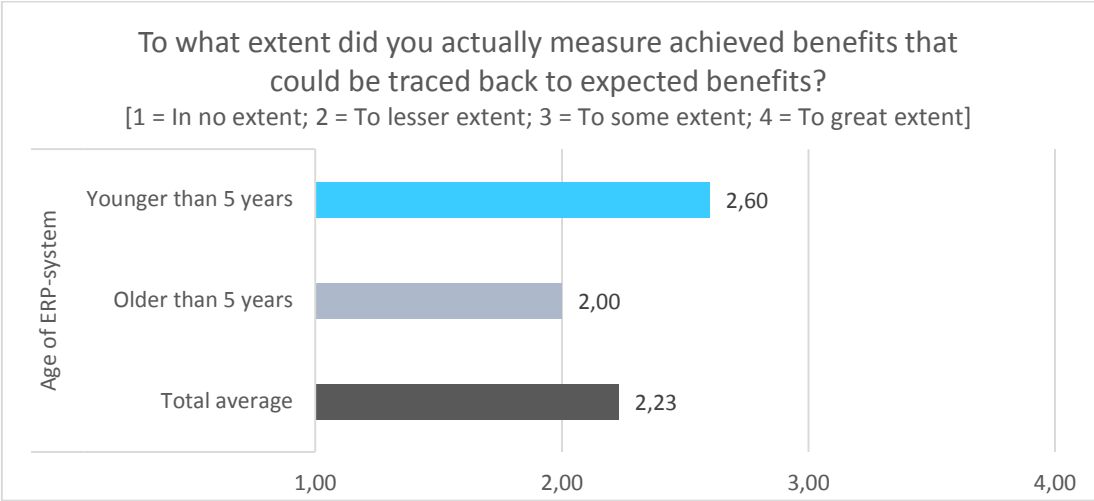


Figure 48 Measurement of achieved benefits cross-referenced with age of ERP-system

5.7.7. System

There are not enough respondents to analyze how the chosen ERP-system influences the work with benefits realization. This is due to the high number of options available with this control variable.

5.7.8. Use of External Help

As only three respondents used external help for benefits realization to some or great extent, there is not enough data to analyze how the use of external competence influences on BRM in Norwegian ERP-projects.

6. Results – ICT-Norway

This chapter will discuss the results of the survey distributed to members of ICT-Norway. As explained earlier, this survey received a limited amount of representative responses. Therefore, less time will be devoted to these results. However, the survey does provide a valuable insight to the consultants' and vendors' experiences and attitudes towards benefits realization, which will be emphasized. A combined result of the two surveys will be presented in the next chapter, followed by a discussion and conclusion chapter.

6.1. The Sample Population

Pursuing respondents who have a relevant role with their ERP-projects is essential for the results of this study. As explained earlier, both the SIGs used, the survey invitations, and the surveys themselves clearly communicate what respondents that are desired. The roles of the ICT-Norway respondents are distributed as follows:

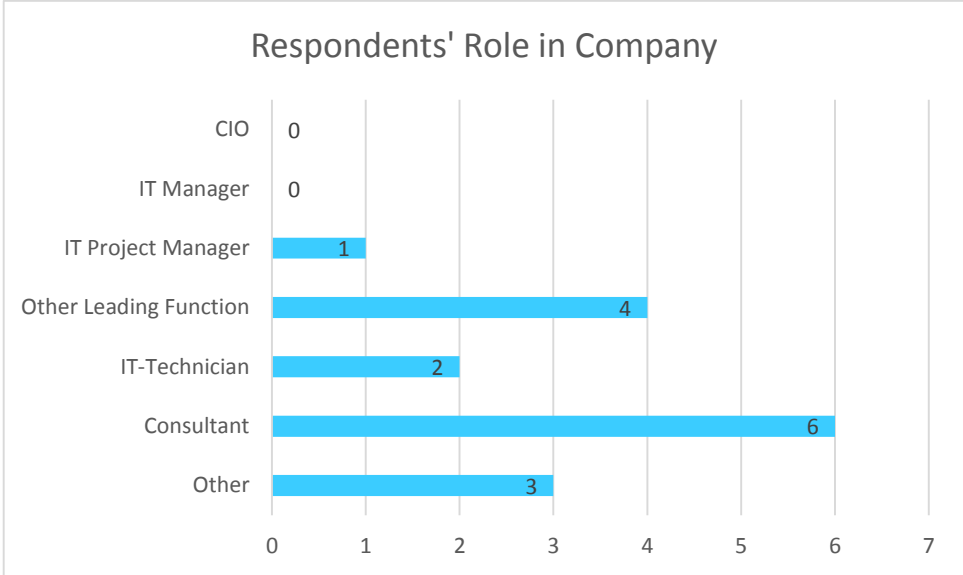


Figure 49 ICT-Norway Respondent Roles

“Other” roles include advisors and “business architects”.

Furthermore, the experience with ERP-systems amongst the respondents is distributed as follows:

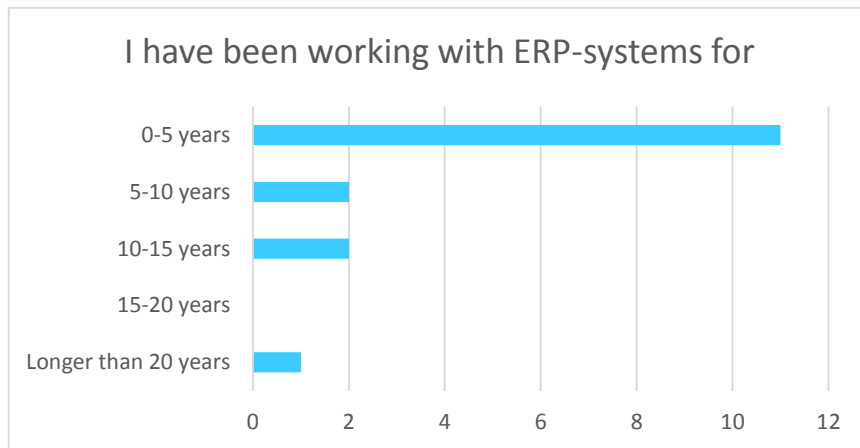


Figure 50 Experience with ERP-systems

Of the total 16, 11 of the respondents have been working with ERP-systems for less than 5 years, but this is still enough to provide useful information for this study.

There were two companies represented in this survey: Company X plus one more consultant/advising company. As Company X is considered as a large company, which the majority of the respondents work for, the results will not represent SMBs (except the one respondent whom represents a small company - less than 50 MNOK in revenues).

The respondents were asked which sector their customers mainly represent. All respondents except one (the small company) represents the public sector or both sectors, making this control variable less usable for comparing results.

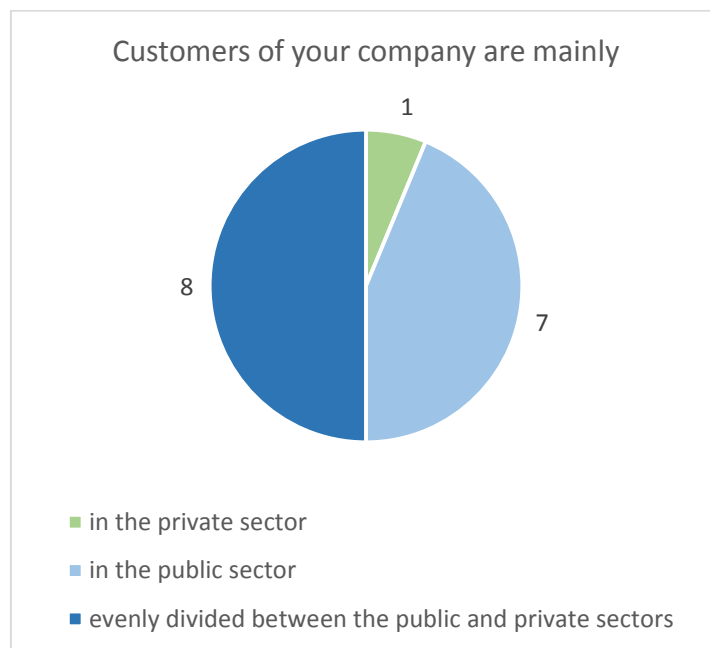


Figure 51 ICT-Norway Sector

6.2. ERP-systems

As the majority of the respondents work in the same company, the variation in provided ERP-systems is quite low:

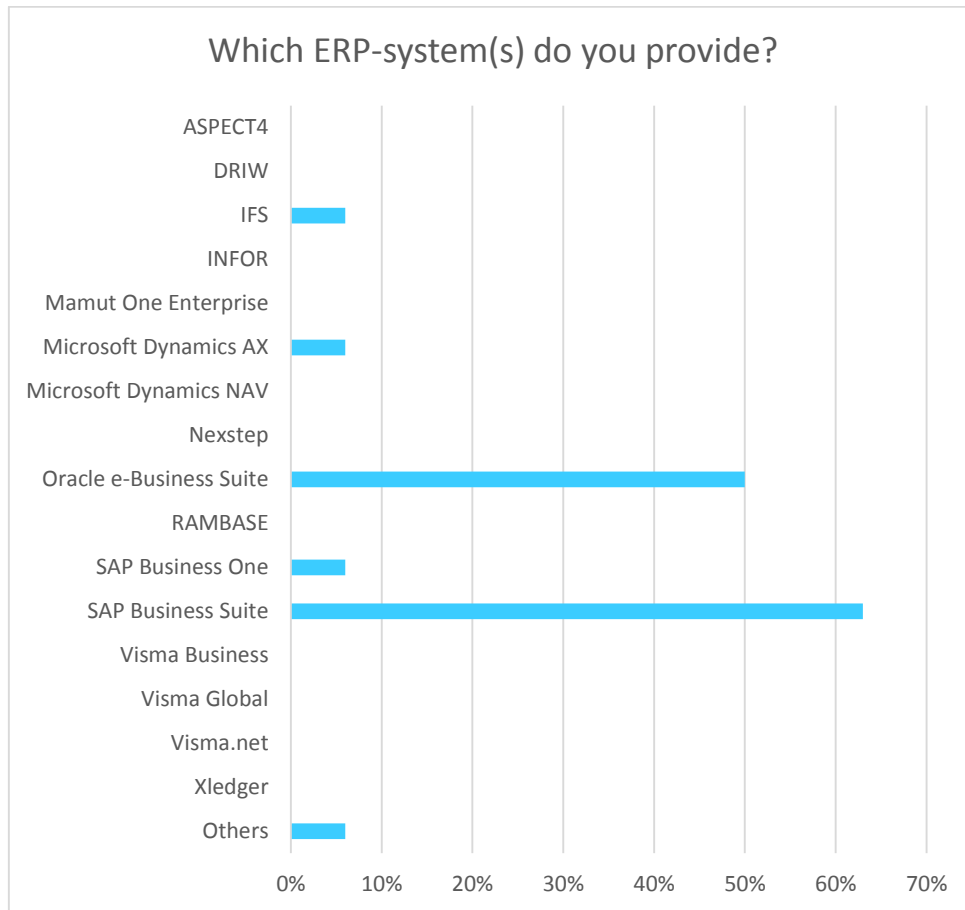


Figure 52 ICT-Norway ERP-systems

Furthermore, the majority of the respondents (94%) perceived that they usually have to customize these systems to some or great extent:

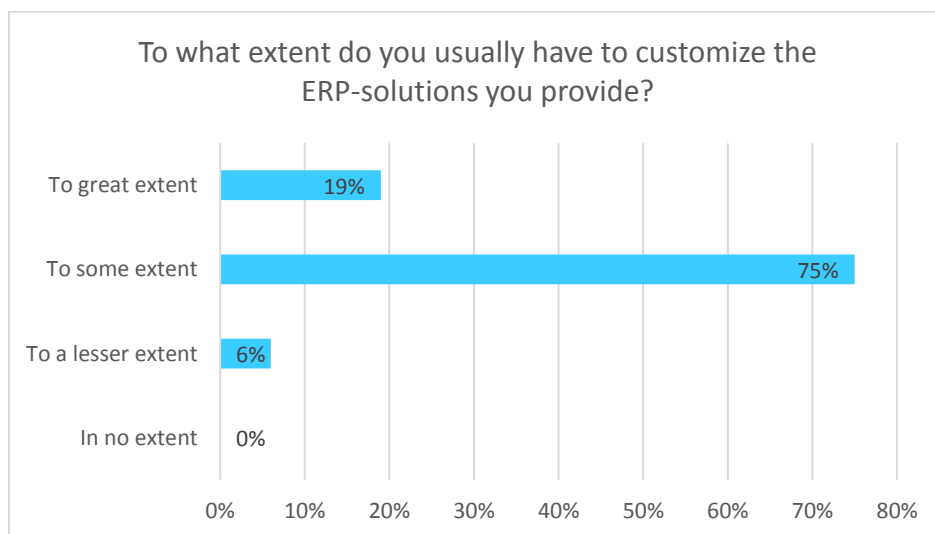


Figure 53 Level of Customization

The respondents gave the following responses when asked about what they experienced as the most common reasons for implementing ERPs:

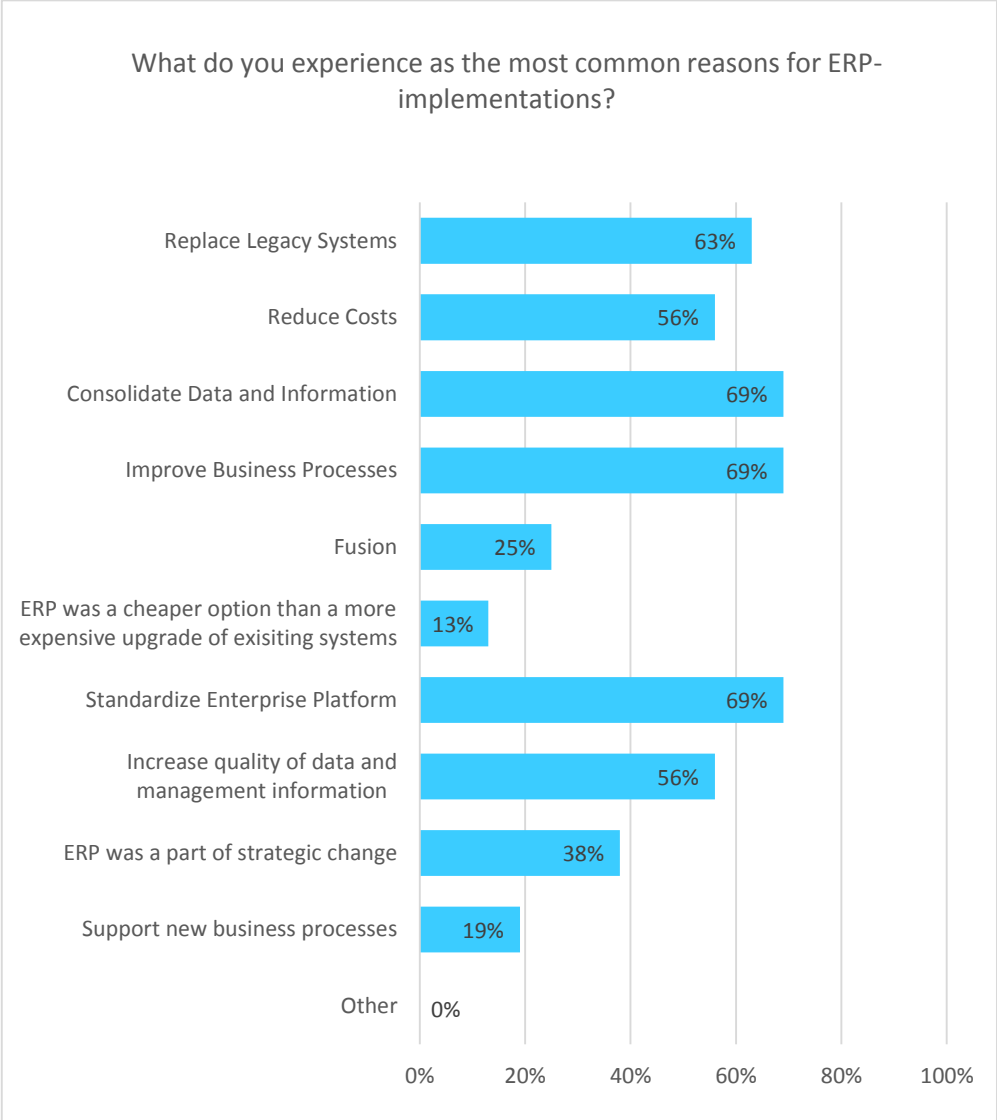


Figure 54 Reasons for Implementing ERP

Specifically, four reasons stand out: Consolidating data and information (69%), improving business processes (69%), standardizing the enterprise platform (69%), and replacing legacy systems (63%). Furthermore, more than half (56%) reported reducing costs, as well as increase in quality of data & management information as common reasons for implementing ERPs.

6.3. Prerequisites for Benefits Realization

The respondents were asked to rate their clients and service partners on their knowledge of benefits realization. In addition, they were also asked to what extent they use their own established processes for benefits realization. Compared to clients, whom might undergo an ERP-project every 5 years or more, vendors do this quite more often. As a result, they have the opportunity to develop their own methods and processes for different activities, such as BRM activities. As explained earlier in this report, even though the vendors have their own established processes for benefits realization, the client has more knowledge about their own company and its business processes. Therefore, it is interesting to see how much the vendors involve their clients in this process, and to what extent the vendors' experience that their client actually sets requirements for benefits realization and measurement of benefits.

