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Chapter 1: Executive Summary

The objective of this study was to look at the implementation of a new management system, and determine to which degree the implementation was successful. The management system is called Total Management System (TMS), and the organisation in which it was implemented is Seadrill. Seadrill is a leading offshore deepwater drilling company, with rigs and operations world wide. Head office is located in Stavanger, Norway. The thesis was also a part of a project within Det Norske Veritas (DNV), were methods for measuring success of implementation processes of management systems should be assessed. The provider of the management system was the Stavanger based company Docmap AS, which have customised and tailored the system to suit Seadrill specifications and needs. Seadrill also had one consultant from DNV hired in to assist during the project phases and the first part of the implementation phase. The implementation has however been carried out by Seadrill themselves. TMS was upon thesis completion still in the implementation phase on some Seadrill owned drilling rigs, but this study was performed on rigs where TMS already had been incorporated and taken into normal use. The main data source for the paper was a quantitative survey performed among users of TMS, located on around 22 Seadrill operated rigs in addition to onshore key personnel. The respondent percentage reached 61% (94 respondents) when closing out the survey. As second hand data, an earlier conducted survey was made available by Seadrill and a few of the questions were repeated to create a comparable set of data. The theoretical perspective on the work focused around Brandsdals VVV-model for determining if a successful organisational change has taken place, as well as bits of theory E and O by Beer and Nohria. Brandsdals VVV model looks at three factors (Knows, Wants, and Works) for organisational changes, whilst theory E and O are describes two types of organisational changes.

The key point of the paper was the close relationship between the actual implementation process of a system and the system itself. A management system cannot work unless implemented properly, and an implementation process will fail if the system being implemented is not properly fit to the organisation. However, the end result is always focused on the management system, whilst the implementation techniques woks as means to achieve the target. The authors' point of view was therefore that by studying how the users around in the organisation actually perceive

and use the implemented system, one can determine if the implementation has been successful. The term 'successful' needs to be closely linked to the organisations objectives with the new management system.

The initial results of the survey were indeed quite positive. As expected there were respondents on all parts of the scale, but on most aspects and viewpoints the majority were clearly on the positive side of the scale. This was further demonstrated in the analysis chapters, where the use of correlations, regressions and comparisons continued to support an overall successful implementation. The use of demographic variables like onshore / offshore, rig-type, years of experience and so on, were useful in the work with identifying any groups of users where the implementation might have been less (or more) successful than the others. The analysis showed that TMS has been well received, and are perceived better than previous systems the employees have been using. The available data from the survey conducted in 2009 helped to demonstrate not just that TMS as a system were in general well received in the organisation, but also that TMS was seen as a better tool than what most of the respondents have been working with before. There were no data to name these systems though, as it was not identified where the respondents had experience from prior to Seadrill, if any. So overall, the conclusion was that a successful implementation has taken place.

But of course, as one walks through such a research project one discovers other points of view, other problems that could have been highlighted or potential better ways of answering the research question. No exception for this project. One particular field interesting for more research would have been the interfaces between the implementation process and the management system. They do interact and are very closely linked, but by only studying the end result (users perception of the implemented system), how could one know what has been done wrong if the users were *not* satisfied? One would than sit with information about a system that does not work to its intentions, whilst the real problem could have been in the implementation phases rather than the system. It would be interesting to work on a clearer distinction between the two factors. And even though believed to give a valid picture of the process, the use of more data sources would both increase the reliability of the work as well as provide even more useful information to Seadrill. Information about the conducted implementation process is very useful information when one continues to run and develop the management system. The survey could

also have been developed differently, with an even tighter connection between the questions asked and the developed success criterion for TMS implementation success. There were also some technical aspects with the survey that could have been different, for example the use of a 'Not relevant' option on selected questions. This could have increased the reliability of the survey data.

Chapter 2: Preface

As a part of the masters' degree in Change Management at the University of Stavanger, a final thesis has to be written towards the end of the two-year long education. And when holding a bachelors' degree in Business Administration with a specialisation in Innovation and Entrepreneurship, writing about management related issues came naturally to me. When I also currently have close to three years of working experience from the oil & energy industry here in Stavanger, I found the task to write this paper both relevant and challenging at the same time. My personal interests are in the fields of organisational development and change, hence increasing the relevance of writing about implementation and management systems. Through the University of Stavanger I came in contact with Det Norske Veritas in May 2010, and together with them the opportunity to study the implementation of the TMS system in cooperation with Seadrill arose through a series of meetings, e-mails and phone calls towards the end of 2010. With two parties (Seadrill and DNV) taking interest in the work, the problem formulation was a challenge to agree upon, but hopefully the results are of interest and relevance for everyone involved. I started as a DNV employee on the 10.01.2011, and this thesis was my first task to complete as the starting point of a hopefully challenging and exciting new career within organisational development and consulting.

I would like to thank a few people for this opportunity, and the great cooperation and support I have got from DNV (Mikal Grure Eie, Helge Hydle and Torstein Tjensvoll), Seadrill (Rune Pallesen, Tor-Inge Gran, and Fredrik Grimsby) and the University of Stavanger (Einar Brandsdal). Valuable inputs and interest into the work has made the process easier and more enjoyable, and also of indisputable value for the final results.

Chapter 3: Project Context

This chapter will briefly introduce the background for choosing implementation success and management systems, before introducing the problem formulation (research question).

3.1: Background

International corporations today are operating on a global level, both when it comes to where their customers and where their own operations are located. They often grow by acquisition of other companies or parts of companies, and this is leading to a diverse mix of cultures and worksites all around the globe. It is easy to see that this imposes a number of challenges in the running of all daily operations in almost any kind of organisation, and an even larger number of ways to overcome those challenges. In the work of developing and running such organisations a corporation's top management have a set of 'tools' to rely to in their job. The content of their 'toolbox' will vary from manager to manager and company to company, depending on education, experience, resources, management philosophy and nature of the business and so on.