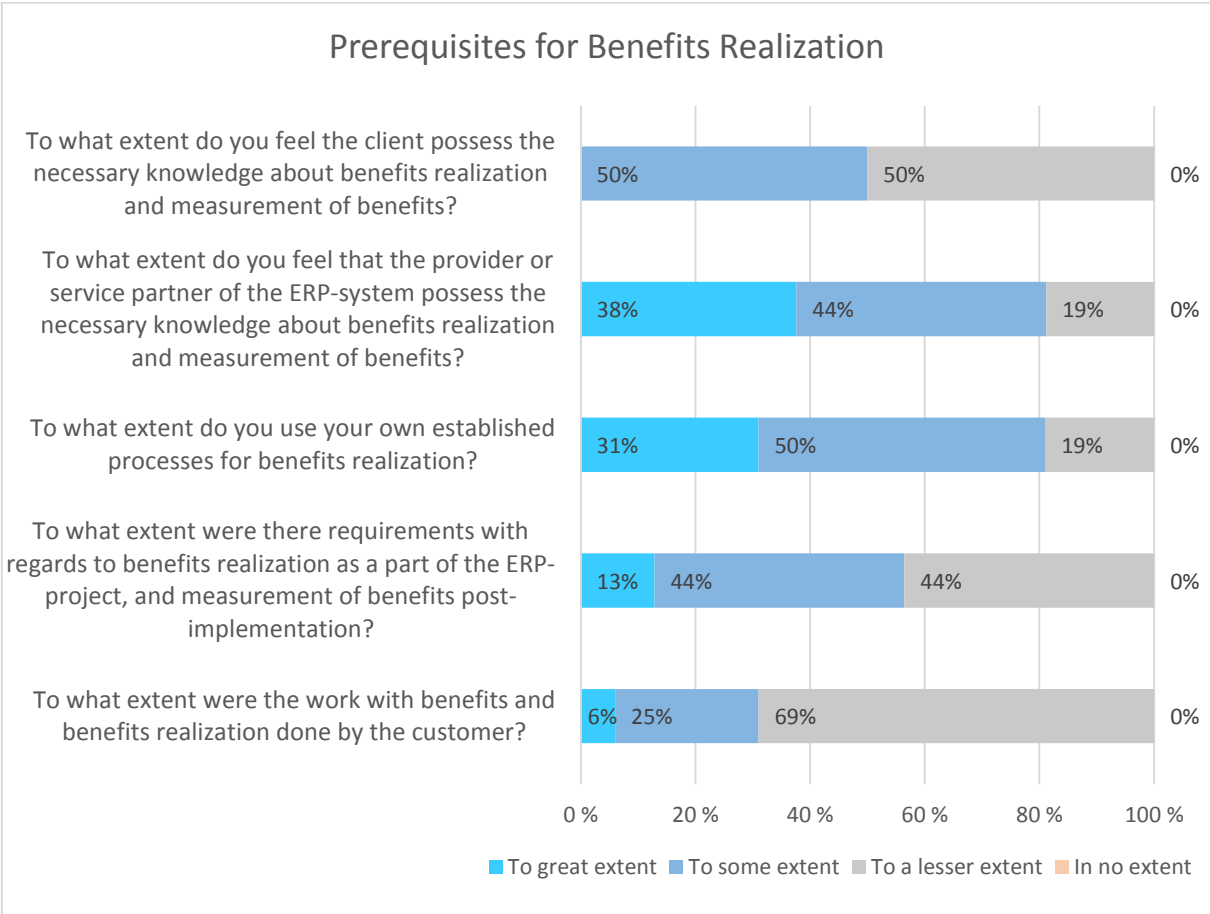


Figure 55 Prerequisites for Benefits Realization

Only 50% of the respondents reported that they felt the client had some or higher degree of knowledge about benefits realization. This shows a significant room for improvement, based on these results. The client will most likely (or should at least have an idea) know best what they actually want to achieve with the ERP-implementation, thus increased knowledge about the methodology and how to actually achieve these benefits will most likely result in higher success rates.

Not surprisingly, the vendors reported that they were happier with the service partner's or providers' knowledge about benefits realization. Ninety-two percent experienced that the service partner or provider had some or higher degree of knowledge about benefits realization.

Furthermore, 91% reported that they had their own established processes for benefits realization to some or great extent. Again, the majority of the respondents worked for different department within the same company, which influences this result.

Fifty-six percent of the respondents experienced that the client actually set requirements for benefits realization and measurement of benefits to some or great extent, while only 31% experienced that benefits realization was done by the customer (to some or great extent).

6.4. Benefits Realization Management

As with the Norwegian Computer Society’s survey, the respondents were asked close-ended questions about activities related to the four steps of benefits realization:

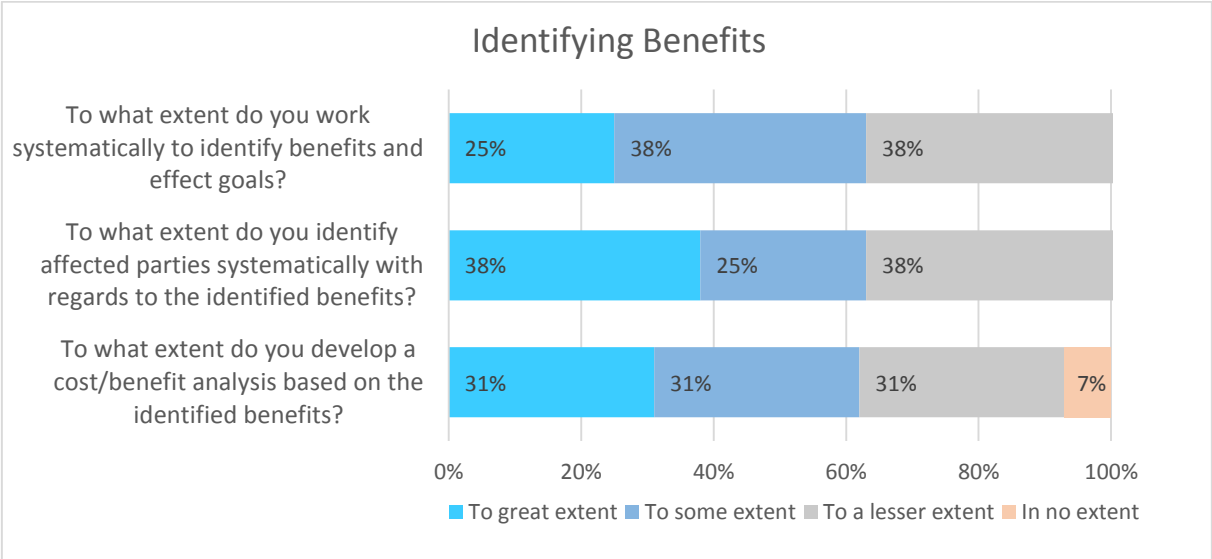


Figure 56 Identifying Benefits

Approximately 62% of the respondents reported that they (to some or great extent) focus on systematical identification of benefits, identification of stakeholders and affected parties concerning these identified benefits, and analyzing these benefits with cost/benefit-analyses or similar. Even though the numbers are similar for these three questions, the numbers are not represented by the exact same respondents. The results also shows that approximately 38% of the respondents experience that these activities are done to lesser or no extent in client projects.

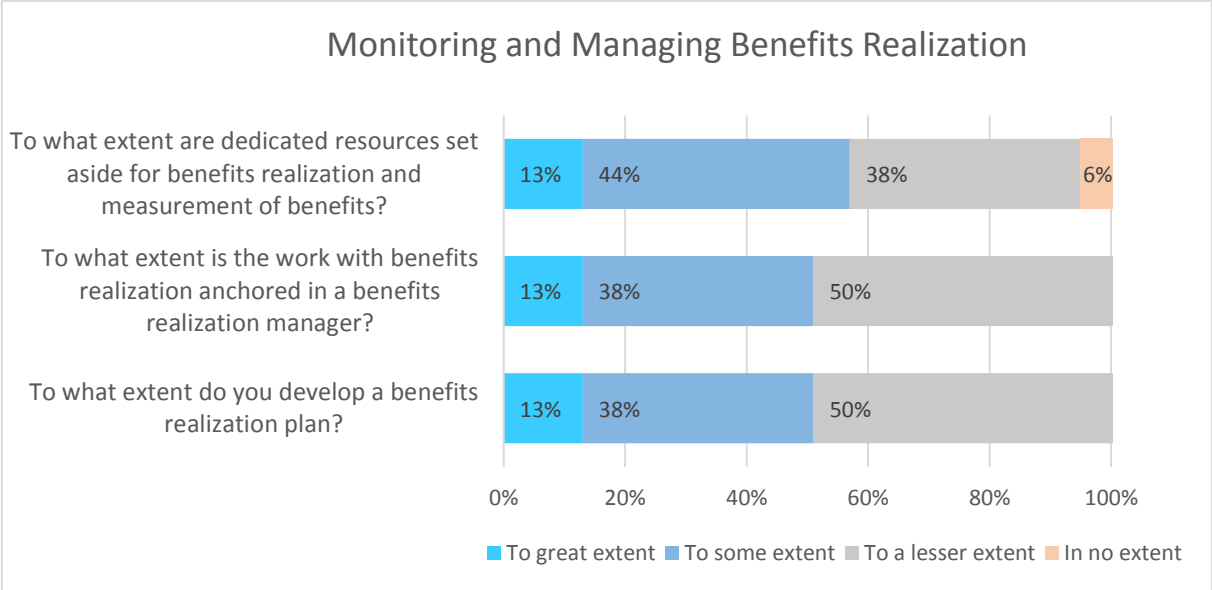


Figure 57 Monitoring and Managing Benefits Realization

Approximately 57% of the respondents reported that dedicated resources are set aside for benefits realization management to some or great extent in client projects. Furthermore, about half report that this work is sourced from a benefits realization manager, and about the same number of respondents report developing benefits realization plans. BRM can be both complex and time-consuming, which means that this requires a certain amount of focus and priority for it to be executed properly. As approximately only half of the respondents report the activities above to some extent or more, many of the remaining client projects are less likely to realize expected benefits.

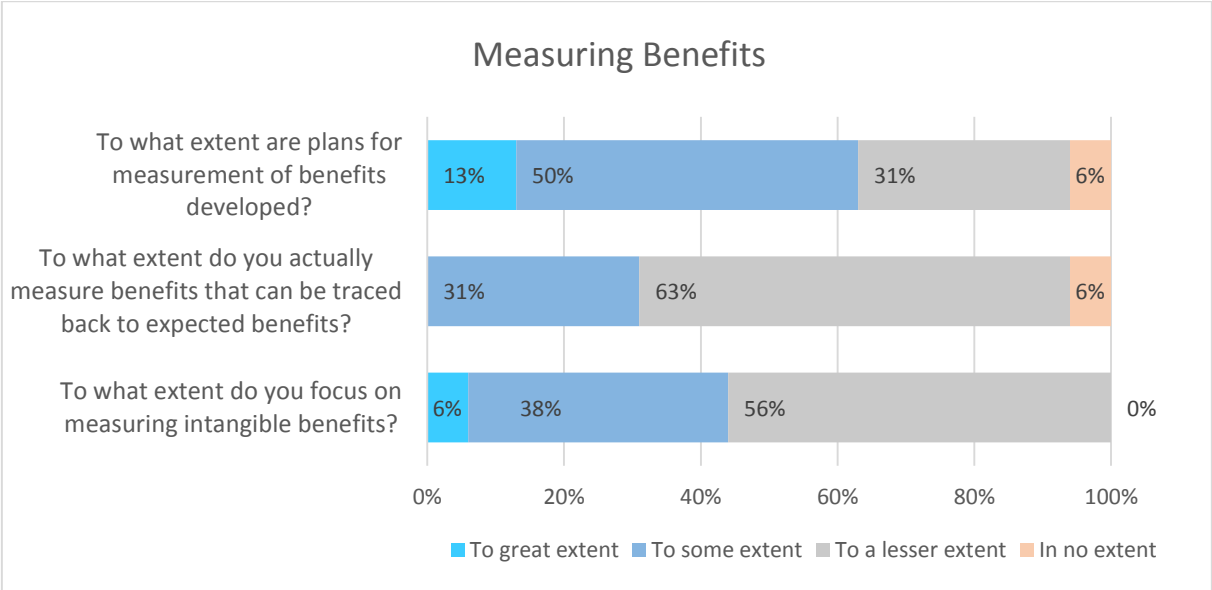


Figure 58 Measuring Benefits

The respondents reported that 63% experience that plans for measurement of benefits are developed to some or great extent. Moreover, only 31% of respondents reported that they actually measured benefits that could be traced back to the identified/expected benefits. Even though the sample population does not represent the population at large, the results might hint towards more focus on result rather than effects amongst vendors, based on these numbers alone. Approximately 44% of the respondents reported focus on intangible benefits to some or great extent.

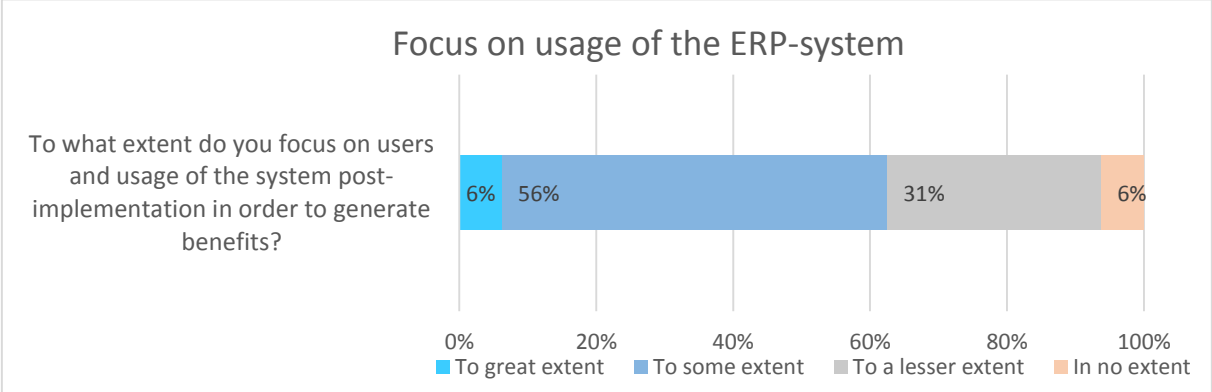


Figure 59 Focus on Usage

As mentioned earlier in this report, focus on usage of the IT-system is a prerequisite in order to achieve maximum benefits from an ERP-implementation. Sixty three percent of the respondents reported that they experienced focus on users and usage of the system to some or great extent.

6.5. Respondents' Own Perception of Benefits Realization

In order to enhance the results in the previous part of the survey, the respondents were given the chance to elaborate as to what they felt were challenges, what lessons they might have learned, and how they would rate their own benefits realization management. In addition, they were asked to write down their own recommendations for future ERP-projects. Even though the respondents of ICT-Norway's survey do not represent the population at large, these questions provide useful insight into what vendors experience on ERP-projects.

6.5.1. Assessment of Own Benefits Realization

When asked to assess benefits realization in the previous ERP-project that they were a part of, the respondents reported the following:

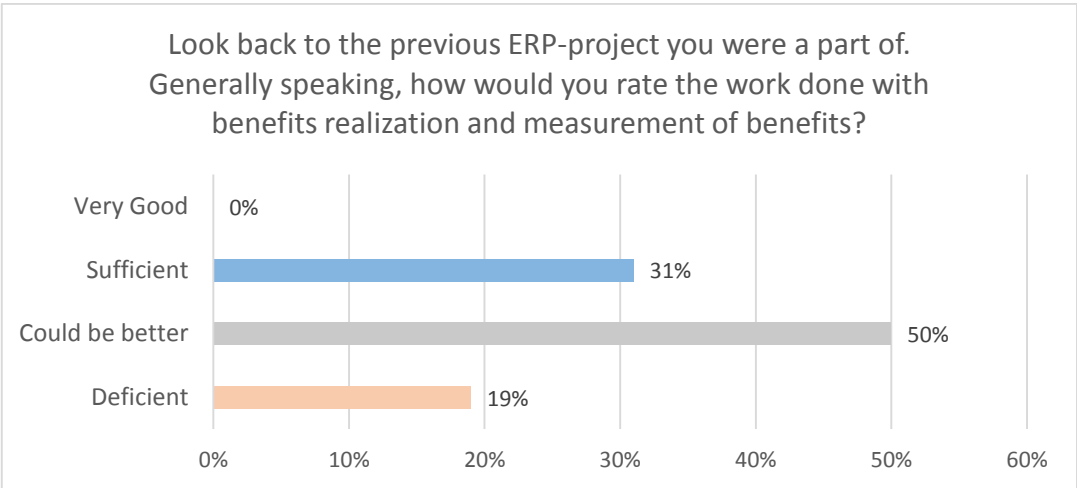


Figure 60 Assessment of BRM in previous ERP-project

As shown above, only 31% of the respondents reported that benefits realization management in their previous project was sufficient. Sixty-nine percent reported that benefits realization and the measurement of benefits in their last project was deficient or could be done better.

6.5.2. Barriers and Challenges with Benefits Realization

The respondents were asked to state what they felt were the most common challenges or barriers when working with benefits realization in an ERP-project. As the respondents are likely to have experience from multiple projects, this gives valuable information, especially in conjunction with the Norwegian Computer Society's survey.

Three respondents reported challenges related to the first stage of benefits realization management, identification of benefits. One respondent reported that the clients tend to have a quite different understanding and expectation for benefits, making “politics” harder. The other two respondents stated that identifying needs vs. wants was a common challenge.

Six respondents reported challenges related to planning of benefits realization. Three of these reported challenges related to defining parameters and as-is state, e.g. when defining intangible benefits. One of them stated that “*We also wish to measure effectivity improvement in areas where we don’t already have data*”. The other three reported lack of allocating responsibility for benefits realization, such as appointing a benefits realization manager or allocating responsibility for the identified benefits.

Four respondents reported challenges related to executing benefits realization. According to three of these respondents, following up the benefits realization plan was a challenge. This was either due to little focus on benefits realization, that the work with benefits realization itself was challenging, or that they did not have enough resources. The last respondent reported that he/she experienced the distance between the people working with benefits realization and the people working on the actual implementation was too big. Therefore, benefits realization “lost its root” in what was really being implemented.

Three respondents reported challenges related to measuring benefits or the parameters used to measure them. One respondents also reported problems related to long project timelines, making the benefits expectations abstract.

The respondent’s answers do not point to a single challenge. Instead, they report challenges related to all four stages of benefits realization.

6.5.3. Reasons for Excluding Benefits Realization Management

Furthermore, the respondents were asked why they think many ERP-projects omit benefits realization management, based on their own experiences.

Of the 13 respondents that did leave a response, six of these stated that they think lack of focus, priority or resources are common reasons for excluding proper benefits realization. E.g., more focus on implementation rather than benefits, costly consultants, or that the clients take benefits for granted.

Five of the 13 respondents reported that they think proper benefits realization is excluded because it is hard to measure and/or define.

Furthermore, three respondents report that lack of competence on benefits realization is one of the leading causes for excluding benefits realization, while another two reported the lack of involvement from leadership as the main cause.

As with the Norwegian Computer Society’s survey, the majority of the vendor respondents reported that benefits realization is excluded due to lack of focus on benefits realization.

6.5.4. Lessons Learned and Own Recommendations

The vendor respondents were also asked about what they experience as their most important lessons learnt, as well as what they think could be done to increase the focus on benefits realization and measurement of benefits in Norwegian ERP-projects. This information would be useful on recommendations for future projects and to improve current practice. The questions were open-ended.

The results were quite diverse, and will be used later in this report along with a summary of this report’s conclusions/recommendations.

6.6. Respondents Assessment of Importance

In order to capture how important the respondents feel benefits realization management is, they were asked to what extent they agreed with the following statement:

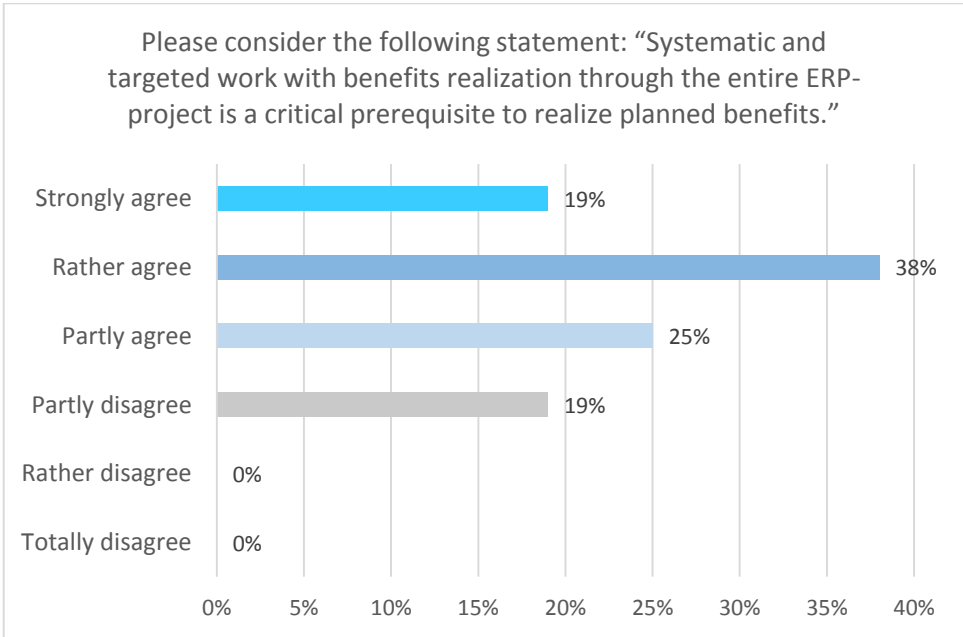


Figure 61 Assessment of Importance

As shown above, 81% of the respondents agree with the statement to various degrees. None of the respondents strongly disagreed with the statement. Overall, this proves that the respondents agree that benefits realization is of importance when implementing an ERP-system.

6.7. Influence of Control Variables

The one-sided sample population makes many of the control variables irrelevant since most of the respondents work for the same company. However, some of the control variables could have had an influence, such as system delivered, the client's knowledge about benefits realization, or whether the client actually requires BRM. Unfortunately, there were not enough respondents to capture any useful information, or no significant influence found.

7. Combined Results

This chapter will present the two surveys combined. The surveys were made almost identical in order to compare and combine the results. In addition to presenting the total results, the results of each survey will be included separately to highlight eventual differences between ERP-clients (the Norwegian Computer Society) and ERP-providers (ICT-Norway). The results will be discussed further in the next chapter.

7.1. Prerequisites for Benefits Realization

Combined, 55% of the respondents reported that the client specifically requires BRM to some or great extent. There were no significant differences between clients and vendors. On the other hand, the surveys show that clients and vendors disagree in regards to the involvement of external personnel to conduct BRM. A total of 88% of clients reported that the work with benefits realization was performed by the vendor to lesser or no extent. In contrast, 69% of the vendors reported that work regarding benefits realization is performed by clients to lesser extent.

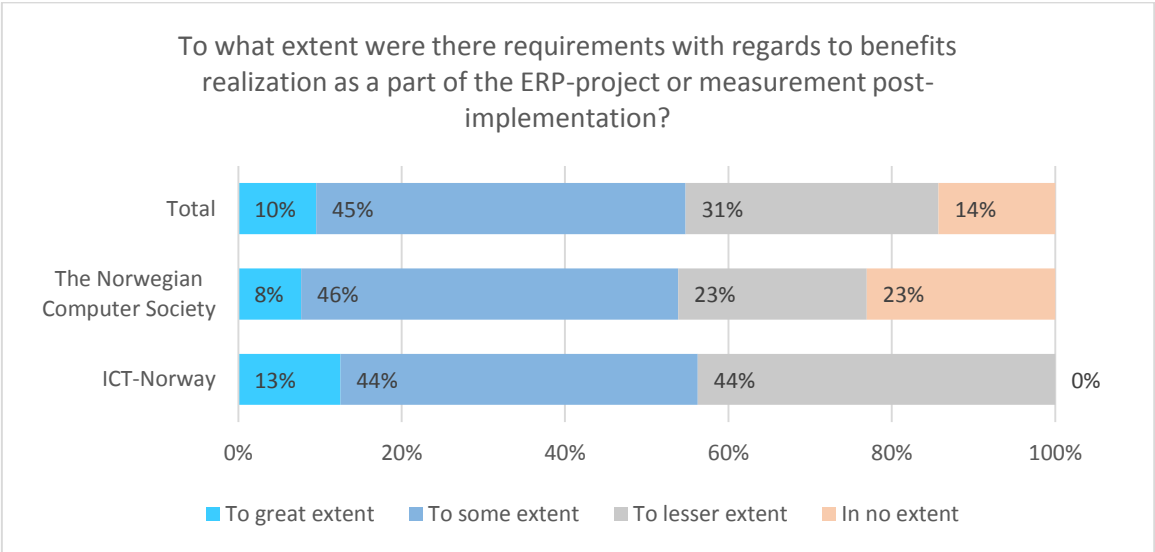


Figure 62 Combined - Requirements for BRM

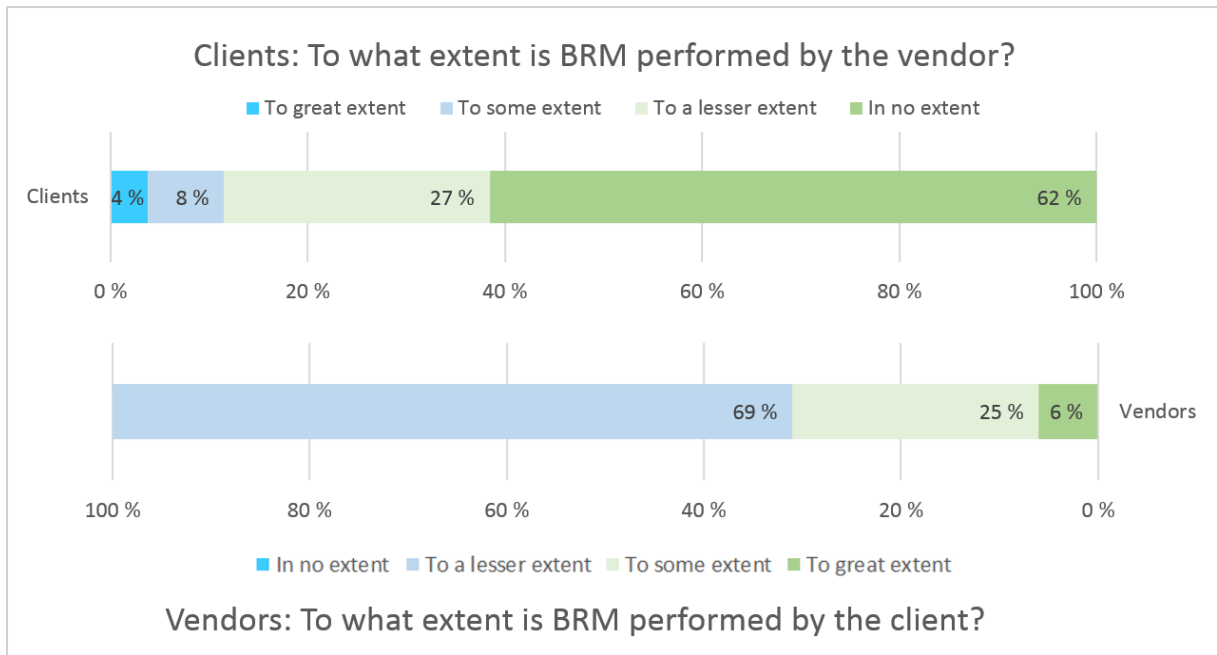


Figure 63 Combined - Use of external personnel for BRM

The questions regarding knowledge on benefits realization of the project group, ERP-clients and service partners were somewhat different between the surveys, thus no combined results regarding knowledge of BRM will be presented.

7.2. Benefits Realization Management

7.2.1. Identifying Benefits

A little more than half of the 42 respondents (54%) reported that they identified benefits and effect goals systematically to some or great extent. The vendors had higher focus on this activity (62%) compared to clients (50%).

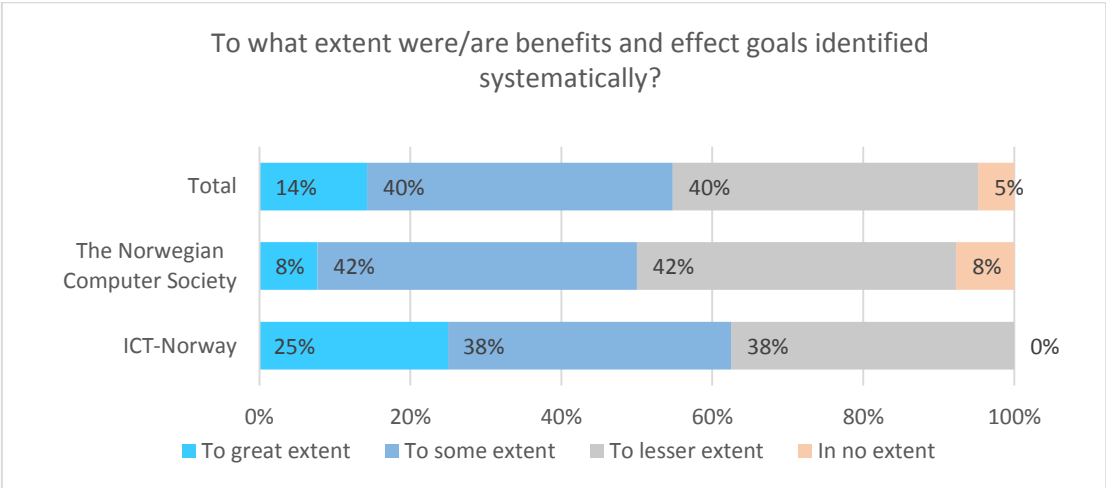


Figure 64 Combined - Identifying Benefits

Furthermore, 60% of the total respondents reported that they identified affected parties and stakeholders concerning these benefits to some or great extent. The numbers are slightly in favor of the vendors.

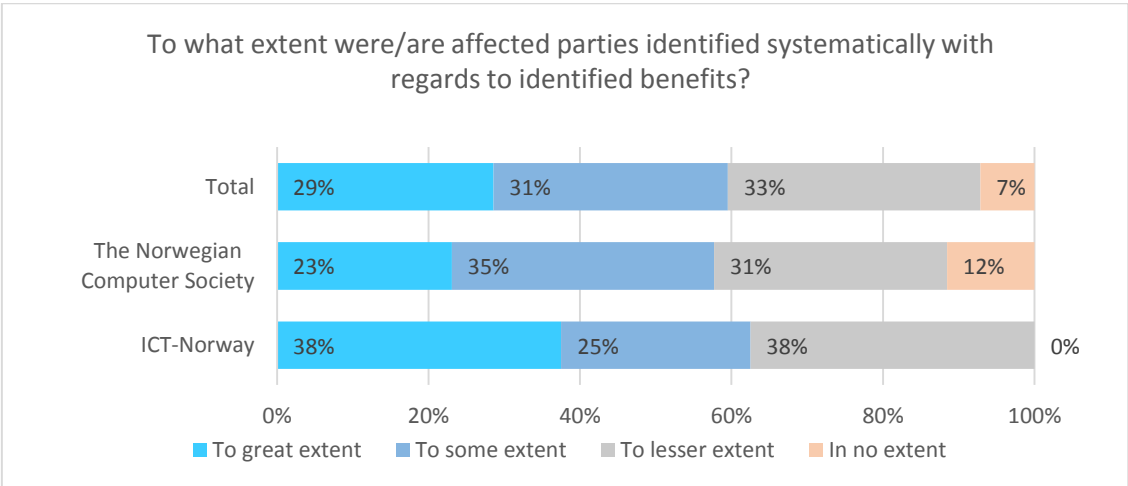


Figure 65 Combined - Identifying Stakeholders

Forty-three percent of the respondents reported that they developed cost/benefits-analyses to evaluate identified benefits to some or great extent. According to the surveys, vendors (62%) have a significantly higher focus on this activity compared to clients (32%).

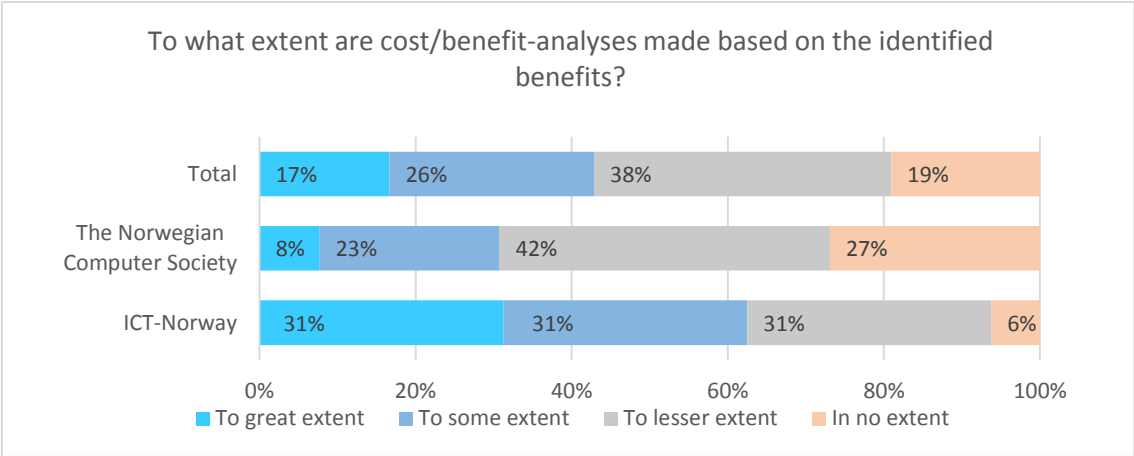


Figure 66 Combined - Cost/benefit-analyses of identified benefits

7.2.2. Planning and Managing Benefits

As discussed multiple times in this report, BRM can be both complex and time-consuming, which means that this requires a certain amount of focus and priority for it to be executed properly. Of the total 42 respondents, barely 26% reported setting aside dedicated resources for BRM to some or great extent. As shown below, the difference between clients and vendors is significant, of which vendors report significantly more focus on this.

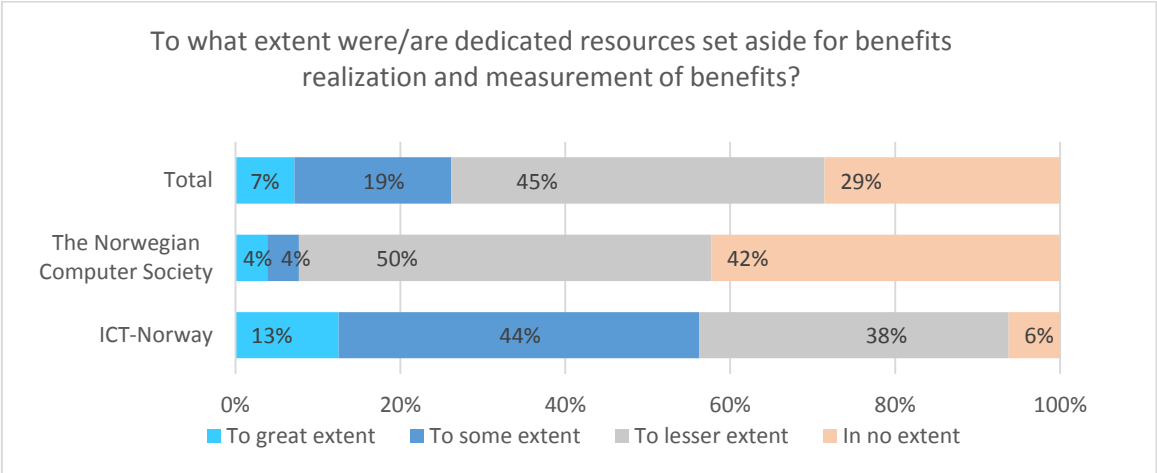


Figure 67 Combined - Resources

While half of the vendors report that they usually appoint a benefits realization manager to some or great extent, only 19% of the clients reported that they did the same during their ERP-project. Overall, approximately one third (31%) of the total respondents report that they appointed a benefits realization manager. Remarkably, 54% of the clients reported that the work with BRM in no extent was sourced from a benefits realization manager.

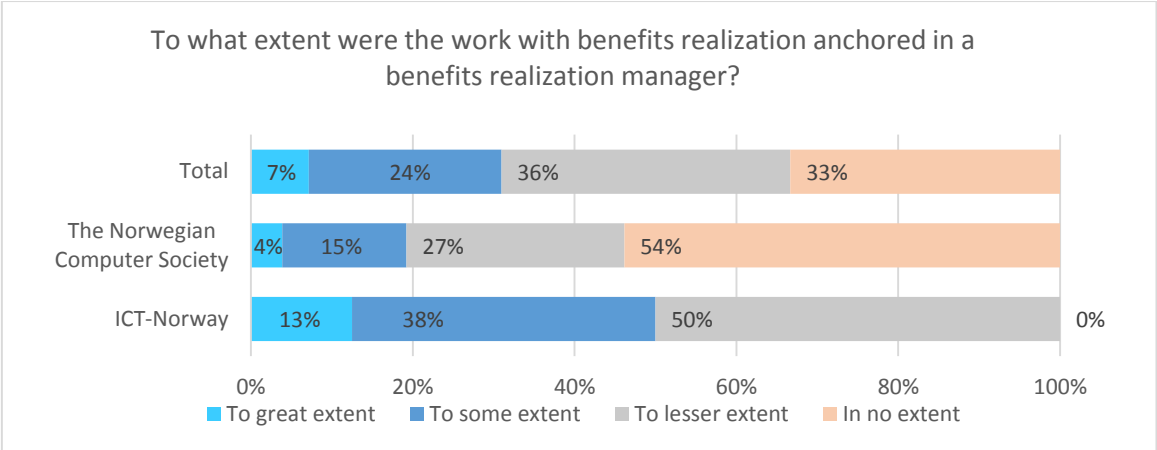


Figure 68 Combined - Appointing a Benefits Realization Manager

Thirty-four percent of the respondents reported that they developed a benefits realization plan to some or great extent, of which the vendors represent the majority. Barely 15% of clients reported that a benefits realization plan was developed to some extent. The majority of the clients reported not developing a benefits realization plan at all (54%).