A management system is one of these tools an organisation can utilise on their way towards the universal objective of all organisations; achieving the goals they have set. A thorough explanation of the term will be done in chapter 4.2 but shortly introduced here. Not all organisations have a management system, and some may have it but are not taking advantage of its potential benefits. The outlines and frames of management systems often follows standardise forms, for example like the ISO 9000 and ISO 14 000 systems for quality and environmental management. But the content within the frames are what makes each system unique, and seen that way it comes clear that there are not two identical management systems out there.

This paper will not be solely about management systems though, but about the linkage and importance of the process of implementing a management system and the system itself. A good management system who is poorly implemented will not work, and the same story goes for a poor management system that is implemented in best possible way. Seen this way, one can see that the implementation process and the system itself are mutually dependent on each other to work as a whole. Still,

there has to be a logical sequence, and it is naturally to set the management system as the main factor. After all, without the management system, there would be nothing to implement. And a good and well functioning management system is also the goal, whilst the implementation techniques work as means to achieve this goal. There are many reasons *why* management systems are decided to be established by organisations, but we can split the main objectives into two groups:

- Internal objectives:
    - As tools for the organisation to work against its goals
    - HSEQ (Health, Safety, Environment and Quality) aspects
    - As tools to streamline unique locations and units
    - Continuous improvement of operations
- External objectives:
    - Regulatory requirements
    - Other stakeholder requirements (Owners, local authorities, clients)
    - Competitive advantages

The development of the main objectives and the intentions of implementing a management system might be the most important thing during a decision and implementation process, as these are the 'ground pillars' of the system. All implementation literature supports that during a long implementation process, one should make an effort to not 'forget' the real reason why the process was started in the first place. Large implementation processes can run over many years, and in many cases one eventually end up with something else than intended. This is one of the reasons why many implementations fail. In this paper the Seadrill objectives for TMS will be assessed against collected data about the satisfaction amongst TMS users and how there perceive TMS. This way one can develop some knowledge about the level of success of the implementation process.

3.2: Problem Formulation

To ask the right question is in many instances more difficult than finding the answer to it, and therefore the formulation of the question is so important. When looking at how successful the TMS implementation has been within Seadrill, many different

approaches to the problem formulation were assessed. And since both DNV and Seadrill had interest into the work, it was even more challenging. Though, with initially working on a more complicated research question including effectiveness and different measurement techniques, a simplified problem formulation came in place throughout the project. The final problem formulation or research question therefore ended up like this:

How successful has the implementation of TMS in Seadrill been?

This question will be attempted finding answers to throughout this paper, and the problem formulation is described in greater detail in chapter 5.1.

Chapter 4: Project introduction

This chapter includes an introduction to the company Seadrill and a description of the general perception of management systems and what such a system consist of.

4.1: Seadrill

Seadrill is a large international drilling company, aiming to be the number one choice of drilling companies. They operate a fleet of around 60 units of drill ships, jack-up rigs, semi submersible rigs and tender rigs. They operate on shallow as well as ultra deep waters, where the ultra deep waters currently have the highest focus. The number of employees lays around 6 800, and Seadrill currently has operations in 15 countries on four continents. Seadrills vision is to 'Setting the standard in drilling', an ambitious goal applied throughout the whole organisation. Seadrill has their head office in Stavanger, Norway and branch offices in Asia, North and South America and Africa. (Seadrill website 2011) The roots of the company go back to 1972, and during the years the company have faced an enormous growth. That is also partly what has led them into the situation where they now are implementing a new management system world wide.

When conducting the research for this paper, all different regions of Seadrill operations were assessed. A recent change in the organisational structure of Seadrill, ended up with the following 5 geographical regions of their operation:

- Corporate

- Americas

- Africa / Middle East

- Europe

- Asia Pacific

All regions have its own management and its own organisational structure, and included in all regions is all rigs currently operating in the specific geographical region. So different rigs will come to and go from the management of the regions as they move around the world on the different jobs from the different clients. This is different to the old structure, where specific rig types (such as jack-up and tender-rigs) were sorted under specific departments. This research is conducted in its entirety after the re-organisation.

4.2: Management Systems

Prior to diving into the problem formulation of implementation success of TMS in Seadrill, more should be said about management systems in general. What they are, what they consists of and how they are structured. Knowledge about this is essential to be able to determine how well the implementation process of a management system has been carried out. However, there is no simple and straight forward answer to any of this. Individual organisations have their own interpretations of the concept, and by all means that is an acceptable approach to it. Different natures of different businesses require unique characteristics of their management systems, and because of this management systems cannot be classified as "shelf- ware"; ready to be purchased from anywhere and implemented by anyone. One can also immediately see the complication this leads to during the implementation phase; there is no standardised way of implementing it.

Management systems are not only applied by the business for their own interest, but they can also be a part of governmental requirements made applicable for particular industries. In Norway for example, the Norwegian Petroleum Safety Authority (PSA) function as a regulatory authority for technical and operational safety in the

offshore industry (PSA Web page 2011), and states that the responsible organisation is obliged to establish, maintain and develop a management system to ensure compliance with current HSEQ laws (Framework HSE (Rammeforskriften) § 17, 2010). Such requirements exist because the government wants to ensure that all drilling and production operations are taking place with the best possible methods to avoid any damages to personnel, the environment or equipment. Seadrill as an operator on the Norwegian continental shelf falls under these (and many others) requirements from PSA.

4.2.1: What is being managed

The term 'management system' is a quite generic, and many variations of different systems sorting under the name exist. A quick internet search of 'management system' reveals results like 'MIS' (Management Information System), 'CMS' (Content Management System), 'LMS' (Learning Management System), 'KMS' (Knowledge Management System) and much more.

However, TMS and the type of management systems discussed in this paper sort under the first result; Management Information System. The main resource or asset Seadrill seeks to control with TMS is Information. With information is meant management information, policies, directives, procedures and detailed work instructions (Seadrill system documentation 2011). It covers information flowing both up and down the organisational hierarchy. Therefore, when talking about 'management system' in this paper, information management systems are meant, unless otherwise stated in the text.

4.2.2: Definitions

A simple and broad approach to a management system is always a good start. And that is, that it has two objectives only; to assist the management in controlling their business, and to assist the employees doing their job (Pallesen 2011). Laid out this way, it is seen that such systems are not only for the management to control from the top (top-down perspective), but just as much a tool for employees on the floor to do their daily work and provide feedback to the management (bottom-up perspective). Furthermore, a definition used by DNV, and the definition used

throughout this paper, is that a management system is; "A framework of processes and procedures used to ensure that an organisation can fulfil all tasks required to achieve its objectives" (Eie 2011). This definition is quite ambitious, and if this definition is put to use and successfully achieved within an organisation, one can see that the system can work as the 'backbone' of the entire organisation. However, this is most often not the case for management systems designed to only cover one or a few fields, like TMS is designed to handle policies, directives, procedures and detailed work instructions. Other management systems can be designed with completely other objectives.

4.2.3: Components

To land the topic into even more definite terms, something needs to be said about what a management system *consists* of. Again, there is no final answer to this, but commonly it consists of three parts (Eie 2011);

1. Software, as platform and information infrastructure;
2. Content, which can be requirements, procedures, best practices, guidelines, processes or other governing documents or information;
3. Rules, roles and responsibility. Outlining who can do what within the system.

A fourth element can also be argued to belong here; the human elements or the users. The competence they possess and the feedback they give about the system are also a vital part of a successful system (Brandsdal 2011). All the parts are collectively dependent on each other; they do not serve any purpose by themselves. Imagine you have an excellent software solution for two-way communication of procedures and guidelines (and feedback) to end users, and you have a database with all of the best written documentation. These two resources are more or less worthless without being combined into a whole. In addition to being 'physically' combined, you need a set of rules and roles within the system, for appropriate personnel to have the access rights suitable for their specific use of the system. Otherwise, no one would find what they were looking for. For it all to work together as a whole and serve the governing organisation, all parts must be tailored,

communicated, understood, and utilised as intended. The organisation management will be the part taking care of tailoring and communication of the system, often with assistance from external consultants who can provide expertise on the chosen system and a new viewpoint. But they should not do so without extensive research within the organisation to make sure the system suits the real need of the workers on the floor. A system not properly made for the organisation will in best case just be ignored and not used, or in worst case it will be used and the output, or process of creating any output, from the organisation is no longer in line and does not contribute towards the organisations' goals. Utilising the system is the responsibility of the entire organisation, from the workers on the floor to the top management. Of course, they will not utilise the system in the same ways, but the intention is that the river of information should flow both up and down without any obstacles, and that no one is either drowning in information or cannot find anything at all.

4.2.4: Perspectives

The existence of management systems can also be seen from different perspectives, and here DNV uses two non-mutually exclusive perspectives on management systems; as a *compliance assurance* system and as a *continuous improvement* tool (Eie 2011). In compliance assurance lays the objectives of satisfying rules, regulations, law and other stakeholder expectations, whilst in continuous improvement tool lays the expectations of always seeking to improve all aspects of the businesses daily operations. Both are important, some will focus on one or the other, while others will seek towards a combination of both.

When seen this way, it becomes obvious that management systems touch into the large field of 'organisational culture' and 'organisational change', as a tool contributing to build a culture with regards to practices in the production. Knowledge about the mechanisms behind organisational culture, and how to intervene to change or move the culture in a desired direction is therefore of high relevance when working with management systems. In the theory section more will be said about organisational change and a few theories around that will be mentioned. However, already here a definition of culture is defined and the paper will reside on this one:

Culture is: A set of fundamental behaviours in a group, developed over time, gives direction to how tasks are performed, how and what to think and how to behave. This behaviour is seen as the right way, and is therefore taught to new members of the group who than continues to maintain and develop the same culture (Schein 1987).

In addition there have through all times been many viewpoints around if and how culture in an organisation can be changed. One is talking about different ontological and epistemological foundations from the researchers and the forever returning questions around if culture is created by people, or are people creating the culture. This will not be discussed further, and this paper reside on Scheins' statements that culture can be changed in a desired direction, but it requires focus and continuous effort over a long period of time (Schein 1987).

Chapter 5: Methodological and Theoretical Background

Blaikie (2010) defines methods simply as 'techniques of data collection and analysis', and before moving on with the problem formulation, available and applied methods will be addressed in this chapter. It is also necessary to place the work within a theoretical framework, so relevant theory will also be addressed in this chapter.

5.1: Problem Formulation Breakdown

Prior to diving into theory or looking into methods for data collection and analysis, an understanding of the question one tries to answer is a good place to start. The specific wording in the research question contributes to the decisions of methods suitable to answer the question. The question in this instance is as stated earlier; "How successful has the implementation of TMS in Seadrill been?" Before moving on than, a breakdown and some definitions in relation to the words used in the problem formulation are useful.

5.1.1: How successful

Blaikie (2010) defines three main types of research questions; 'what', 'why' and 'how'. In this instance the word 'how' is chosen, and this gives some direction with regards to the processes throughout the research project. When asking 'how successful' the aim is not only to state *if* successfully implemented, but also to say something about the degree of success of the implementation. However, one cannot state this on a fixed scale or by giving it a number, at least not without having a respectable set of data from other similar processes to compare with (Best practice methods). But a goal is to say something about areas where the implementation has been successful and to identify areas where there are room for improvement. The word 'successful' also needs some borders around it, as something being successful for one company might not be seen as a success for others. In this paper successful is simply defined in accordance with the objectives Seadrill have for the implementation of TMS. This way success is connected to the case and therefore measurable.