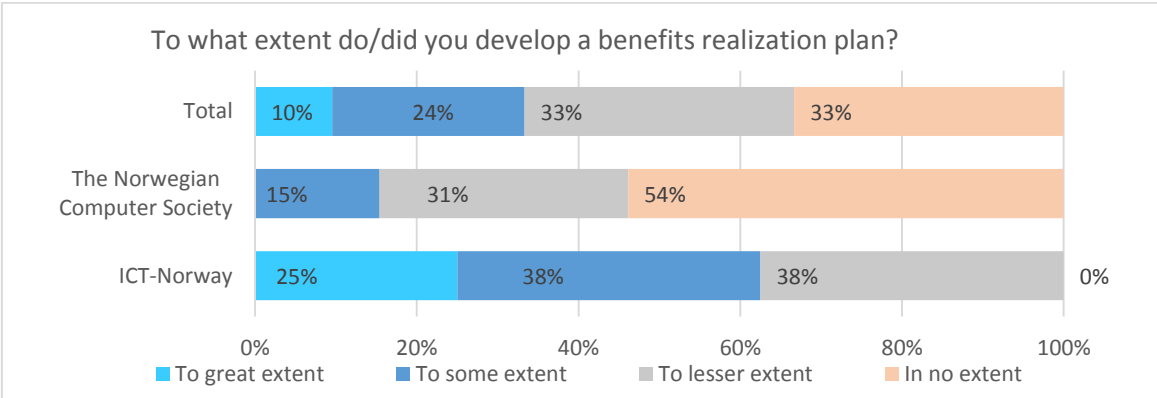


Figure 69 Combined - Benefits Realization Plan

7.2.3. Measuring Benefits

According to the survey results, approximately 36% of the total sample population reported that they developed plans for measurement of benefits to some or great extent. Barely 19% of the clients reported this, whereas 63% of the vendors reported the same.

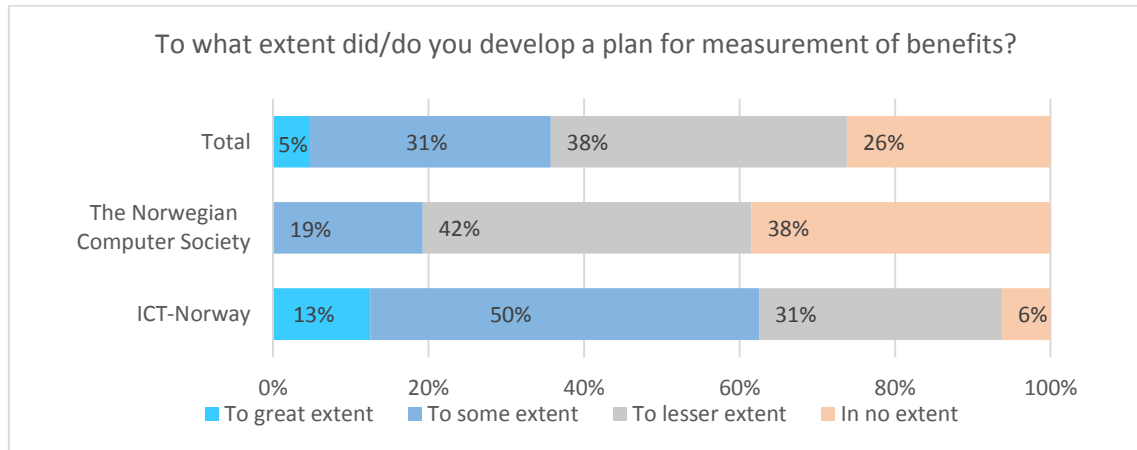


Figure 70 Combined - Plans for measuring benefits

Four out of ten respondents reported that they actually measured benefits that could be traced back to expected benefits to some or great extent. More interestingly, 46% of the ERP-clients reported this, even though only 19% had made plans for measurement of benefits. In contrast, of the vendors, who were much more focused on developing plans for measurement of benefits, only 31% reported that they actually measure these benefits to some or great extent. Furthermore, 19% of the total respondents reported that they did not measure any benefits at all.

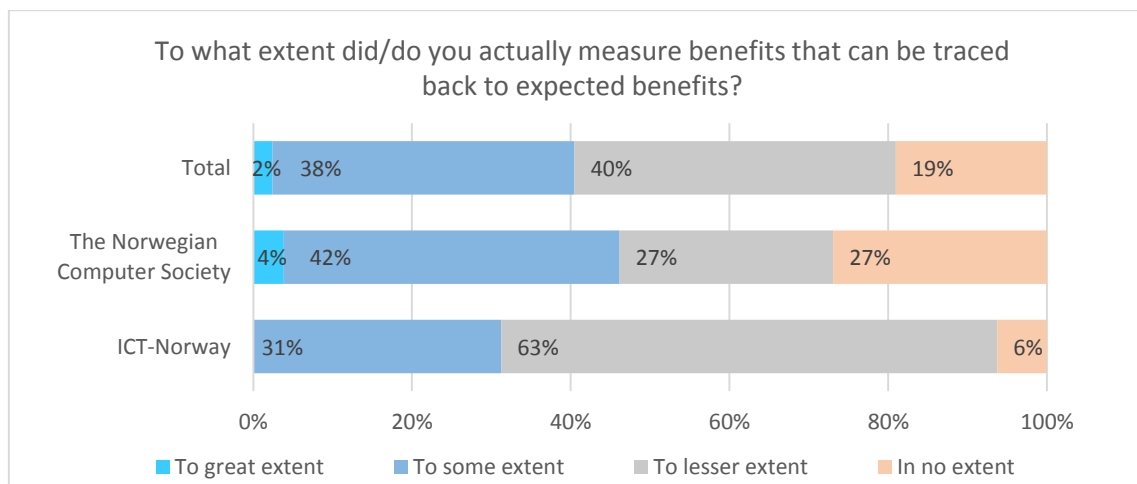


Figure 71 Combined - Measurement of Benefits

As highlighted throughout this report, intangible benefits can be just as beneficial as tangible ones. Of the total 42 respondents, about one quarter (24%) stated that they focused on measuring intangible benefits to some or great extent, of which the vendors account for the majority of these numbers.

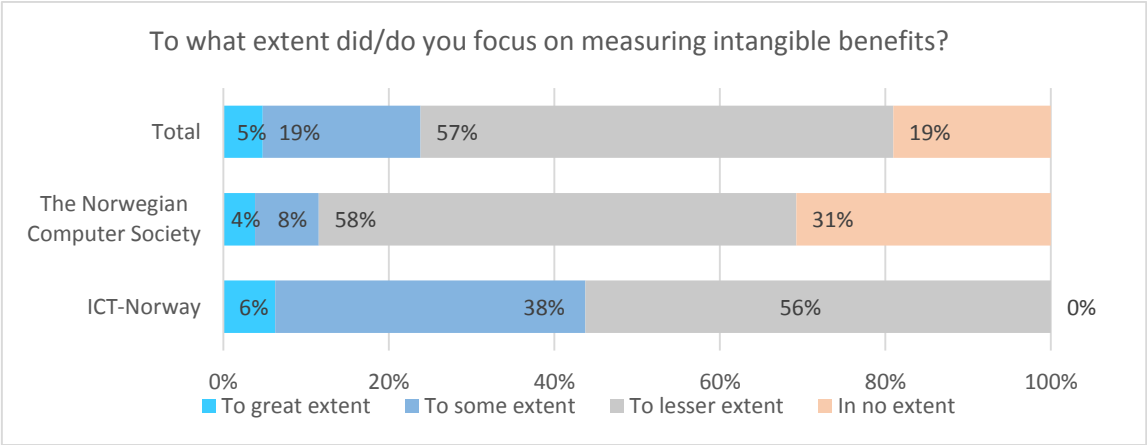
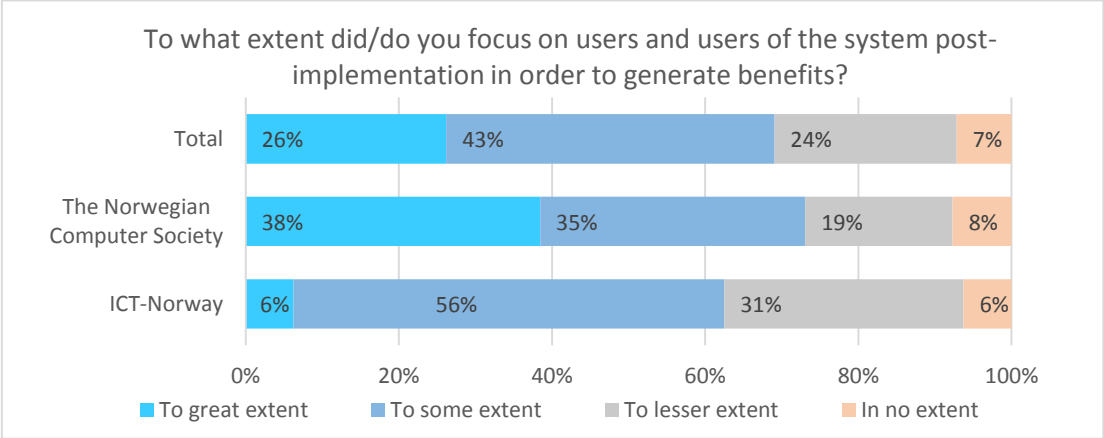


Figure 72 Combined - Focus on intangible benefits

7.2.4. Focus on Usage of the ERP-system

Sixty-nine percent of the total respondents reported that they focused on usage of the ERP-system post-implementation to some or great extent. More interestingly, the ERP-clients of the Norwegian Computer Society reported significantly more focus on this, compared to the vendors. Thirty-eight percent of the clients reported focusing on this to great extent, and 35% reported this to some extent. As previously mentioned, focusing on usage of the ERP-system is a prerequisite to achieve expected benefits.



7.3. Assessment of own BRM and Perception of Importance

There were no significant differences between clients and vendors when they were asked to rate their own efforts with benefits realization. As mentioned earlier, the vendors rated their own BRM based on the previous ERP-project of which they took part.

As shown below, the majority of the respondents are not satisfied with their own efforts with benefits realization. Seventy-six percent of the total respondents reported that their efforts with BRM could be done better or was deficient. There were no significant differences between vendors and clients.

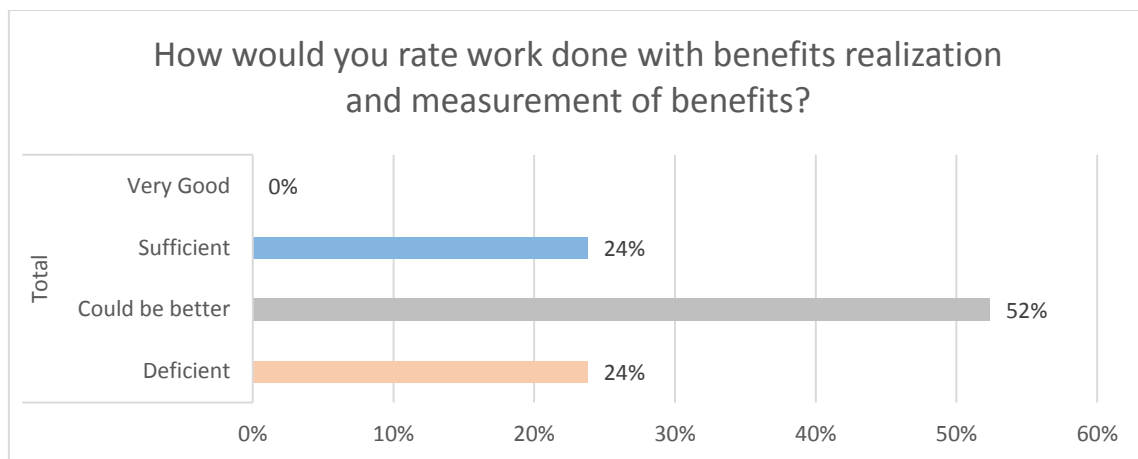


Figure 73 Combined - Assessment of own BRM

Furthermore, the majority agrees that BRM is important in an ERP-project. Eighty-three percent of the total respondents agrees with the given statement to various degrees. There were no significant differences between vendors and clients, though the client responses were a little more differentiated.

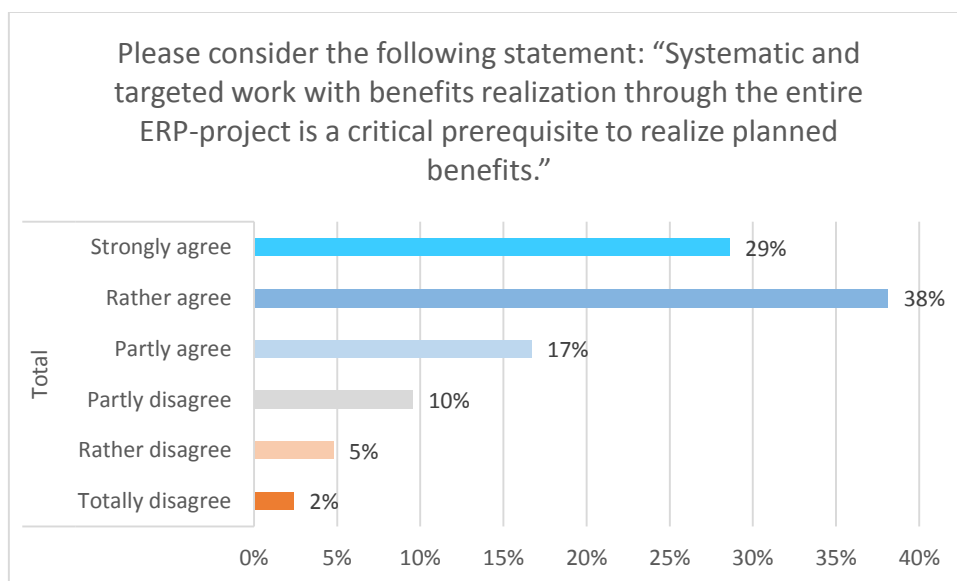


Figure 74 Combined - Perception of importance of BRM

7.4. Summary

The following graphs summarize the results of the close-ended questions of the two surveys. This includes how the respondents work with benefits realization, assessment of their own BRM and how important they think benefits realization is. The graphs are based on average scores, with the intention to highlight trends, and will not capture extreme values, etc.