5.1.2: Implementation

A thorough understanding of implementation needs to be in place, as this is a crucial part of this research. As an example, it is a common misunderstanding when someone claims that 'rolling out' or 'installing' is the same as implementing. A new computer system can easily be rolled out to its end users, but if these do not receive any training or other information regarding the use of the system, and hence are not using it, it is not implemented. In other words, behaviour or processes has to change before implementation has taken place. It can be for example the processes a certain type of work requires; if some sort of new machinery is made available but workers chose not to use it, nothing is implemented. If they use the new machines and the process of producing the output changes accordingly, the new work process (and machinery) is implemented. One explanation of the word implementation is 'to carry out, accomplish, fulfil, produce, complete' (Hill and Hupe 2002), and with an additional understanding of that something has to be changed as a result of the process, the understanding of completed implementation is in place. In other words, one is again talking about organisational changes. Something old (process, physical thing) has to be replaced with something new, and an actual change with regard to

this process or object have to take place. The process of implementing can undertake many forms and stages, and some of these will, together with theoretical perspectives on organisational change will be addressed further down in this chapter.

5.1.3: TMS in Seadrill

This last part of the research question are imposing that the specific case is TMS within Seadrill. This is because this project has not been a study of implementation systems in general or implementation processes in general. It would therefore be difficult to generalise the results too much. However, the methodology used would be usable when looking into other implementation processes of management systems (and similar) as well.

5.2: Methods

To choose research method is a part of the overall research design, and ideally it happen more like a consequence rather than a choice, depending on the research question and the purposes for doing the research. With the intensions of the research and the context around the research question one makes a choice of which method or methods to apply for selecting, collecting, organising and analysing data to help answer the research question (Blaikie 2010).

Further, Blaike (2010) describes two main types of research methods, each with a large number of sub-methods assigned to them. These two are *qualitative* and *quantitative* methods. Qualitative methods is the description of research methods aiming for an in-depth understanding of an observation or phenomenon, and the research here often focuses around interviews, semi or unstructured observation, focus groups etc. Quantitative methods on the other hand, seek to count or measure something observed in social life, and aims for a broader knowledge or understanding about something. Both terms can also have a broader meaning besides describing method, for example one can hear talk about quantitative or qualitative data, research, researchers etc. Very often data collected for the two methods sort under the use of text or words (qualitative), and numbers (quantitative). But data collected for an quantitative analysis does not have to be numbers in the first form as they are collected, but often the data are converted to

numbers and are being analysed in that form, like the survey in this paper. However, it is common to present any conclusion as text again, with the numbers as proof or backup for the chosen text. In modern social research it is also common to undertake a methodological approach called *mixed methods*, and hereby applying aspects of methods from both qualitative and quantitative strategies. It is more appropriate to state that the different methods can complete each other than to say that one is better than the other.

Due to the nature of this research, where the implementation success of TMS among users world wide were going to be assessed, there was no other real option than a quantitative approach. It is the only feasible way to reach out to a certain quantity of people, at multiple and remote locations. Success is earlier stated defined as something closely related to the intentions and objectives with the system, and these again are closely linked to the people using TMS; the workers around the world doing the job on the different Seadrill rigs. This also supports the assumption that one cannot say anything about the rate of success without asking a selection of the users.

The survey conducted in Seadrill (attached as Appendix 1) consisted of 18 questions, including a last question made available for general comments around TMS. A few of the questions were repeated from a survey conducted in 2009, prior to the implementation of TMS, to create a direct comparable set of data. The survey was sent to 154 unique email addresses, and several of these were *functions* and not persons. That means that 2-3 different persons can possess the position, depending on the number of shifts on the unit. One of the e-mail addresses was by a mistake a rig *without* TMS implemented, and this respondent answers were deleted from the data set prior to analysing the results. Actual number of valid responses reached when closing out the survey was therefore 94, or a percentage of 61%. Respondents were chosen on a random basis, using the company organisation chart to select random names and functions in the different regions. The number of potential respondents from each region varies because the number of rigs and employees in the different regions vary. Also, TMS were not fully implemented on all rigs and personnel from these were not included in the survey. The selected respondents are therefore believed to be a good selection of TMS users in all regions in Seadrill. Results from the performed survey, and comparisons with the survey from 2009 will be described in greater detail in chapter 6 and 7.

5.2.1: Methods when measuring success

How to measure something depends on what is being measured. Distance is best measured with an inch rule, and mass is best figured out by using a scale. But measuring an implementation process is not as straight forward. Sociological research does not have the advantage of natural laws to rely on, and therefore measurements of most kinds are not as black and white as one could wish. When deciding upon methods on how to measure if a system implementation has been successful, there is therefore only one right place to start; the success criteria and main objectives for introducing the new system in the first place. In the very beginning of any well conducted implementation process, one should ask 'what is the purpose of acquiring this new system/tool?' and 'what do we want to achieve?' One should than try to find indicators for these statements, if they cannot be measured directly. Than, one have to select the best possible way of collecting any data about these indicators. Therefore, there is no standard way of measuring success. Each project has its own success factors, and hence its own measurement needs.

5.2.2: Methods when measuring success: Seadrill

As stated above a successful management system needs to have a set of objectives or some defined criteria for its success in the organisation. For TMS in Seadrill this is built around the main statement that *TMS will be the main tool to build one Seadrill company and culture.* This is stated by the management and written in the system documentation for TMS, as well as used as a slogan on the TMS web page on Seadrill Intranet.

Figure 5.2.2.1 – Seadrill slogan

The cultural aspect becomes obvious as one seeks to impose long term changes in the way workers do their daily job. This is to uniform operations on unique locations. Further, it is written in the documentation that TMS shall serve some specific purposes within the organisation:

- Give management, employees, customers and other interested parties clear and consistent management information
- Be the basis for improvement of work processes and methods
- Contribute to the elimination of unnecessary costs and generate maximum revenue

These purposes clearly highlight the Information part of this type of management system (MIS), stating that within TMS, all employees will find the information necessary to do their job in best possible way. To take these statements one step further, Seadrill also imposes a few sentences on what the correct utilisation of TMS will lead to or result in. These are:

- Sharing of knowledge and best practice
- Support learning, improvement and experience transfer
- Avoidance of silo thinking

These are very useful when developing measurement indicators for the system. In many cases, such output-statements can work as indicators without having to be further worked with. If one cannot measure the results of the system, how can one say anything about implementation success or not? Clear links between the above

mentioned factors will be valuable not only when assessing the performed work, but also during the implementation process.

In addition to the above mentioned company-specific statements, a set of general requirements for a good management system is often used by DNV. They partly overlap with the TMS specific ones, but are listed here in any case (Eie 2011):

- Communicate requirements (Internal and External)
- "Catch" and distribute best practices
- Reflect governmental requirements
- Be formalised, for tracking and auditable purposes

TMS is built as shown in figure below. The red arrows symbolises management information flowing down the hierarchy, whilst the black arrows symbolises feedback information from end (and middle) users flowing up the hierarchy. The main function of the management system is to cascade information down the hierarchy, but one should not underestimate the importance of the black arrows pointing upwards. This is where organisational learning and the real benefits of the system will happen. This project therefore seeks to reveal aspects of both sides of the system, which will be addressed further down in the paper.
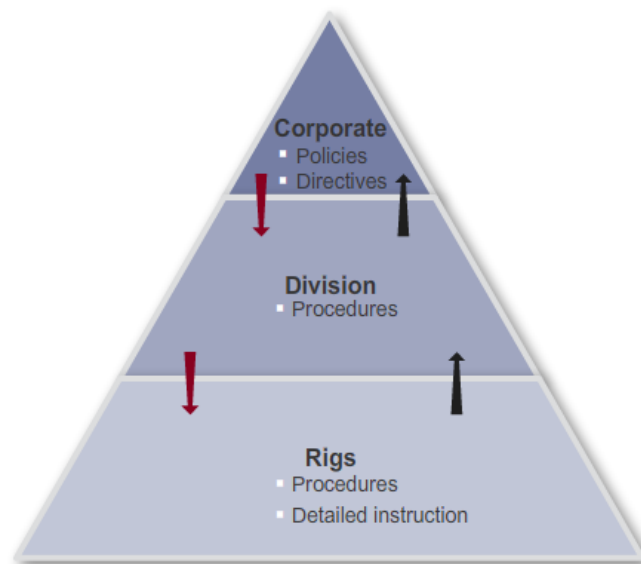

Figure 5.2.2.2 – TMS structure

All the factors listed above are important when one is seeking to look into grade of success of the implementation of a management system. They are the foundation of the system being implemented, and it is these ones one should attempt to measure or assess. There is no easy answer to which ones are more important or if they can be ranged in sequence to one another, as this will vary from situation to situation. What one should have in mind during a process of measuring implementation success is that it is usually not possible to assess all indicators at the same time. It would often be to resource demanding and not serve any real purpose. One should therefore try to summarise the most important aspects into a few key points, supporting a large part of what is defined as implementation success in the case one want to measure. Therefore, in the continued work with measurements of TMS implementation success, the following two criteria were selected as main indicators of success:

- **Communication of management and operational information**
- **Catch best practice, including communicating and learning from it**

These criteria were developed on the basis of what are the most important features with TMS as well as universal perceptions of a good management system. By assessing these some of the most important aspects of the implementation process are covered for. As seen, not all aspects are taken into account, for mentioned practical reasons. For example Seadrill states that TMS shall contribute to elimination of unnecessary costs and to generate maximum revenue. To which extent TMS does just that, will not be looked directly into through the selected criteria, but of course – a well functioning management system could at least be assumed not have *negative* impact on the cost and revenue of the organisation. Throughout the next chapter, the chosen factors will therefore be assessed through the results of the most recent survey, the survey from 2009 and other information received from Seadrill.

5.2.3: Data selection and survey

For the survey 22 users on different rigs were selected, on the basis that they all had implemented TMS and had a certain quantity of documents registered on their server. The rigs were selected among all different rig types. The reason for not

conducting the survey on rigs where TMS is more recently installed is that per the implementation definition used they do not have TMS fully implemented. A simple 'roll-out' of the system is not sufficient. Also, due to limited access, and usage of, computers on the different rigs, some key functions on the rig were selected in cooperation with Seadrill. Therefore not all personnel on each rig have participated in the survey. The TMS (and other management systems) are not widely used by everyone down to the lowest organisational level, but it is more frequently used among middle and higher management on the rig/platform. For example the offshore installation manager, safety managers / officers, technical management etc. Most of the receivers of the invitation to participate in the survey offshore were *functions,* whilst those in the onshore organisation were specific *names* picked from the organisation chart. This does not implicate anything else though that there is a chance of two, maybe three offshore people having access to the same e-mail address (for example *safety.rig@seadrill.com,* and potentially all of these three could perform the survey. The tool used to perform the survey was Questback, an online and well known survey tool. The license to use it was obtained through the University in Stavanger. The survey was released and invitations sent out Friday 22nd of April 2011, and were available for answers up to 2nd of May 2011. At the closing date, there were 95 individual responses to the survey. Taking a closer look at the data, one of these had left a comment that the rig he currently was stationed at not had TMS implemented yet. All answers from this respondent were therefore deleted. A small weakness with the online survey tool used was that it did not notified users who forgot to tick one of the answer-boxes when moving on to next question. This led to some missing variables in the data set, and all these were converted to the value of -9 (minus nine) to avoid interference with any of the valid data. In the SPSS analyses the 'Missing' field therefore have a text-value of '-9' followed by the number of missing cases for that specific variable.