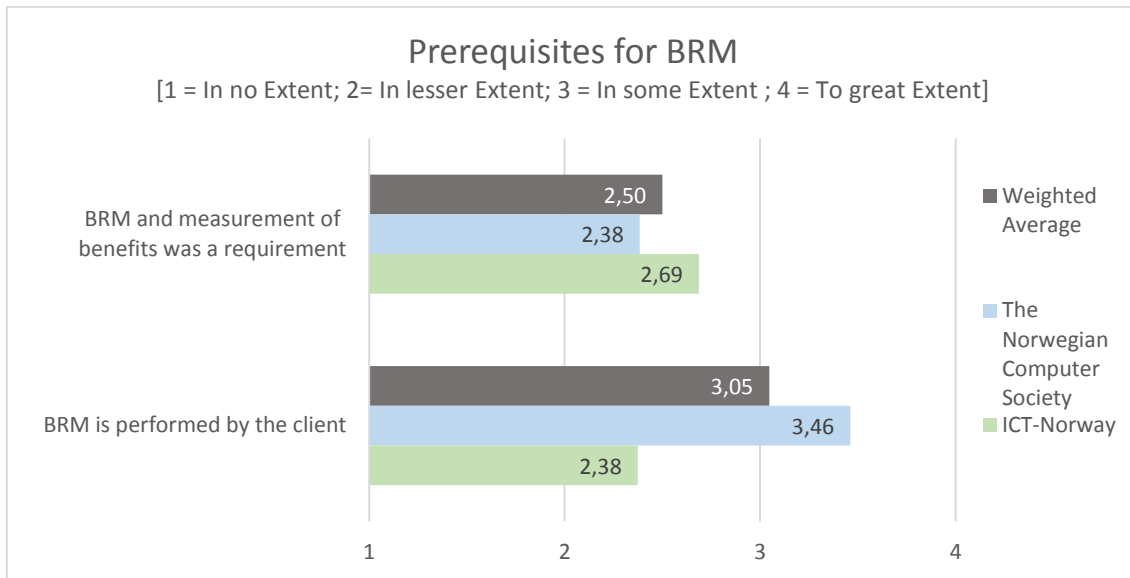


Figure 75 Summary - Prerequisites for BRM

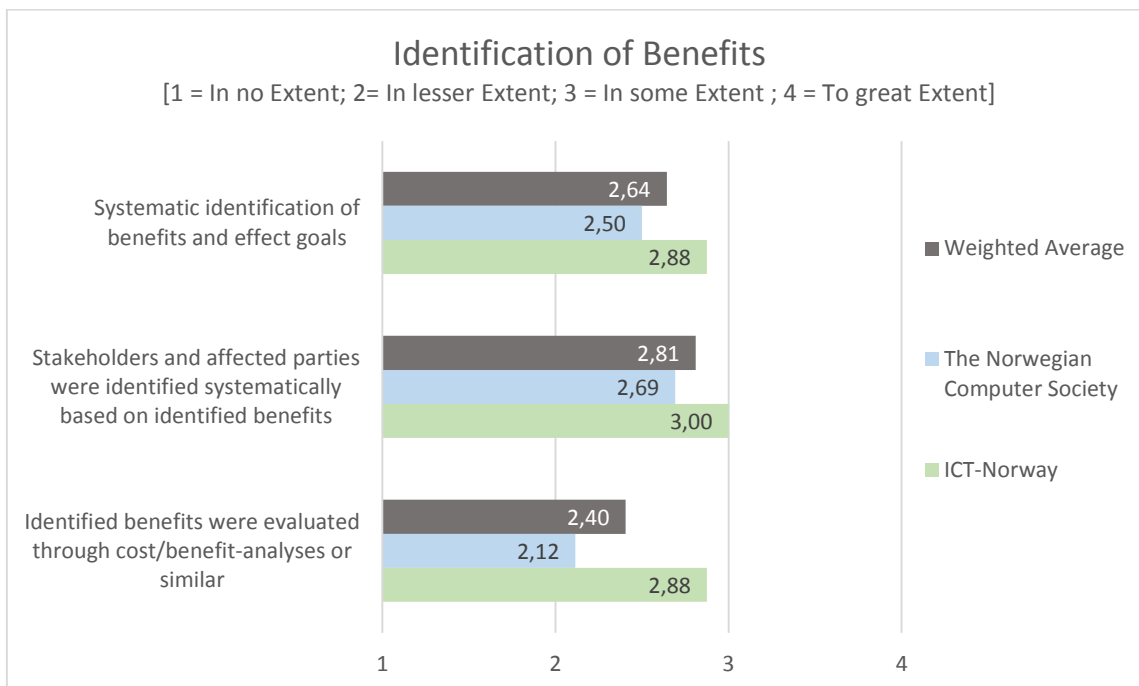


Figure 76 Summary - Identification of Benefits

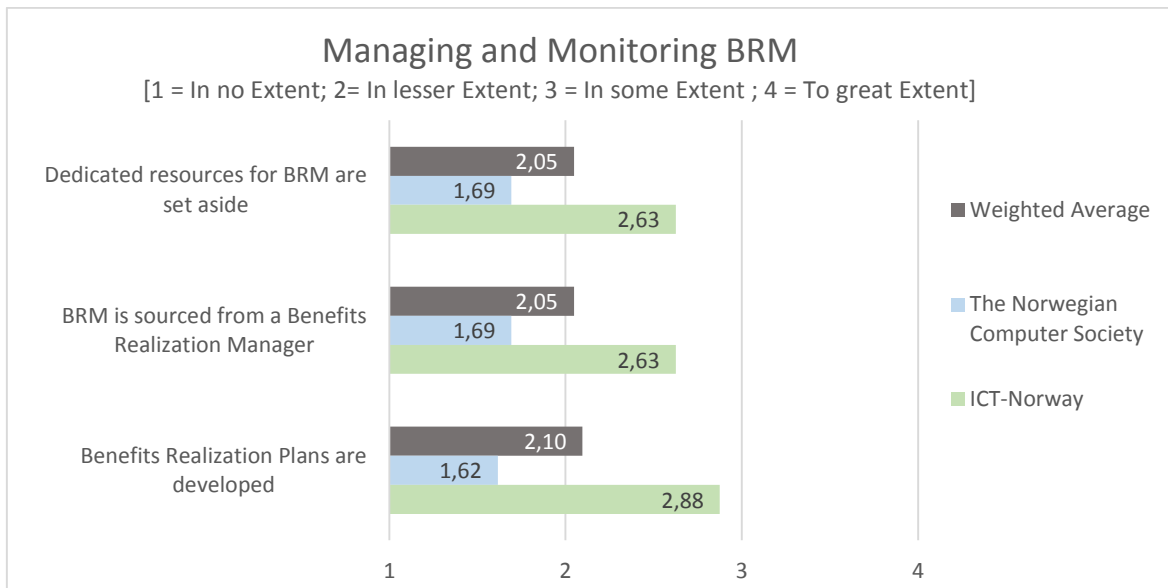


Figure 77 Summary - Managing and monitoring BRM

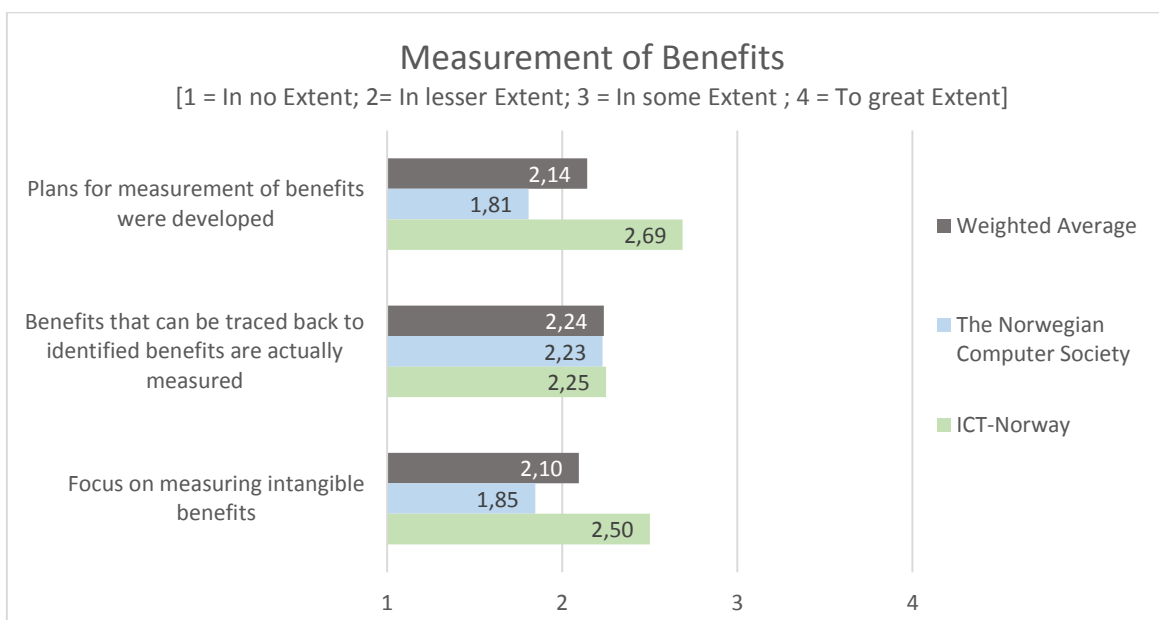


Figure 78 Summary - Measurement of Benefits

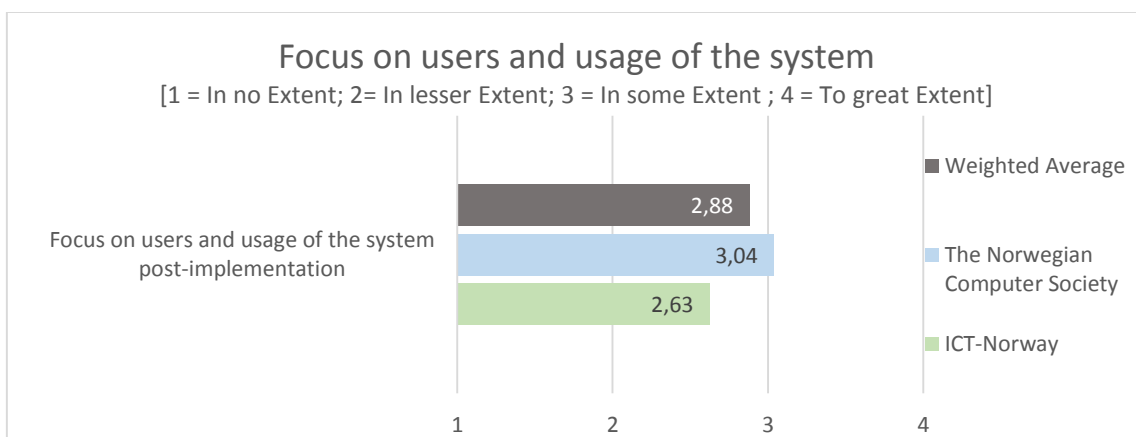


Figure 79 Summary - Focus on usage of the ERP-system

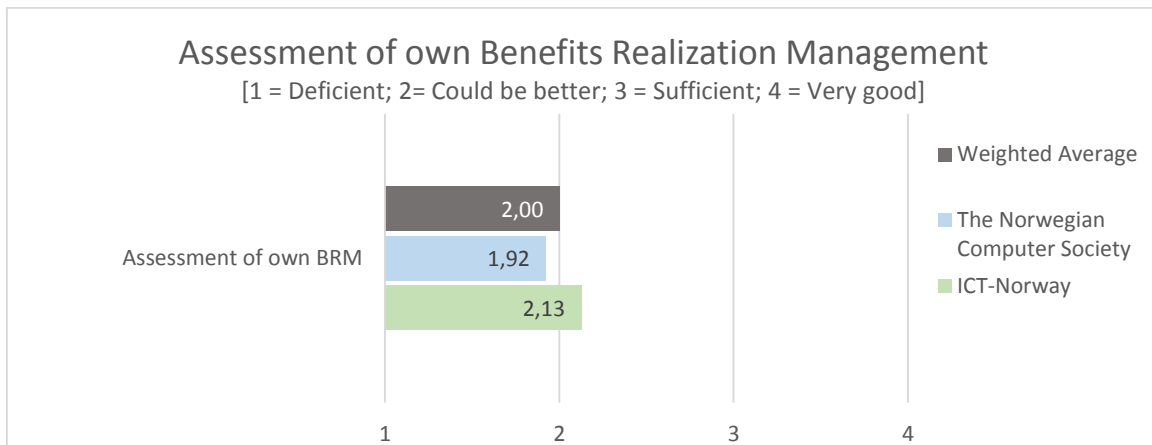


Figure 80 Summary - Assessment of own BRM

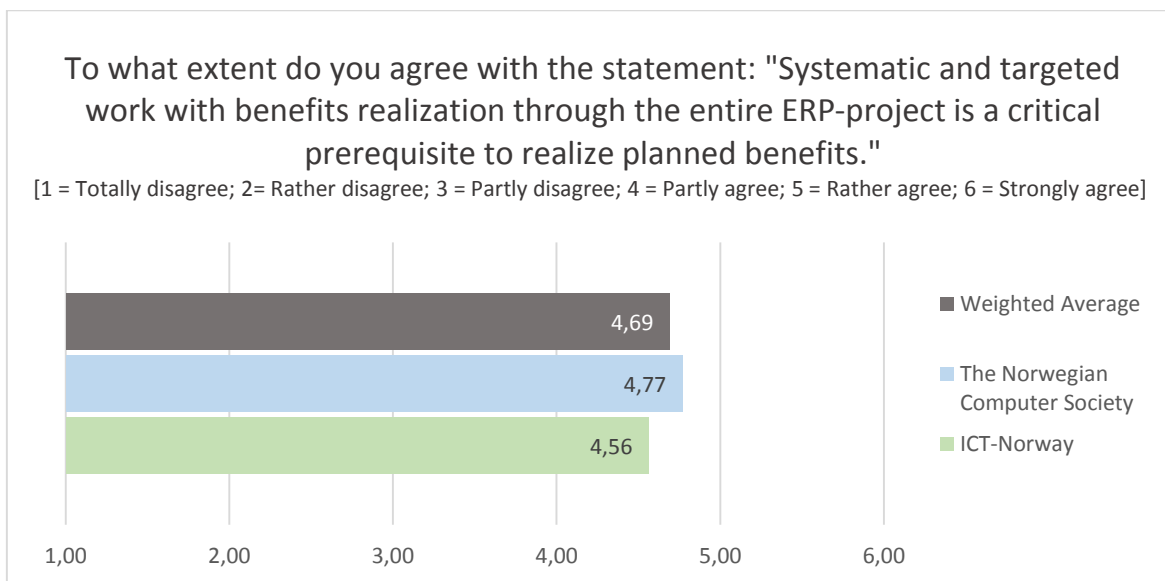


Figure 81 Summary - Importance of BRM

As illustrated above, and generally speaking, the respondents have worked with benefits realization systematically “to lesser extent”, even though there is a higher focus on identification of benefits, and usage of the system post-implementation. Most respondents agree with the statement “Systematic and targeted work with benefits realization through the entire ERP-project is a *critical* prerequisite to realize planned benefits”, but the majority is overall dissatisfied with BRM in their own/previous ERP-project. The results also show a generally higher focus on BRM amongst ERP-vendors compared to ERP-clients.

8. Discussion

The following chapter will discuss the results given in the previous three chapters. The results will also be cross-referenced against previous research (as given in chapter 2) and other resources, where applicable. The relevance of this study will also be discussed, and furthermore, this discussion will be used as a basis for the conclusions drawn in the next chapter. The Norwegian Computer Society's survey will be weighted higher because of the higher representativeness of their respondents. In addition, previous research is mostly based on a clients' point of view, which makes this survey even more relevant than ICT-Norway's survey. However, ICT-Norway's survey will be included where applicable.

There is a concern with the representativeness of the results of this study, as mentioned previously. This will be discussed towards the end of this chapter rather than repeating the same discussion for every sub-chapter.

8.1. Knowledge about Benefits Realization

According to the survey, clients are in general satisfied with leadership's and the project team's knowledge about benefits realization. The average score is "to some extent", and about two thirds of the sample population reports that they are satisfied to some or great extent. Vendors reported less knowledge amongst their clients and higher knowledge amongst their service partners.

According to IT in Practice 2014, IT-managers state that 57% of top leaders and 42% of middle leaders have some or a high degree of knowledge about BRM (Rambøll Management Consulting, 2014). This thesis' results are slightly higher than IT in Practice's. However, this thesis' sample population is slightly different than IT in Practice's, as other roles than IT-managers were allowed to answer. Filtering the results for IT-managers only, shows that IT-managers are generally more satisfied with leadership's and the project team's BRM knowledge compared to the sample average. On the other hand, the number of IT-managers in this survey is fairly low, therefore, the representativeness of this result is questionable.

In general, quite a few of the customers are satisfied with leadership and the project group's knowledge in benefits realization. On the other hand, there is still a lot of room for improvement as one third of the sample population is satisfied to lesser or no degree. The vendors' assessment of clients' knowledge on BRM points to further room for improvement. IT in Practice 2014 reports even worse numbers. Benefits realization and BRM requires training and knowledge, and without proper knowledge, the efforts are likely to be of less quality, as shown previously in this report.

8.2. Requirements and use of External Resources

This survey reveals that a little more than half of the sample population had set requirements for benefits realization and measurement of benefits as a part of the implementation project. The author did not manage to find any previous research on this particular field.

As shown previously, the majority of the sample population are relatively not satisfied with the work done with benefits realization. This is likely to be connected with the fact that few clients actually set requirements for BRM and measurement of benefits. Without proper requirements, it is more the responsibility of the provider or other parties to determine as to what extent benefits realization is focused on. As BRM is a rather demanding and time-consuming task, it is likely that the efforts of benefits realization are of less quality and less focused upon if they are not specifically required.

Furthermore, few of the client respondents report that external help is used for benefits realization. In contrast, a majority of the vendors reported that the BRM is performed by the client to lesser extent. Reasons for this deviation could be different perception of own involvement, e.g. ambiguity in allocation of work, or different allocation of roles that have not been working tightly together. Another reason could be lack of knowledge, e.g. that the client does not fully understand or see the amount of work needed with BRM. It could also be that the sample clients of this survey does not represent the clients of the sample vendors. Regardless, this is hard to determine without further research. The author did not find any previous research on this subject.

As discussed previously, there are pros and cons to using external resources for BRM. Due to the low number of respondents, and the little variation in use of external BRM competence, this matter will have to be investigated further.

8.3. Identifying Benefits

The survey shows that approximately 54% of the ERP-projects identified benefits and effect goals systematically to some or great extent. The numbers were slightly in favor of private companies. Vendors reported similar numbers, though a little higher.

According to IT in Practice, approximately 60% of private companies identify benefits and effect goals systematically to some or great extent, while roughly 34% of public companies do the same (Rambøll Management Consulting, 2014).

The numbers are slightly different, but again, the sample respondents of this project are chosen from different roles than IT in Practice (whom only focused on IT-managers and other managers). This might help explain the variation in answers, but again, the response rate of this report's surveys make the results less representative.

Regardless, both this report and IT in Practice points towards significant room for improvement regarding identification of benefits and effect goals. A majority of the respondents reported lack of focus on benefits realization as a major challenge. In addition, many sample companies reported lack of BRM knowledge, which might help to explain results above.

Furthermore, the survey shows a slightly higher focus on analyzing stakeholders and affected parties based on the identified benefits. Approximately 6 out of 10 do this to some or great extent.

The author did not find a lot of research on the efforts of analyzing stakeholders and affected parties with regards to identified benefits, other than the Norwegian Supreme Audit Institution's report. The report states that three of the eleven public projects focused on this activity.

The numbers of this study are quite different from the Norwegian Supreme Audit Institution's report, which reported far worse results than this study. However, due to the low number of samples (of both this paper and the Norwegian Supreme Audit Institution's investigation), this will have to be confirmed.

Furthermore, this survey shows that roughly 43% of the sample population develop cost/benefits-analyses based on the identified benefits to some or great extent. There were minor differences between public and private companies. Vendors reported significantly more focus on this activity.

According to IT in Practice 2014, 67% of private companies use cost/benefits-analyses to operationalize and identify benefits, and use this information to manage project execution. Only 37% of public companies do the same (Rambøll Management Consulting, 2014). The Norwegian Supreme Audit Institution reported that three of the eleven public projects developed cost/benefits-analyses for the identified benefits (Riksrevisjonen, 2015).

The numbers for private companies are quite different in IT in Practice compared to this study. However, the question is worded quite differently in IT in Practice 2014 compared to the surveys of this project. In addition, the company roles of the sample populations are different. Regardless of this, both surveys indicate significant room for improvement concerning the use of cost/benefit-analyses to evaluate identified benefits. The results of the Norwegian Supreme Audit Institution are aligned with the results of this study.

8.4. Planning for and Managing Benefits Realization

The Norwegian Computer Society's survey shows that very few of the sample ERP-clients set aside dedicated resources for benefits realization. Only two of the respondents (both from public companies) reported doing this to some or great extent (approx. 8% of the total population). The remaining respondents reported that dedicated resources were set aside to lesser or no extent. Furthermore, the

survey shows that 19% of the respondents appointed a dedicated benefits realization manager to some or great extent, while about 15% of the respondents developed a complete benefits realization plan for planning and managing benefits realization.

Similarly, IT in Practice reported that 10% of private companies and 12% of public companies set aside dedicated resources to some or great extent. 15% and 8% appointed a benefits realization manager to some or great extent, and 18% of private and 7% of public companies developed a benefits realization plan (Rambøll Management Consulting, 2014).

Both surveys indicate very little focus on setting aside dedicated resources, appointing benefits realization managers and developing benefits realization plans. This survey indicates somewhat better results amongst public companies, but the low number of respondents from such companies makes these results questionable. As mentioned earlier in this report, many of the respondents reported little focus on benefits realization in general, which is likely to have an effect on this.

Vendors reported significantly higher numbers when asked about use of dedicated resources, use of benefits realization managers, and development benefits realization plans. This will be discussed further in chapter 8.10.

8.5. Measuring Benefits

According to the survey, barely 36% of the total sample population had plans for measuring benefits during the ERP-project, to some or great extent, of which the vendors (ICT-Norway's survey) were the major contributor. ERP-clients alone reported that 19% included plans for this, of which the numbers were significantly better for public companies (43%) compared to private companies (11%). Interestingly, approximately 46% of the sample ERP-clients reported that they did actually measure achieved benefits post-implementation to some or great extent. The numbers were similar between public and private companies. However, only 31% of the vendors reported the same.

Even though the author did not find any previous research on to what extent ERP-projects made plans for measuring benefits, there were, however, several publications about measurement of benefits post-implementation. Mabert et. al reported in 2003 that approximately 20% use ROI or any other form of investment analysis during their ERP-implementations (Mabert, Soni, & Venkataramanan, 2003). Olhager and Selldin reported that 41.8% of Swedish companies did the same (Olhager & Selldin, 2003). In 2009, Jutras reported numbers that are more positive, with 83% of companies calculating ROI after the completion of an ERP-project, based on their survey (Jutras, Measuring the ROI of ERP in SMB, 2009). However, Devoteam Davinci reported that merely two out of ten Norwegian companies that had plans for benefits realization in their IS-project, actually followed up these plans (Jørgensen, 2011). The Norwegian Supreme Audit Institution reported from their investigation that six

of the eleven public projects measured benefits, but only two of these could trace these measurements back to expected benefits (Riksrevisjonen, 2015). Overall, previous research points towards little focus on measurement of benefits.