5.2.4: Data analysis

With the data from the survey in place, as well as the data from the previous conducted survey (2009), the analysing part comes next. Data needs to be assessed against the measurement indicators developed earlier in the process. The results from the survey conducted in Seadrill has been analysed with the help of a statistical

software package, called SPSS. First some initial descriptive data of the questions and answers given, before further analysis between the different types of demographical users and their satisfaction and meanings of TMS were performed. The types of statistical analysis are briefly described below.

Correlation is about how two or more variables are correlating to each other (Skog 2009). Simply said, if two questions are highly correlated, a person answering five on one of the question is likely to answer five (or close to five) on the correlated questions. One can also look for negative correlations, but the point remains the same. This can be used where one are using multiple questions to highlight the same underlying question, and if all questions correlate it is an indicator that the questions are all 'valid' and contributes towards answering the main question. One can this way for example discover if a question is badly constructed and therefore misunderstood by respondents. The answers can than be ignored or treated separately, depending on the research and the researchers intentions.

Regression is also about correlations, but here one looks at how changes in one dependent variable can be explained by changes in one or several independent variables (Skog 2009). The type of regression analysis used was ordinary linear regression models. As an example, the TMS survey includes questions like if one has completed the online TMS training module, and how good one thinks TMS is compared to other management systems. Assumed the correct options of answering were used, one can than set one variable as dependent (for example how good one thinks TMS are compared to other systems) and through a regression analyse see how having or not having completed the training affects the satisfaction of TMS. There are a few premises that have to be met to be able to perform such an analysis, for example that the variables has to be linear, or re-coded into linear variables if they are not. The data should be homoscedastic, which means the variance of the data should be the same along the entire regression line (Skog 2009). Therefore not all questions are suitable for regression analysis, at least not in the original form.

Finally, to give an indication on how TMS has developed since the implementation start, questions from the TMS survey from 2009 are compared with the identical questions from the 2011 survey. The 2009 survey results were however not

available as raw data, and therefore could not be compared statistically within SPSS, but by treating the surveys identically except that they were performed on two different points in time, a simple comparing of answers could still be of interest. This will be performed in Microsoft Excel and illustrated with graphs extracted from excel.

All together the chosen methods are not very advanced, but they should give a representative picture of the data from the available sources. The important part is where the analysed data is to be hold up against the different criteria for TMS and for a good management system implementation. It is here the empirical data are connected to the theory and the goal is to extract as much information as possible on the question of how successful the implementation of TMS in Seadrill has been.

5.3: Theory

There is no clear textbook theories being challenged or assessed in this type of work, but some of the understandings and fundaments around the concepts used are founded on a theoretical understanding. As stated above, to implement a management system successfully and to make the organisation use it is closely related to organisational changes. There are endless amounts of books and articles written about organisational changes, and some of those theories seen as relevant will briefly be mentioned here. Validity and reliability are also mentioned as it is very relevant to any quantitative survey being conducted.

5.3.1: Theory E & O - Implementation

Beer and Nohria (2000) talks about these two different types of organisational changes, knows as theory E and theory O. They claim that all organisation changes falls under these theories, but not solely under one or the other. The E stands for 'Economy', and changes according to theory E are related to shareholders, profit and financial status. It typically covers changes related to strategy, structure and systems. Theory E is top-down oriented and the social human and the organisation as a social creature are not emphasised. The other theory, theory O, is located at the other side of the scale. The O stands for 'Organisation', and organisational learning

and human capital are key ingredients. An important aspect of this theory is to internalise amongst the organisations members the values and interests of the organisation. It supports those meaning that an organisation is created and developed by the people in it and the sum of the behaviour of the members is equal to one entity. Many researches mean that one cannot fully work on an implementation (change) process undertaking only either theory E or theory O, but one always has to seek the middle way and impose aspects from both. Beer and Nohria claims to have found extreme examples on both sides, but also that a mixture is more common. The table below is extracted from Beer and Nohria 'Breaking the Code of Change' (2000), and shows the two theories against each other in a short summarised way.

Theories E and O of Change

Purpose and Means	Theory E	Theory O
Purpose	Maximize economic value	Develop organizational capabilities
Leadership	Top-down	Participative
Focus	Structure and systems	Culture
Planning	Programmatic	Emergent
Motivation	Incentives lead	Incentives lag
Consultants	Large/knowledge-driven	Small/process-driven

Figure 5.3.1.1 – Theory E and O

Than, the TMS implementation process should be looked into with these theories in mind. This is done mostly to help realise what kind of implementation process one has been facing in Seadrill and this is relevant when seeking to look into measurement of the process. One can also see the use of this in other consulting situations where asked to assess an implementation process of a system not known to one self. By knowing what kind of changes one has tried to impose on the organisation is than of great help. Below are a short description of the two theories and how the TMS implementation process fit in.

Theory E:

- The "all economic" theory E is not the most suitable to describe the implementation of TMS in Seadrill. But it definitely has clear aspects from it. For example the use of consultants, the fact that this is 100% a management taken decision, and thereby deriving from the top and down, it is well planned and it is structured. But despite all these, the main objective for TMS is not shareholder value. Of course, Seadrill as other companies have clear financial targets, but it was not the lack of profit leading into an implementation of TMS.

Theory O:

- The real objectives for TMS are much more related to factors under theory O. These are as described earlier focused around best practice / organisational learning, communication of requirements and procedures, and to support a learning organisation. Also, the actual users of TMS are (in greater numbers) the employees rather than the management. Theory O set the employees and their participation high and for a system like TMS it could be claimed as the only right thing to do. One can in other words draw a direct line to the overall vision of TMS; to build one Seadrill company and culture.

Summarised, the implementation process is much more related to theory O than to theory E. Theory E has played an important role in the decision making and planning stage, but the real implementation work and success is dependent on the response in the organisation and that the management system is being used as intended by the management. Therefore, and this is important, the focus when measuring success should be on the 'software'; the people and the achieved changes in the company culture.