Furthermore, the survey amongst ERP-clients shows that only 3 private companies focused on measuring intangible benefits to some or great extent (approx. 12% of the entire sample population), while the remaining respondents reported focusing on this to lesser or no extent. Vendors reported significantly more focus on this (46%) to some or great extent.

Little research was found regarding intangible benefits, but Olhager and Selldin reported that the majority of their sample population used methods with quantitative focus, i.e. methods for measuring tangible benefits (Olhager & Selldin, 2003).

Concerning measuring benefits, the results in this study are quite aligned with previous research. Overall, there is little focus on measuring benefits, and there is clearly room for improvement. Even though there are some variations between private companies, public companies, and vendors; less than half reported focusing on these BRM activities, at most. Almost none of the client respondents focused on intangible benefits. The open-ended questions of this survey revealed that many of the respondents felt that there was little focus on benefits realization, which would help explain the poor numbers concerning measurement of benefits. In addition, several mentioned that they had difficulties with measurement of benefits, or that they did not know how. This is likely to be an influencing factor as well.

8.6. Usage of the ERP-system

The survey revealed that the majority (69%) of the total population focused on users and usage of the system during their ERP-implementation, to some or great extent. According to the Norwegian Computer Society's survey, private companies reported significantly more focus on this compared to public companies, 79% vs 58% respectively.

The author did not find any previous research about this matter.

The results show that there is still room for improvement, but compared to the other results of this survey, lack of focus on usage of the system is not likely to be the major contributor to unsatisfactory execution of BRM.

8.7. Reasons for Implementing ERP

According to both surveys combined, the major reasons for implementing ERPs are replacing legacy systems, improving business processes, standardizing the enterprise platform, increasing quality of data & management information, and consolidating data & information.

With the exception of standardizing the platform, these results are aligned with the results Olberg found in his study⁴ (Olberg, 2013). However, improving quality of data & management information is the only reason represented amongst the top 10 benefits provided in chapter 2. On the other hand, all listed initiators in this study are represented in the five dimensions of ERP benefits, as presented by Shang & Seddon (Davenport, Harris, & Cantrell, 2004) (Shang & Seddon, 2000).

Looking at how the reported reasons for implementing ERP align with previous research is not relevant for this study, as this question was mainly included as a control variable. How the reasons influence the work done with benefits realization is of more interest, e.g. projects that aims towards “just” replacing legacy systems might have lesser focus on benefits realization compared to ERP-projects that aim towards reducing costs and improving business processes, etc. This matter will have to be investigated further due to the low number of respondents of this study.

8.8. Size of Company

According to the results of this study, the size of the company did have an influence on the results. Larger companies, compared to SMBs, were better at analyzing stakeholders, planning for benefits realization, setting aside dedicated resources, and focusing on intangible benefits. However, they were less satisfied with their own BRM efforts and leadership’s knowledge in this field. Medium sized companies were more focused on identifying benefits and effect goals systematically than companies of other sizes.

Mabert et al. investigated how company size affected ERP-implementations in the US manufacturing sector. Even though they did discover some differences in the ERP-implementations between companies of different sizes, they did not discover any statistical differences when looking at how the companies measured benefits through ROI or other investment analyses (Mabert, Soni, & Venkataramanan, 2003).

The report published by Mabert et al. only mentioned measurement of benefits in terms of using ROI or other investment analyses. The report did not include any other information about how the US manufacturing companies work with benefits realization.

The survey reports no significant differences regarding measurement of benefits post-implementation (with the exception of intangible benefits). This is similar to the study published by Mabert et al. However, the results of this study shows significant differences between the company sizes in other areas of BRM. The size of the company that is implementing the ERP-system will significantly affect the complexity of the project, available resources, the project schedule, affected parties, the budget,

⁴ To reduce the amount of information in this report, this part of Olberg’s study has not been covered by the relevant literature section (chapter 2).

and various other factors. This includes initial reasons for implementing ERP, level of module customization, implementation approach, as mentioned in Mabert's study (Mabert, Soni, & Venkataramanan, 2003). Consequently, the company size is likely to affect activities related to BRM as well, as shown in this study's results. Due to the low number of respondents, the findings in this study will have to be confirmed.

8.9. Public vs. Private Sector

As shown earlier, the survey revealed significant differences between private and public companies. Even though there are few public companies represented, the survey does show some trends.

Public companies were better at setting requirements for benefits realization, as well as setting aside dedicated resources, appointing benefits realization managers, and developing projects plans. They did also have a higher score on planning for measurement of benefits. In general, public companies seem to perform better than private companies in *facilitating* benefits realization.

On the other hand, private companies were slightly better at the identification phase of BRM, meaning identifying benefits, its stakeholders and assessing identified benefits with cost/benefit analyses, etc. In addition, they were more focused users and usage of the system post-implementation, and they were generally more satisfied with the work done with benefits realization compared to public companies, but still not very satisfied.

Based on these results alone, public companies seem to be a little more result oriented compared to private companies, whom seem to be more concerned with the effect of the ERP-implementation. One possible answer is that public ERP-projects have more guidelines and requirements for documenting certain processes, e.g. benefits realization plans, etc. Resources might be assigned up front, which means that the project team will have to document the spending and what they plan to use the resources to. On the other hand, private companies might be more focused on documenting the effects and justifying the investment.

The assumptions above fit the results of this survey, but will have to be investigated further through a more in-depth study.

The author did not find a lot of research on how the sector affects benefits realization in ERP-projects. However, IT in Practice 2014 shows that public companies generally score lower than private companies do concerning BRM. Knowledge about benefits realization amongst top- and middle leaders in public companies scored significantly lower compared to the private sector, while this survey gave equal results between the sectors. Furthermore, IT in Practice reports that private companies have a higher focus on identifying benefits and the use of cost/benefit-analysis to document this, which is aligned with this survey. IT in Practice also states that private companies appoint a

benefits realization manager more often than public companies, and they develop benefits realization plans more frequently, both of which contradicts the results of this study. Furthermore, the report states that public companies set aside dedicated resources for benefits realization slightly more often than private companies, which matches the results of this study (Rambøll Management Consulting, 2014).

As shown above, how the sector influences benefits realization practices is different between this study and the results in IT in Practice. The report focuses on more than just ERP-systems, and the population is somewhat different than the sample population in this study. In addition, the report does not cover all aspects of benefits realization. On the other hand, the IT in Practice is based on a much larger sample population than this study. Regardless, the differences between the studies enhances the need for further investigation on this matter.

8.10. Vendor vs. Client

When comparing the two surveys of this project, the ERP-vendors reported overall significantly more focus on BRM activities compared to ERP-clients. In particular, this applies to activities related to facilitating BRM, such as setting aside dedicated resources, appointing benefits realization managers, developing plans for BRM, and creating plans for measurement of benefits post-implementation. Generally, vendors reported more focus than clients on all activities besides measurement of benefits post-implementation and focus on usage of the ERP-system. However, the differences were not huge between clients and vendors on these two questions. Vendors and clients were equally dissatisfied with own BRM, and they both agreed on the importance of BRM.

Unfortunately, the author was not able to find any particular research regarding BRM amongst ERP-vendors.

The vendor respondents of this report did mostly work in a large company, therefore they are likely to participate in ERP-projects more often than the ERP-clients themselves, and they have their own established processes for BRM (as shown in chapter 6.3). Consequently, the vendors are likely to have significantly more focus on BRM than ERP-clients have, as confirmed in this study.

Interestingly, the clients showed more focus on measuring benefits and the actual usage of the system post-implementation. These activities are more directly connected with the effects of the project, rather than results. This might point towards more focus amongst vendors to document results rather than successful outcomes of the project. However, the difference between vendors and clients are minor, and more research is needed in order to support this conclusion.

When an ERP-vendor undergoes an ERP-project, they are doing it specifically for a client; therefore, one would expect the results of the two surveys to be more aligned with each other. One explanation

for this deviation could be that the clients of the Norwegian Computer Society's survey are not representable of the clients for which the vendors of ICT-Norway's survey have delivered ERP-systems. The different responses regarding use of external expertise for BRM supports this. Another reason could be lack of knowledge on BRM amongst the clients, and not being fully aware of the BRM activities in their own projects. Another reason relates to the representativeness and bias of the sample population; the vendors are asked to rate their own work with BRM, which increases that chance of more positive answers, which again would add to the diversity in results between the two surveys.

8.11. Other Influencing Factors

Some control variables did seem to have an impact on benefits realization in Norwegian ERP-projects, according to the Norwegian Computer Society's survey results. All of which will have to be confirmed through a more in-depth study due to the number of respondents.

The level of customization had an impact on to what extent the sample companies measured benefits post-implementation, to what extent they measured intangible benefits, and to what extent they focused on users and usage of the system. More customization is likely to lead to more complex implementation projects and solutions. Consequently, this is likely to make the work with benefits realization harder. Firstly, there will be fewer projects to compare against, which might reduce the usefulness of measurements. Secondly, the challenges that arise with higher levels of customization might negate the focus on benefits realization, and thirdly, more complex projects are likely have more complex BRM.

The age of the system did seem to have a slight effect on the results on the survey. For the most part, this had an influence on the identification stage of BRM; older systems did focus less than newer systems on identifying benefits, analyzing these benefits with cost/benefits-analyses and assessing affected parties. Newer systems were also more focused on measuring achieved benefits post-implementation. Even though the results show a slight improvement on some aspects of benefits realization, one cannot conclude that benefits realization practices have improved during the recent years, based on this study alone. The fact that the respondents with older systems might not remember everything as detailed as respondents with newer systems must also be taken into account.

With perfect information, the roles of the respondents should not affect the results of the questions asked in this study, as the roles of the respondents are irrelevant as to what extent BRM activities are performed. The role of the respondents did not influence the results of this study to any significant extent. The question on roles was included merely as a control variable.

How the choice of ERP-system and the use of external competence affects benefits realization needs to be investigated further. There is not enough data in the sample population to draw any conclusions on this matter.

Due to the low response rate, there is not enough data to investigate how different variables affected BRM amongst the vendors.

8.12. Barriers and Reasons for Excluding BRM

As previously mentioned, the survey included a set of open-ended questions that allowed the respondents to elaborate what they felt were their major challenges/barriers with benefits realization, and why they think benefits realization as a practice is excluded from many ERP-projects. The results gave valuable information that complimented the survey results.

The answers are the respondents' own opinions, and the responses partly speak for themselves. The author did not find any relevant previous research to compare the results on this. However, the results do help explain and/or elaborate the results of the previous questions.

The vendors (ICT-Norway's survey) reported barriers/challenges in all stages of BRM. There was no single barrier that stood out as major, or most common. While the results do not point to a single challenge that can be fixed with a single solution, they do highlight the importance of following up on BRM throughout the entire project.

As shown in chapter 5, the client respondents do agree on a few points, however. A majority of the respondents from private companies reported that they either felt the largest barriers were a lack of priority on benefits realization, not enough time/resources for BRM, or both. With little focus on benefits realization, there is obviously a likelihood that the majority of benefits realization processes will be affected. This includes setting requirements for benefits realization, systematic work to identify benefits and the related processes, setting aside dedicated resources, appointing benefits realization managers, developing plans, and measuring. The majority of the vendors that reported barriers related to executing BRM, also reported the lack of focus as a challenge.

Some client respondents also reported poor work prior to the project as barriers. This includes poor planning, and the leadership's understanding of benefits realization, of which the impact is described earlier in this report (chapter 8.1). Of the vendors that reported challenges prior to the project, ambiguity in expectations and needs were the most common ones.

Less frequent barriers were lack of experience with ERP, lack of competence with benefits realization, and problems with how to measure/quantify. All of the above mentioned barriers are likely to be

reduced by either change in priorities (as in increasing focus on benefits realization) or training/enhancing knowledge of BRM.

Some respondents reported that organizational changes or the size of the company were the most challenging barriers. This is understandable as larger organizational changes or larger companies require more drastic and complex changes, compared to smaller companies or isolated projects. One vendor reported large project time lines as a major barrier.

When the respondents were asked what they thought were the main reasons for why many ERP-projects did not include BRM, a vast majority reported lack of focus as the major reason. Half of the total 36 respondents that left a comment reported this. As explained a few paragraphs above, this is likely to affect all aspects of benefits realization. ERP-clients also reported on the lack of experience/knowledge with benefits realization, the lack of resources, and the lack of usefulness as the major reasons for why they thought many ERP-projects excluded BRM. The vendors reported challenges on how to measure benefits as the major reasons. As with the barriers above, most of these problems can be fixed with changes in priority and/or increased knowledge of BRM.

8.13. The Bigger Picture

So far, each aspect of benefits realization has been discussed separately. The following part will try to tie these aspects together.

In general, the respondents have reported that they are pleased with leadership's and the project team's knowledge on benefits realization. On the other hand, the majority reports little focus, priority, or resources set aside for BRM. Furthermore, few respondents reported that they had set specific requirements for the efforts with benefits realization and measurement of benefits. According to the clients, few used external help for benefits realization.

With regards to executing benefits realization management, there is clearly room for improvement across the different parts of the methodology. Approximately half of the sample population identified benefits and effect goals systematically, and half of the respondents reported that they assessed stakeholders and affected parties while identifying benefits. However, only 43% reported evaluating the identified benefits with cost/benefit analyses, of which the vendors are the main contributors.

When it comes to planning for and managing benefits, only two client respondents reported setting aside dedicated resources for benefits realization activities to some or great extent, and only 19% of the clients reported that they appointed a benefits realization manager to some or great extent. Only 15% developed a benefits realization plan to *some* extent. However, the vendors reported significantly better numbers, though not higher than 62% at most.

Approximately 46% of the entire population reported measuring achieved benefits to some or great extent post-implementation, even though only 36% reported having plans for this. Only 24% of the respondents reported that they focused on intangible benefits to some or great extent, of which the vendors are the major contributors. On the other hand, the majority (69%) focuses on usage of the ERP-system to some or great extent, which is a prerequisite to benefit from ICT-investments.

As a result, the minority (24%) rated their own efforts with benefits realization as satisfactory, while the rest reported that it had room for improvement or was deficient. None rated their own benefits realization efforts as “very good”. The results do point towards a likely coherence between satisfaction with BRM and the level of performed BRM activities in the project, though this will have to be investigated further.

Even though there is significant lack of focus and room for improvement when it comes to benefits realization in Norwegian ERP-projects, the majority agrees, to various degrees, that benefits realization and measurement of benefits is a critical prerequisite to realize planned benefits.

The author did not find any comprehensive research about benefits realization and BRM that covered all aspects of the methodology. However, the Norwegian Supreme Audit Institution’s qualitative investigation does, in fact, focus on all four stages of BRM. According to their investigation, all of the 11 projects described effect goals of their projects, but only a few (3) reported analyzing stakeholders and affected parties, as well as evaluating benefits through cost/benefits-analyses. The same three documented on executing all benefits realization activities throughout the project. The remaining eight projects could not document any other benefits realization activities, besides measuring benefits. However, they could not document that these measurements could be traced back to identified benefits (Riksrevisjonen, 2015).

Similarly, the respondents of this survey had a higher focus on identifying benefits and stakeholders, compared to the other benefits realization activities. They did also have a higher focus on measuring benefits, though few of these had made plans for these measurements.

8.14. Relevance of this Study and Generalizability

As explained earlier in this report, there are questions regarding the generalizability of this study due to the low response rates. With a low response rate, one cannot be certain that the results based on the sample population represent the population as a whole.

However, what about the usefulness and the relevance of this study?

Overall, the results of the study are quite aligned with previous research, even though the author was not able to find previous research on all aspects discussed. Furthermore, the representativeness of the results improves slightly as a result of minor variation in the answers; each answer indicates which way the scale tips. The combined results are even clearer.

Overall, the results can be considered as a random sample of the total population. The sample is according to previous research, bearing in mind that each individual result does not vary too much, which makes this survey somewhat useful in the way it indicates some trends for further research. The results of the study prove that there is a need for further research in the field of benefits realization in ERP-projects. This is indicated by the results, which show significant room for improvement, and which need to be investigated further towards causes and potentials, and to confirm the findings of this study.

9. Conclusions

This study tries to identify as to what extent Norwegian companies work systematically with benefits realization in order to maximize achieved benefits from their ERP-implementations. As some qualitative research already exists, it was decided to use a quantitative method to investigate this matter. Furthermore, the study tried to investigate the attitude towards BRM amongst Norwegian companies.

The results show that the majority of the respondents are fairly satisfied with leadership's and the project team's knowledge on benefits realization. However, many feel that benefits realization does not receive enough focus, priority or resources. Still, the majority of the respondents agree, to various degrees, that systematic work with benefits realization is critical in order to achieve expected benefits of an ERP-implementation.

Furthermore, the study concludes that there is significant room for improvement concerning how the companies execute benefits realization, including all stages of BRM. This also includes both ERP-clients and ERP-vendors, though the latter reported significantly more focus on BRM activities compared to the former.

Some parts of the methodology received more focus than others, such as identifying benefits and measuring benefits post-implementation. Other BRM activities, such as measuring intangible benefits, were only focused on by a small minority of the respondents.

In addition to the lack of focus, priority and resources, several other factors seem to have an influence on BRM. This includes sector, size of company, leadership's knowledge about benefits realization, when the system was implemented (how old it is), and level of customization, of which leadership's knowledge on BRM had the largest influence on the results.

The results are not automatically generalizable due to a limited number of respondents. Even though the surveys were distributed to a large amount of potential respondents (that fit the respondent profile), the surveys got far fewer responses than expected. Due to the time limit of this thesis, the author did not have the opportunity to gather additional respondents to enhance the results' representativeness. However, the majority of the results are in line with previous research, and the results give a clear indication of to what extent BRM is conducted in Norwegian ERP-projects.

Overall, the study reveals significant room for improvement regarding BRM in Norwegian ERP-projects, though it is necessary to confirm the results and to investigate this matter further.

The following sections summarize the author's recommendations for further research, and practical implications based on this study's results, including the respondents' own recommendations and lessons learned.

9.1. Practical Implications

With the lack of generalizability, this study does not really have any practical implications. This is mainly because one cannot guarantee to a certain extent that the results of this study represent the population as a whole. However, under the assumption that the results of this study actually are representative, the author found one major practical implication:

The study shows significant room for improvement concerning benefits realization; and the lack of focus, priority and resources were reported as major concerns. Consequently, the author believes that leadership needs to be more aware of how an ERP-project benefits from proper benefits realization. More training on BRM will help projects adapt to benefits realization practices, and more awareness of the values resulting from proper benefits realization is likely to increase focus on this methodology. More frequent use of benefits realization overall might also help enhance an industry-wide focus, thus likely increasing the use of BRM practices. This would also allow people to share experiences and support one another more than they do today.

9.2. Respondents' Own Recommendations

The respondents of the survey were allowed to elaborate what they felt were their major lessons learned, as well as what recommendations they had to increase the focus on benefits realization in the industry.