Below is an illustration of how TMS can fit into the split between theory E and O. The drawing is only an estimation, and the weighting of the phases are quite subjective by the author, but the point still remains. Explanation follows below the illustration.
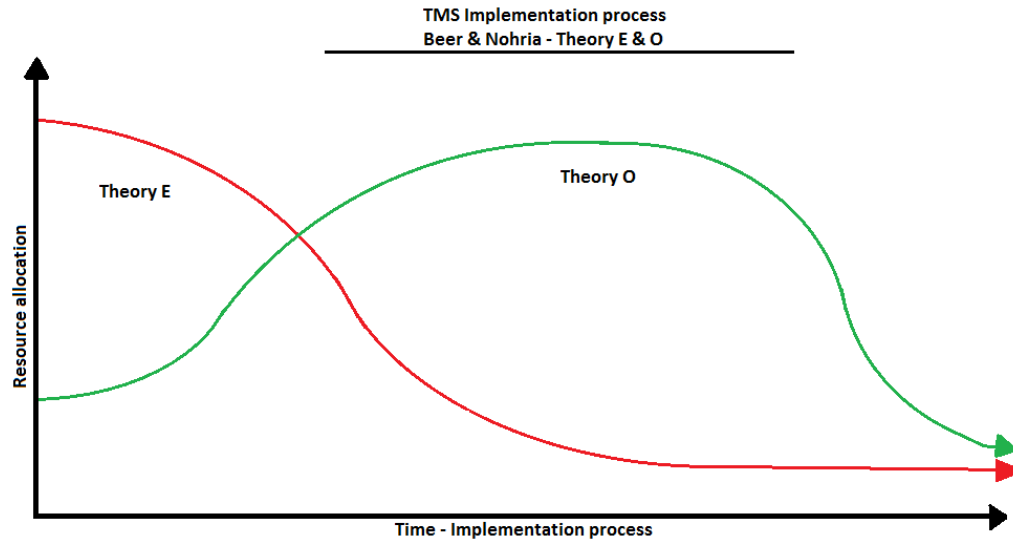
Figure 5.3.1.2 – Theory E & O in an Implementation process

The point of the illustration is just to show how an implementation process can change through its different phases. The six stages used in the example here are extracted from 'Managing Change and Transition' by Harvard Business Review (2003), and are the actions going on towards the right of the timeline in the illustration. The arrows are symbolising how organisational effort are transitioning from a theory E perspective towards a theory O perspective as the process moves forwards in time.

Phase 1 is to enlist support and involvement of key people. This is in the very beginning and the change is to all extinct with the management, and therefore a high degree of theory E in this phase. However, the O(rganisation) aspect on it all is included from the start.

Phase 2 is the planning stage, where one should develop a good and realistic implementation plan. Here it is getting more and more important to involve key personnel further out in the organisation to be able make something realistic.

Phase 3 is where the management is showing effort and support of the ongoing changes. 'Walking the talk' and statues good examples. The E is getting smaller and more and more of the implementation are taking place with an O-aspect; out in the organisation.

Phase 4 is pilot testing, training of users, enabling of users in terms of rewards and goals.

Phase 5 is to celebrate important milestones, for example completion of pilot testing programs, first department/unit to be up and running, completion of training and more.

Phase 6 is a phase that after the authors' opinion should go as a parallel phase all along the project; to communicate over and over again what is being done and why it is being done.

5.3.2: Brandsdals VVV (KWW)-model

Einar Brandsdal (Teaching supervisor for this project) has developed an own model for looking into if an organisation has undertaken any changes, and is relevant when one wants to assess a process like the one described above. With reference to figure 5.3.1.2 above and the TMS case, this will take place at the point in time where the arrows are narrowing in and the system gradually moves from implementation phase to ordinary working phase. In Norwegian the model is called the 'Vet, Vil og Virker' model, and directly translated to English this becomes 'Knows, Wants and Works'. It is built around the three words in this way (Brandsdal 2011);

> **Knows**; for employees to start using something that has recently been implemented into the organisation, they have to *know* about it. Systems cannot just be rolled out, this will at the best just lead to a 'mechanical' change. Employees have to be thought *how* to use the system and be informed *why they should use it.*

> **Wants**; in addition to be trained to use it, there should be a *reason* or an *intensive* for making use of the newly implemented system. They should have been thought and informed and showed *why* this new system is being put into use, and know about the benefits it gives them personally and

professionally. This will lead to employees promoting it towards other colleagues, and this is essential to achieve a lasting cultural change.

Works; finally the system has to work. It has to be an *improvement* of the system it is replacing, if it is not brand new. If it is brand new, the changed processes should be an improvement in the employees' daily work. This part is crucial and the entire process will fail if the system does not work to its intentions.

If these three factors can be said to be in place, it is a good chance that a successful implementation has taken place. In the TMS case, these factors are represented in the developed success factors described in chapter 5.2.2.

5.3.2: Validity

Validity is an important concept when working with any kind of research. According to Skog (2009) to be concerned with validity in research work, is to work to avoid pitfalls. Validity simply means if something is 'valid' and is a term one should keep in mind during the entire research project. Skog (2009) lists four main types of validity, each covering different parts of research work. Two of these are of a more generic term, covering quite wide, and will be assessed in this paper. The two typed of validity are listed and explained below.

Concept validity means in its simplest form, if one is succeeding in measuring and registering what one is attempting to, on a satisfying and reliable way. Random correlations might occur and should be addressed, because what one is observing might be caused by other factors than what one might think. This is closely related to casual mechanisms, where for example A leads to B. But, with closer investigation, there might be a non-observed factor C which also has an effect on B (Skog 2009). In addition to being several possible mechanisms behind what one is observing, there will often be several ways of measuring it. In this case when looking into success of an implementation process through a survey, many of the questions can "work together" as one indicator, and this way increasing the validity (and reliability) of the chosen method. A method for finding such indicators is called

'Chronbachs Alpha'. This simply checks the correlations between the selected indicators, and comes up with a number of how the different indicators correlate in total. For example if a survey contains five questions with slightly different angel on a problem, but all questions seek to reveal the same mechanism or observed phenomena, there is a high chance the answers are highly correlated to each other. The answers must be on an identical scale, or converted to an identical scale to be analysed correctly (Skog 2009).