That BRM needed proper focus was the most common lesson learned amongst the client respondents (the Norwegian Computer Society's survey). Some respondents reported that they needed to be better at setting aside time and resources for benefits realization, and that the leadership needed to be involved to a higher degree. Furthermore, some respondents highlighted the importance of proper planning for benefits realization, including setting proper requirement specifications based on identified benefits, developing business cases, and conducting more thorough analyses before making decisions. Other lessons learned were that measurements are rarely accurate enough according to business cases, unless enough time has been spent developing these. Some mentioned good competence as a prerequisite for proper benefits realization.

The vendor respondents were very clear in what they felt were their major lessons learned: Start with benefits realization and focus on it from day one. At the same time, involve leadership from day one. Furthermore, the ERP-benefits have to be identified and specified properly in order to improve communication of project goals, and to conduct meaningful measurements.

In order to increase focus on benefits realization, the most common recommendation was more involvement from leadership and the organization as a whole. Both the vendors and clients agreed on this. If the leadership and the organization are more focused on benefits realization, they are also more likely to acquire more knowledge on BRM and target more towards expected benefits. Two respondents also recommended focusing more on benefits realization during training (not specifically related to ERP/benefits realization), and refer to books, publications and other media for success stories and useful information.

Furthermore, some respondents (from both surveys) reported that they recommend the project team to be more specific on what benefits the project is supposed to achieve, by whom and why. Some also recommended more focus on the actual benefits early in the project, and base major priorities on these. In general, they recommend steering towards more specific goals and benefits, which in turn will increase focus on BRM. Other client respondents also recommend challenging the vendor to concentrate more on benefits realization instead of just project results.

Specifically, the vendors recommend communicating the usefulness of BRM, particularly towards leadership.

Furthermore, some of the client respondents recommend continuous focus on identified benefits throughout the project and after project takeover, e.g. by recording these benefits in a log for monitoring and management. Consequently, the project team will have to focus on BRM through the entire project life cycle.

To conclude, “focus” and “planning” are key words in the respondents’ own recommendations and lessons learned. Benefits realization must be facilitated properly, planned for, and receive the necessary attention from leadership and the organization as a whole, from day one.

9.3. Recommendations for Further Research

- Due to the limited number of respondents, the results of this study will have to be confirmed. The same quantitative surveys can be distributed, but need more respondents to confirm this study's findings. Due to the time limit of this study, the author did not have the opportunity to do this himself, even though every effort has been made.
- Few ERP-clients reported using external competence for BRM. As discussed earlier in this report, use of external help has both pros and cons that could affect the ERP-project both ways. How this affects benefits realization efforts is of interest.
- Similarly, this study was not able to investigate how the choice of ERP-system affects benefits realization activities.
- The study found several differences between private and public companies. First of all, these findings will have to be confirmed. Secondly, it would be interesting to research the reasons behind these deviations. Both sectors had their own areas of BRM where they were better than the other sector, thus both sectors have areas where they can learn from one another.
- This study focused on benefits realization alone. It could be interesting to investigate how much better best-in-class Norwegian companies perform with regards to benefits realization, compared to other companies. How much does BRM actually improve the project's results and effects? This information could either prove the necessity of BRM, or disprove it. This study was conducted based on a premise that systematic work with BRM is a prerequisite to realize expected benefits. Research from other countries *indicates* that BRM has a positive influence on ERP-projects. However, not many quantitative research papers specifically support this premise.
- Further improvement and benefits realization after the initial post-implementation evaluation has not been included in this study. How this phase of BRM affects ERP-projects will have to be investigated.

10. References

- Accent Software Inc. (2015, January 5). *ERP software helps improve decision-making*. Retrieved April 2015, from <http://www.accenterp.com/general/erp-software-helps-improve-decision-making/>
- Aldrich, J. (2013, March 1). *Implementing ERP Software to Improve Customer Service*. Retrieved April 2015, from <http://panorama-consulting.com/implementing-erp-software-to-improve-customer-service/>
- Bond, B., Genovese, Y., Miklovic, D., Wood, N., Zrimsek, B., & Rayner, N. (2000, October 4). *ERP is dead - long live ERP II*. Gartner Group.
- Brown, C. V., Dehayes, D. W., Hoffer, J. A., Wainwright Martin, E., & Perkins, W. C. (2012). *Managing Information Technology 7th Ed*. Prentice Hall.
- Davenport, T. H., Harris, J. G., & Cantrell, S. (2004). *The Return of Enterprise Solutions: The Director's Cut*. Accenture.
- Delone, W. H., & McLean, E. R. (2003). The DeLone and McLean Model of Information Systems Success: A Ten-Year Update. *Journal of Management Information Systems / Spring 2003, Vol. 19, No. 4*, 9–30.
- Det Teknisk-Natervitskaplege Fakultet. (2013). *Vegvisar for Bachelor- og Masteroppgåva*. Universitetet i Stavanger.
- Devoteam. (2010, 10 12). *IT-Gevinstene Uteblir*. Retrieved April 2015, from <https://www.ntbinfo.no/release?releaseId=109205>
- Eltvik, C. L. (2013). *Gevinster og kostnader ved implementering av et ERP-system*. Høgskolen i Buskerud.
- European Commission. (2014, 12). *What is an SME?* Retrieved from European Commission: http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/sme-definition/index_en.htm
- Folke-Olsen, R. (2012). *Hvordan driftsette et ERP-prosjekt? En casestudie i Forsvaret*. Universitetet i Agder.
- IBM. (2010). *Maximizing enterprise resource planning ROI: A guide for midsize companies*. IBM Global Business Services.
- Jutras, C. (2007). *The Total Cost of ERP Ownership in Mid-Size Companies*. Aberdeen Group.

- Jutras, C. (2008). *The 2008 ERP in Manufacturing Benchmark Report*. Aberdeen Group.
- Jutras, C. (2009). *Measuring the ROI of ERP in SMB*. Aberdeen Group.
- Jørgensen, M. (2011). *Simula Research Laboratory*. Retrieved April 2015, from Lønner Det Seg å Investere I IT-Prosjekter? Hva Vet Vi Om ROI-Prediksjoner?:
<https://www.simula.no/publications/1%C3%B8nner-det-seg-%C3%A5-investere-i-it-prosjekter-hva-vet-vi-om-roi-prediksjoner>
- Letavec, C. (2013, October 2). *An Introduction to Benefits Realization Management*. Retrieved March 2015, from <http://www.slideshare.net/craigletavec/an-introduction-to-benefits-realization-management>
- Mabert, V. A., Soni, A., & Venkataramanan, M. (2003). *The impact of organization size on enterprise resource planning (ERP) implementations in the US manufacturing sector*. Elsevier Science Ltd.
- Monk, E., & Wagner, B. (2007). *Concepts in Enterprise Resource Planning 3rd. Ed.* Course Technology.
- Olberg, T. (2013). *Forretningssystemer i Norge*. Herbert Nathan & Co.
- O'Leary, D. E. (2004). Enterprise Resource Planning (ERP) Systems: An Empirical Analysis of Benefits. *Journal of Emerging Technologies in Accounting Vol. 1*, 63-72.
- Olhager, J., & Selldin, E. (2003). Enterprise resource planning survey of Swedish manufacturing firms. *European Journal of Operational Research* 146, 365-373.
- Rambøll Management Consulting. (2014). *IT i Praksis 2014*.
- Riksrevisjonen. (2015). *Riksrevisjonens undersøkelse av arbeid med gevinstrealisering i statlige ikt-prosjekter*. Fagbokforlaget AS.
- Ryan Nelson, University of Virginia. (2006, March 6). *Evaluating Project Success, Failure -- and Everything in Between*. Retrieved March 2015, from <http://www.computerworld.com/article/2562215/it-management/evaluating-project-success--failure----and-everything-in-between.html>
- Ryvarden, E. (2005, Mai 19). *Mange er misfornøyd med sitt ERP-system*. Retrieved April 2015, from <http://www.digi.no/kortnytt/2005/05/19/mange-er-misfornoyd-med-sitt-erp-system>
- Sadagopan, S. (2003). *Enterprise Resource Planning*. Indian Institute of Information Technology.

Shang, S., & Seddon, P. B. (2000). *A Comprehensive Framework for Classifying the Benefits of ERP Systems*. AMCIS 2000 Proceedings.

Skjelvan, R. (2014). ERP. *KPMGs Lederundersøkelse 2014*, 14-15.

Wailgum, T. (2007, March 7). *ERP Definition and Solutions*. Retrieved March 2015, from <http://www.cio.com/article/2439502/enterprise-resource-planning/erp-definition-and-solutions.html>

Ward, J., De Hertogh, S., & Viaene, S. (2007). Managing Benefits from IS/IT Investments: an Empirical Investigation into Current Practice. *Proceedings of the 40th Hawaii International Conference on System Sciences - 2007*.

Wiggen, N. H. (2009). *Masteroppgave: Evaluering av IKT-investeringer i norsk kommunal sektor ved hjelp av balansert målstyring*. Universitetet i Agder.

Wikipedia.org - Total Cost of Ownership. (2015, March 27). Retrieved March 2015, from http://en.wikipedia.org/wiki/Total_cost_of_ownership

Wysocki, R. K. (2012). *Effective Project Management*. John Wiley & Sons, Inc.

11. Appendixes

Contents

Appendix I – The Norwegian Computer Society’s Survey (Norwegian)

Appendix II – The Norwegian Computer Society’s Survey (translated)

Appendix III – ICT-Norway’s Survey (Norwegian)

Appendix IV – ICT-Norway’s Survey (translated)

Appendix I – The Norwegian Computer Society’s Survey (Norwegian)

This appendix includes an export of the survey from SurveyXact.dk. The export has a different formatting than what was presented to the respondents:

Velkommen til en spørreundersøkelse om

Gevinstrealisering ifm ERP-prosjekter i norske bedrifter.

(Undersøkelsen vil ta ca 5-10 minutter).

Vennligst legg igjen din epostadresse

Undersøkelsen er en del av en masteroppgave innen Industriell Økonomi ved

Universitetet i Stavanger. Spørreundersøkelsen blir gjennomført i samarbeid med **Den Norske Dataforening**.

Resultatene vil blant annet bli offentliggjort på Dataforeningens hjemmesider.

Hvem ønsker vi å undersøke: Alle norske virksomheter som har investert penger i ERP-prosjekter.

Hvem ønsker vi at skal svare på undersøkelsen: Personer som har hatt en ledende eller sentral rolle i implementeringen av ERP-prosjektet.

All data i forbindelse med undersøkelsen vil bli behandlet konfidensielt og slettet etter etterbehandlings slutt. Du vil forbli anonym også ved eventuell offentliggjøring av resultater.

Takk for deltakelsen og lykke til!

Mvh, Magne Thorsell Smedsrud

Universitetet i Stavanger

Christian Torp

Chief Operations Officer (COO), Den Norske Dataforening

I første omgang ønsker vi å finne ut litt om ERP-systemet dere bruker samt omstendighetene rundt valg av ERP-system og gevinster relatert til prosjektet.

Hvilket ERP-system bruker dere?

- (1) ASPECT4
- (2) DRIW
- (3) IFS
- (4) INFOR
- (5) Mamut One Enterprise
- (6) Microsoft Dynamics AX
- (7) Microsoft Dynamics NAV
- (8) Nexstep
- (9) Oracle e-Business Suite
- (10) RAMBASE
- (11) SAP Business One
- (12) SAP Business Suite
- (13) Visma Business
- (14) Visma Global
- (15) Visma.net
- (16) Xledger
- (17) Andre _____

Hva var årsaken(e) til ERP-investeringen? Velg alternativene som passer

- (1) Erstatte foreldet teknologi.
- (2) Redusere kostnader.
- (3) Konsolidere data/informasjon (lagre data én gang på ett sted) og/eller bedre synlighet av data på tvers av organisasjonen.
- (4) Forbedre forretningsprosesser.
- (5) Fisjon eller fusjon.
- (6) ERP var et billigere alternativ enn en dyrere oppgradering av eksisterende systemer.
- (7) Standardisere plattformen i konsernet.
- (8) Øke datagrunnlaget og kvaliteten på styringsinformasjon.
- (9) ERP-implementeringen var en del av en strategisk endring.
- (10) Understøtte nye forretningsfunksjoner.
- (11) Annet _____

I hvilken grad var dere nødt til å gjøre tilpasninger av ERP-systemet?

- (1) I ingen grad
- (2) I mindre grad
- (3) I noen grad
- (4) I meget høy grad

Hvor lenge siden er det ERP-systemet ble tatt i bruk for første gang?

- (1) Mindre enn et år siden
- (2) 1-3 år siden
- (3) 3-5 år siden
- (4) 5-8 år siden
- (5) Mer enn 8 år siden

På de neste 4 sidene ønsker vi å undersøke litt mer rundt selve arbeidet med gevinstrealisering og dine tanker rundt dette arbeidet.

NB! Tekstbokser kan utvides ved å dra i hjørnet nederst til høyre.

Forutsetninger for gevinstrealisering

	I ingen grad	I mindre grad	I noen grad	I meget høy grad
I hvilken grad mener du prosjekt-teamet og/eller ledelsen innehadde nødvendig kompetanse ifm. gevinstrealisering?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
I hvilken grad ble det stilt krav til arbeidet med gevinstrealisering som en del av ERP-prosjektet og arbeidet med måling av gevinster i etterkant av prosjektet?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
I hvilken grad ble arbeidet med gevinst og gevinstrealisering gjort av leverandøren?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>

Arbeidet med Gevinstrealisering

Identifisering av gevinster

	I ingen grad	I mindre grad	I noen grad	I meget høy grad
I hvilken grad ble det jobbet systematisk for å identifisere gevinster og effekt mål?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
I hvilken grad ble det jobbet systematisk for å kartlegge berørte grupper og interessenter ifm identifiserte gevinster?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
I hvilken grad ble det utarbeidet en lønnsomhetsanalyse (anslåtte kostnader og nyttevirknninger) av identifiserte gevinster?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>

Styring og oppfølging av arbeidet med gevinster

	I ingen grad	I mindre grad	I noen grad	I meget høy grad
I hvilken grad ble det satt av dedikerte midler til gevinstrealisering og måling av gevinst?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
I hvilken grad ble arbeidet med gevinstrealisering forankret i en «gevinstansvarlig»?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
I hvilken grad ble det opparbeidet en gevinstrealiseringsplan (altså et helhetlig opplegg for styring og oppfølging av arbeidet med å realisere gevinster)?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>

Måling av gevinster

I ingen grad I mindre grad I noen grad I meget høy grad

I hvilken grad ble det etablert planer om måling av gevinst som en del av ERP-implementeringen?

(1) (2) (3) (4)

I hvilken grad ble det faktisk målt oppnådde gevinster i etterkant at ERP-implementeringen som kan spores tilbake til forventede gevinster?

(1) (2) (3) (4)

I hvilken grad ble det fokusert på måling av «myke gevinster» (Eller «uhåndgripelige gevinster», Engelsk: «Intangible Benefits»)? *

(1) (2) (3) (4)

* Myke gevinster er gevinster som ofte er vanskelige å måle direkte, selv om de kan være like verdifulle. Eksempler: Økt tilfredshet blant ansatte, økt beslutningsgrunnlag og informasjonsflyt, standardisering av prosesser, fleksibilitet i IT-infrastruktur, konsolidering av data, lettere oppkjøp av andre bedrifter, globalisering, osv.

Bruk av systemet

I ingen grad I mindre grad I noen grad I meget høy grad

I hvilken grad ble det fokusert på brukere og bruken av systemet i etterkant av implementeringen for å oppnå gevinster?

(1) (2) (3) (4)

Generelt sett, hvordan vil du vurdere arbeidet som ble gjort med gevinstrealisering og måling av gevinst?

- (1) Mangelfullt
- (2) Kunne vært bedre
- (3) Tilstrekkelig
- (4) Veldig bra

Hva opplevde du var de største barrierene/utfordringene ved arbeidet med gevinstrealisering?

Forklar

Studier tyder på at mange ERP-implementeringsprosjekter ikke inkluderer måling av gevinst som en del av prosjektplanene/initiell business case/etc. Hva tror du er de største årsakene til dette? Vennligst forankre svaret i egne erfaringer, så langt det lar seg gjøre.

Hva er dine viktigste lessons learned ifm arbeid med gevinstrealisering?

Ta stilling til følgende påstand: «Systematisk og målrettet arbeid med gevinstrealisering gjennom hele ERP-implementeringsprosjektet er en kritisk forutsetning for at planlagte gevinster skal kunne realiseres».

- (1) Uenig
- (2) Ganske uenig
- (3) Til dels uenig
- (4) Til dels enig
- (5) Ganske enig
- (6) Enig

Har du noen anbefalinger om hvordan en kan øke fokuset på gevinstrealisering og måling av gevinst i norske ERP-prosjekter?

Til slutt ønsker vi å vite litt om din stilling og bedriften du jobber i/med

Min rolle i virksomheten er

- (1) Daglig leder
- (2) Økonomiansvarlig
- (3) IT-ansvarlig
- (4) Annen ledende funksjon
- (5) IT-teknisk stilling
- (6) ERP-bruker
- (7) Ingen av de overnevnte alternativene _____

Hvor mange ansatte er det i virksomheten?

- (1) Mindre enn 10
- (2) 10-50
- (3) 51-250
- (4) Mer enn 250

Er virksomheten du jobber i privat eller offentlig?

- (1) Privat
- (2) Offentlig

Andre kommentarer før undersøkelsen avsluttes?

Det var det!

Tusen takk for deltakelsen!

Du vil nå bli omdirigert til Den Norske Dataforenings hjemmesider.

Appendix II – The Norwegian Computer Society’s Survey (translated)

This appendix includes an English translation of the survey export from SurveyXact.dk. The export has a different formatting than what was presented to the respondents. :

Welcome to a survey about

Benefits Realization in Norwegian ERP-projects.

(The survey will take approximately 5-10 minutes).

Please leave your email address:

The survey is a part of a Master’s thesis in Industrial Economics at the University of Stavanger. The survey will be conducted in collaboration with **the Norwegian Computer Society.**

The results will be published on the Norwegian Computer Society’s home pages.

Whom do we want to survey: All Norwegian Companies that have invested in ERP-projects.

Who do we want answering this survey: Personnel that have had a key role during the implementation of the ERP-project.

All data in conjunction with the survey will be treated confidentially and deleted after the data has been processed. You will remain anonymous in the event of a publication of this survey’s results.

Thanks a lot for participating, and good luck!

Best regards, Magne Thorsell Smedsrud
University of Stavanger

Christian Torp
Chief Operations Officer (COO), the Norwegian Computer Society

At first, we wish to know a bit about the ERP-system you use and the circumstances around choice of ERP-system and benefits related to it.

Which ERP-system do you use?

- (1) ASPECT4
- (2) DRIW
- (3) IFS
- (4) INFOR
- (5) Mamut One Enterprise
- (6) Microsoft Dynamics AX
- (7) Microsoft Dynamics NAV
- (8) Nexstep
- (9) Oracle e-Business Suite
- (10) RAMBASE
- (11) SAP Business One
- (12) SAP Business Suite
- (13) Visma Business
- (14) Visma Global
- (15) Visma.net
- (16) Xledger
- (17) Other _____

What were the reason(s) behind the ERP-implementation? Please select the suitable alternative(s) that fits:

- (1) Replace legacy systems.
- (2) Reduce costs.
- (3) Consolidate data/information (save data in one place once) and/or improve visibility of data across the enterprise
- (4) Improve business processes.
- (5) Fusion.
- (6) ERP was a cheaper alternative than a more expensive upgrade of existing systems.
- (7) Standardize enterprise platform.
- (8) Increase quality of data and management information
- (9) The ERP-implementation was part of a strategic change.
- (10) Support new business functions.
- (11) Other _____

To what extent did you have to customize your ERP-solution?

- (1) In no extent
- (2) To lesser extent
- (3) To some extent
- (4) To great extent

When was the ERP-system put into use for the first time?

- (1) Less than 1 year ago
- (2) 1-3 years ago
- (3) 3-5 years ago
- (4) 5-8 years ago
- (5) More than 8 years ago

On the next 4 pages we wish to investigate the work done with benefits realization in the ERP-project and your thoughts around this work.

NB! Text boxes can be expanded by dragging the bottom right corner.

Prerequisites for benefits realization

	In no extent	To lesser extent	To some extent	To great extent
To what extent do you think the project-team and/or leadership possess the necessary knowledge about benefits realization and measurement of benefits?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
To what extent were there requirements with regards to benefits realization as a part of the ERP-project, or measurement of benefits post-implementation?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
To what extent were the work with benefits and benefits realization done by the provider/vendor?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>

The work with Benefits Realization

Identifying Benefits

	In no extent	To lesser extent	To some extent	To great extent
To what extent were benefits and effect goals identified systematically?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
To what extent were affected parties identified systematically with regards to identified benefits?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
To what extent was a cost/benefit analysis made based on the identified benefits?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>

Monitoring and Managing Benefits Realization

	In no extent	To lesser extent	To some extent	To great extent
To what extent were dedicated resources set aside for benefits realization and measurement of benefits?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
To what extent were the work with benefits realization sourced from a benefits realization manager?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
To what extent was a benefits realization plan developed?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>

Measurement of Benefits

	In no extent	To lesser extent	To some extent	To great extent
To what extent did you make a plan for measurement of benefits?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
To what extent did you actually measure benefits that can be traced back to expected benefits?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
To what extent did you focus on measuring intangible benefits?*	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>

* Intangible benefits are benefits that are usually harder to measure directly, even though they can be just as beneficial. E.g. Increased employee morale, better decision data and flow of information, standardization of processes, flexible IT-infrastructure, consolidation of data, easier acquisition of other companies, globalization, etc.

Usage of the system

	In no extent	To lesser extent	To some extent	To great extent
To what extent did you focus on users and usage of the system post-implementation in order to generate benefits?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>

Generally speaking, how would you rate the work done with benefits realization and measurement of benefits?

- (1) Deficient
- (2) Could be better
- (3) Sufficient
- (4) Very good

**What did you experience as the biggest barriers/challenges with regards to benefits realization?
Please elaborate.**

**According to research, many ERP-projects do not include measurement of benefits as a part of the project plans/initial business case/etc. What do you think are the major reasons for this?
Please root the answer in your own experiences, if possible.**

What are your most important lessons learned concerning benefits realization in ERP-projects?

Please consider the following statement: "Systematic and targeted work with benefits realization through the entire ERP-project is a *critical* prerequisite to realize planned benefits."

- (1) Totally disagree
- (2) Rather disagree
- (3) Partly disagree
- (4) Partly agree
- (5) Rather agree
- (6) Strongly agree

Do you have any recommendations on how to increase the focus on benefits realization and measurement of benefits in Norwegian ERP-projects?

Finally, we wish to know a little bit about the company you work for and your position

My role in the company is:

- (1) CEO
- (2) CFO
- (3) IT-Manager
- (4) Other leading function
- (5) IT-technician
- (6) ERP-use
- (7) None of the above_____

How many employees does your company have?

- (1) Less than 10
- (2) 10-50
- (3) 51-250
- (4) More than 250

Is your company in the private or public sector?

- (1) Private
- (2) Public

Other comments before we end the survey?

That's it!

Thanks a lot for participating!

You will now be directed to the Norwegian Computer Society's home pages.

Appendix III – ICT-Norway's Survey (Norwegian)

This appendix includes an export of the survey from SurveyXact.dk. The export has a different formatting than what was presented to the respondents:

Velkommen til en spørreundersøkelse om
Gevinstrealisering blant norske ERP-leverandører
(Undersøkelsen vil ta ca. 5-10 minutter).

Vennligst legg igjen din epostadresse

Undersøkelsen er en del av en masteroppgave innen Industriell Økonomi ved Universitetet i Stavanger. Spørreundersøkelsen gjennomføres i samarbeid med **IKT-Norge**. Resultatene vil bli offentliggjort på IKT-Norge sine hjemmesider i første halvdel av Juni 2015.

Hvem ønsker vi å undersøke: Alle norske virksomheter som leverer ERP-løsninger.

Hvem ønsker vi at skal svare på undersøkelsen: Personer som har hatt en ledende eller sentral rolle i leveranse av ERP-systemer.

All data i forbindelse med undersøkelsen vil bli behandlet konfidensielt og slettet etter etterbehandlings slutt. Du vil forbli anonym også ved eventuell offentliggjøring av resultater.

Takk for deltakelsen og lykke til!

Mvh, Per Morten Hoff
Generalsekretær IKT-Norge

Magne Thorsell Smedsrud
Universitetet i Stavanger

I første omgang ønsker vi å finne ut litt om ERP-systemet dere leverer samt omstendighetene rundt valg av ERP-system og tilpasning av det.

Hvilke(t) ERP-System leverer dere?

- (1) ASPECT4
- (2) DRIW
- (3) IFS
- (4) INFOR
- (5) Mamut One Enterprise
- (6) Microsoft Dynamics AX
- (7) Microsoft Dynamics NAV
- (8) Nexstep
- (9) Oracle e-Business Suite
- (10) RAMBASE
- (11) SAP Business One
- (12) SAP Business Suite
- (13) Visma Business
- (14) Visma Global
- (15) Visma.net
- (16) Xledger
- (17) Andre _____

Hva oppfatter du som de vanligste årsakene til ERP-investeringer? Velg alternativene som passer

- (1) Erstatte foreldet teknologi
- (2) Redusere kostnader
- (3) Konsolidere data/informasjon (lagre data én gang på ett sted) og/eller bedre synlighet av data på tvers av organisasjonen
- (4) Forbedre forretningsprosesser
- (5) Fisjon eller fusjon
- (6) ERP var et billigere alternativ enn en dyrere oppgradering av eksisterende systemer.
- (7) Standardisere plattformen i konsernet
- (8) Øke datagrunnlaget og kvaliteten på styringsinformasjon
- (9) ERP-implementeringen var en del av en strategisk endring.
- (10) Understøtte nye forretningsfunksjoner
- (11) Annet _____

I hvilken grad er dere nødt til å gjøre tilpasninger av ERP-systemene dere leverer?

- (1) I ingen grad
- (2) I mindre grad
- (3) I noen grad
- (4) I meget høy grad

På de neste 4 sidene ønsker vi å undersøke litt mer rundt selve arbeidet med gevinstrealisering og dine tanker rundt dette arbeidet.

NB! Tekstbokser kan utvides ved å dra i hjørnet nederst til høyre

Forutsetninger for gevinstrealisering

	I ingen grad	I mindre grad	I noen grad	I meget høy grad
I hvilken grad opplever du at kunden innehar nødvendig kompetanse innenfor gevinstrealisering og måling av gevinst?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
I hvilken grad opplever du at leverandøren/servicepartneren av ERP-systemet innehar nødvendig kompetanse innenfor gevinstrealisering og måling av gevinst?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
I hvilken grad ble det benyttet egne etablerte prosesser for gevinstrealisering?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
I hvilken grad stiller kunden krav til arbeidet med gevinstrealisering som en del av ERP-prosjektet og arbeidet med måling av gevinster i etterkant av prosjektet?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
I hvilken grad blir arbeidet med gevinst og gevinstrealisering gjort av kunden?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>

Arbeidet med Gevinstrealisering

Identifisering av gevinster

	I ingen grad	I mindre grad	I noen grad	I meget høy grad
I hvilken grad jobbes det systematisk for å identifisere gevinster og effektmål?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
I hvilken grad jobbes det systematisk for å kartlegge berørte grupper og interessenter ifm identifiserte gevinster?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
I hvilken grad blir det utarbeidet en lønnsomhetsanalyse (anslåtte kostnader og nyttevirkninger) av identifiserte gevinster?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>

Styring og oppfølging av arbeidet med gevinster

	I ingen grad	I mindre grad	I noen grad	I meget høy grad
I hvilken grad settes det av dedikerte midler til gevinstrealisering og måling av gevinst?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
I hvilken grad er arbeidet med gevinstrealisering forankret i en «gevinstansvarlig»?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
I hvilken grad opparbeides det en gevinstrealiseringsplan (altså et helhetlig opplegg for styring og oppfølging av arbeidet med å realisere gevinster)?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>

Måling av gevinster

	I ingen grad	I mindre grad	I noen grad	I meget høy grad
I hvilken grad etableres det planer om måling av gevinst som en del av ERP-Implementeringen?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
I hvilken grad blir det faktisk målt oppnådde gevinster i etterkant at ERP-implementeringen som kan spores tilbake til forventede gevinster?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
I hvilken grad fokuseres det på måling av «myke gevinster» (Eller «uhåndgripelige gevinster», Engelsk: «Intangible Benefits»)? *	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>

* Myke gevinster er gevinster som ofte er vanskelige å måle direkte, selv om de kan være like verdifulle. Eksempler: Økt tilfredshet blant ansatte, økt beslutningsgrunnlag og informasjonsflyt, standardisering av prosesser, fleksibilitet i IT-infrastruktur, konsolidering av data, lettere oppkjøp av andre bedrifter, globalisering, osv.

Bruk av systemet

	I ingen grad	I mindre grad	I noen grad	I meget høy grad
I hvilken grad fokuseres det på brukere og bruken av systemet i etterkant av implementeringen for å oppnå gevinster?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>

Se tilbake på forrige implementeringsprosjekt du var en del av. Generelt sett, hvordan vil du vurdere arbeidet med gevinstrealisering og måling av gevinst?

- (1) Mangelfullt
- (2) Kunne vært bedre
- (3) Tilstrekkelig
- (4) Veldig bra

Hva opplever du som de største barrierene/utfordringene ved arbeidet med gevinstrealisering?

Forklar

Studier tyder på at mange ERP-implementeringsprosjekter ikke inkluderer måling av gevinst som en del av prosjektplanene/initiell business case/etc. Hva tror du er de største årsakene til dette? Vennligst forankre svaret i egne erfaringer, så langt det lar seg gjøre.

Hva er dine viktigste lessons learned ifm arbeid med gevinstrealisering?

Ta stilling til følgende påstand: «Systematisk og målrettet arbeid med gevinstrealisering gjennom hele ERP-implementeringsprosjektet er en kritisk forutsetning for at planlagte gevinster skal kunne realiseres».

- (1) Uenig
- (2) Ganske uenig
- (3) Til dels uenig
- (4) Til dels enig
- (5) Ganske enig
- (6) Enig

Har du noen anbefalinger om hvordan en kan øke fokuset på gevinstrealisering og måling av gevinst i norske ERP-prosjekter?

Til slutt ønsker vi å vite litt om din stilling og bedriften jo jobber i/med

Min rolle i virksomheten er

- (2) CIO
- (3) IT-sjef
- (1) IT-prosjektleder
- (5) Annen ledende funksjon
- (6) IT-teknisk stilling
- (4) Annet _____

Jeg har jobbet med ERP-systemer i

- (1) 0-5 år
- (2) 5-10 år
- (3) 10-15 år
- (4) 15-20 år
- (5) Lenger enn 20 år

Kan du anslå din bedrifts årlige omsetning [Mnok]?

- (1) 0-50
- (2) 50-250
- (3) 250-1000
- (4) Mer enn 1000

Våre kunder er hovedsakelig

- (1) i privat sektor
- (2) i offentlig sektor
- (3) likt fordelt mellom begge sektorer

Andre kommentarer før undersøkelsen avsluttes?

Det var det!

Tusen takk for deltakelsen!

Du vil nå bli omdirigert til IKT-Norges hjemmesider.

Appendix IV – ICT-Norway’s Survey (translated)

This appendix includes an English translation of the survey export from SurveyXact.dk. The export has a different formatting than what was presented to the respondents:

Welcome to a survey about

Benefits Realization amongst Norwegian ERP-providers.

(The survey will take approximately 5-10 minutes).

Please leave your email address:

The survey is a part of a Master’s thesis in Industrial Economics at the University of Stavanger. The survey will be conducted in collaboration with **ICT-Norway**

The results will be published on ICT-Norway’s home pages.

Whom do we want to survey: All Norwegian Companies that deliver ERP-solutions.

Who do we want answering this survey: Personnel that have had a key role during delivery of ERP-systems.

All data in conjunction with the survey will be treated confidentially and deleted after the data has been processed. You will remain anonymous in the event of a publication of this survey’s results.

Thanks a lot for participating, and good luck!

Best regards, Per Morten Hoff
General Secretary, ICT-Norge

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At first, we wish to know a bit about the ERP-system you deliver and the circumstances around choice of ERP-system and customization of it.

Which ERP-system do you provide?

- (1) ASPECT4
- (2) DRIW
- (3) IFS
- (4) INFOR
- (5) Mamut One Enterprise
- (6) Microsoft Dynamics AX
- (7) Microsoft Dynamics NAV
- (8) Nexstep
- (9) Oracle e-Business Suite
- (10) RAMBASE
- (11) SAP Business One
- (12) SAP Business Suite
- (13) Visma Business
- (14) Visma Global
- (15) Visma.net
- (16) Xledger
- (17) Other _____

What perceive as the major reason(s) behind the ERP-implementations? Please select the suitable alternative(s) that fits:

- (1) Replace legacy systems.
- (2) Reduce costs.
- (3) Consolidate data/information (save data in one place once) and/or improve visibility of data across the enterprise
- (4) Improve business processes.
- (5) Fusion.
- (6) ERP was a cheaper alternative than a more expensive upgrade of existing systems.
- (7) Standardize enterprise platform.
- (8) Increase quality of data and management information
- (9) The ERP-implementation was part of a strategic change.
- (10) Support new business functions.
- (11) Other _____

To what extent do you usually have to customize your ERP-solutions?

- (1) In no extent
- (2) To lesser extent
- (3) To some extent
- (4) To great extent

On the next 4 pages we wish to investigate the work done with benefits realization in the ERP-projects and your thoughts around this work.

NB! Text boxes can be expanded by dragging the bottom right corner.

Prerequisites for benefits realization

In no extent To lesser extent To some extent To great extent

To what extent do you feel the client possesses the necessary knowledge about benefits realization and measurement of benefits?

(1) (2) (3) (4)

To what extent do you feel that the provider or service partner of the ERP-system possess the necessary knowledge about benefits realization and measurement of benefits?

(1) (2) (3) (4)

To what extent do you use your own established processes for benefits realization?

(1) (2) (3) (4)

To what extent were there requirements with regards to benefits realization as a part of the ERP-project, and measurement of benefits post-implementation?

(1) (2) (3) (4)

To what extent were the work with benefits and benefits realization done by the customer?

(1) (2) (3) (4)

The work with Benefits Realization

Identifying Benefits

	In no extent	To lesser extent	To some extent	To great extent
To what extent do you work systematically to identify benefits and effect goals?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
To what extent do you identify affected parties systematically with regards to the identified benefits?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
To what extent do you develop a cost/benefit analysis based on the identified benefits?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>

Monitoring and Managing Benefits Realization

	In no extent	To lesser extent	To some extent	To great extent
To what extent are dedicated resources set aside for benefits realization and measurement of benefits?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
To what extent is the work with benefits realization sourced from a benefits realization manager?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
To what extent do you develop a benefits realization plan?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>

Measurement of Benefits

	In no extent	To lesser extent	To some extent	To great extent
To what extent are plans for measurement of benefits developed?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
To what extent do you actually measure benefits that can be traced back to expected benefits?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>
To what extent do you focus on measuring intangible benefits?*	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>

* Intangible benefits are benefits that are usually harder to measure directly, even though they can be just as beneficial. E.g. increased employee morale, better decision data and flow of information, standardization of processes, flexible IT-infrastructure, consolidation of data, easier acquisition of other companies, globalization, etc.

Usage of the system

	In no extent	To lesser extent	To some extent	To great extent
To what extent do you focus on users and usage of the system post-implementation in order to generate benefits?	(1) <input type="checkbox"/>	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>	(4) <input type="checkbox"/>

Look back to the previous ERP-project you were a part of. Generally speaking, how would you rate the work done with benefits realization and measurement of benefits?

- (1) Deficient
- (2) Could be better
- (3) Sufficient
- (4) Very good

What do you experience as the biggest barriers/challenges with regards to benefits realization?
Please elaborate.

According to research, many ERP-projects do not include measurement of benefits as a part of the project plans/initial business case/etc. What do you think are the major reasons for this?
Please root the answer in your own experiences, if possible.

What are your most important lessons learned concerning benefits realization in ERP-projects?

Please consider the following statement: "Systematic and targeted work with benefits realization through the entire ERP-project is a *critical* prerequisite to realize planned benefits."

- (1) Totally disagree
- (2) Rather disagree
- (3) Partly disagree
- (4) Partly agree
- (5) Rather agree
- (6) Strongly agree

Do you have any recommendations on how to increase the focus on benefits realization and measurement of benefits in Norwegian ERP-projects?

Finally, we wish to know a little bit about the company you work for and your position

Min role in the company is:

- (2) CIO
- (3) IT-Manager
- (1) IT Project Manager
- (5) Other leading function
- (6) IT-technician
- (4) Other _____

I have been working with ERP-systems for

- (1) 0-5 years
- (2) 5-10 years
- (3) 10-15 years
- (4) 15-20 years
- (5) More than 20 years

Can you estimate your company's yearly revenue [Mnok]?

- (1) 0-50
- (2) 50-250
- (3) 250-1000
- (4) More than 1000

Our customers are mainly

- (1) in the private sector
- (2) in the public sector
- (3) evenly divided between both sectors

Other comments before we end the survey?

That's it!

Thanks a lot for participating!

You will now be directed to ICT-Norway's home pages.