Conclusion validity simply means the validity of the drawn conclusions from the research. Especially in social sciences, the observed effects or mechanisms might be caused by what the research has concluded with, or it might just be random 'luck'. It is here easy to see that the conclusion validity is dependent on the work done prior to coming to this point. If the selection of respondents has been done properly, the method of collecting data and analysing this is done in best possible ways, the chances of the conclusions being more valid than with poor research work is quite high. But within a conclusion also lays the subjectivity and the objectivity of the researcher(s), so even with highly valid data and analyses the conclusion can end up as not very valid or credible.

Chapter 6: Survey results

In this chapter the results of the survey will be presented. First, some initial results around the demographic questions used to sort the respondents, and than secondly results of more detailed analyses of the data. The goal is to hold the data up against the defined criteria for a successful implementation of TMS. All percentage-values given are rounded to the nearest whole number for easier reading.

6.1: Initial results

The first question asked were which geographical region the respondents belonged to, and the answers to that question are shown in the excel-table below. The data comes from SPSS, but some additional calculations were added to show how the respondents distributed themselves and how the total respondent percentage in each

region was. Potential respondents are the number of recipients who were invited to answer in each region.

	Corporate	Americas	Africa/Middle East	Europe	Asia Pacific
Potential Respondents	9	42	25	25	52
Actual Respondents	7	21	17	22	27
% Answer	78%	50%	68%	88%	52%
N total	94 actual respondents out of 153 potential (61%)				

Table 6.1.1

As shown, the response rate varied from 50% to 88% in the different regions. The number of potential respondents in the corporate division was quite low, but this is natural as these are representing management on quite high level. If seen together with the TMS triangle in figure 5.2.2.2 corporate division is located on the top. Europe seems to be sticking out from the crowd with a very high answering rate of 88%. The reasons for this can be many, but one can for example think of cultural reasons. Maybe the European fleet (even though the fleet is moving around in the current organisation) currently consists of workers and rigs with a stronger culture for using formalised systems in the way of working. It can also be elements from the fact that regulations and control are stronger in the European sector, which again leads to a different use of management systems. These are not clear facts or are being looked into in the paper, only assumptions by the author, but it is important in such a work to reflect over the raw data used in the analyses to better understand the results as they appear.

The next question was asked to sort respondents on which type of rig they were working on. When selecting the respondents to send the survey to, all different rig types were included, but the responses varied from only 1 respondent and up to 34. The ongoing implementation phase of TMS was part of the reason why not more users on more rigs were asked. In addition, some of the rigs have a limited number of users with direct access to a computer. These users were not practical possible to reach, as well as many of them not being users of TMS directly. These will use

print-outs of the procedures and work-descriptions from TMS, made available by nearest management. The spread of respondents on the different Seadrill rig types is shown in the SPSS table below.

Which Rig-type do you belong to?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Drillship	20	21	23	23
	Semi-submersable	34	36	39	63
	Benign Jack-up	5	5	6	69
	Harsh Environment Jack-up	1	1	1	70
	Tender/Semi-tender	5	5	6	75
	Oher	21	22	24	100
	Total	86	91	100	
Missing	-9	8	8		
Total		94	100		

Table 6.1.2

As shown in the table there is 8 respondents missing (value of minus nine), and these are people not working on a rig at all. These ones answered 'Corporate' on previous question and the built-in logic of the survey tool than excluded this question. The total number of missing here is 8, one more than the corporate people, and this is caused by one respondent either chose not to answer or missed it. As this is only one person it can be assumed to be caused by a mistake when clicking on the answers. In addition, the selection "other" has 21 users, and these probably work on rigs similar to the types listed but know them under different names. The rig-category list was pre-defined by Seadrill.

The next question is also a demographic one, simply to map the respondents' seniority within Seadrill. The results are shown below, showing a quite even distribution except a lack of respondents with experience from 6 to 10 years. The reason for this is unknown, but consistent with the survey conducted in 2009. The question and answer alternatives were identical, and the alternative 6-10 years experience got 7% of the answers in 2009. The other alternatives varied from 25% to 35% in the old survey, which is also consistent with the 2011 survey.

How many years have you worked for Seadrill / Smedvig?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-2 Years	31	33	33	33
	3-5 Years	34	36	36	69
	6-10 Years	2	2	2	71
	More Than 10 Years	27	29	29	100
	Total	94	100	100	

Table 6.1.3

Next question were about workplace; if they were located in the onshore organisation belonging to each region or if they were working offshore on the different rig installations. Answers received as shown in SPSS table below.

Where is your workplace?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Offshore	53	56	56	56
	Onshore	41	44	44	100
	Total	94	100	100	

Table 6.1.4

This spread was as anticipated, as a higher number of the selection of 153 people had offshore positions. Everyone was asked this question and no values were missing. The percentages of 56 and 44 give a good spread of TMS users both onshore and offshore. It is important to reflect over to which degree these two different kinds of users can be treated as one group in the further analyses, as it is a clear 'cut' between the two user groups. It is a distinct difference on those working onshore in offices versus those working offshore on the rig installations. One could therefore consider splitting the data in two groups according to this question and analyse thereafter. In this case this has not been done, because the question was used as a demographical variable and was tested up against both a created variable consisting of data from several other questions as well as individual questions. The workplace-questions are therefore taken into consideration within the analyses, just in another way than by splitting and analysing the respondents separately.

The next question was asked to split the TMS users into two groups; those who only use TMS to extract information, and those who in addition create and publish documents or requirements. By creating and / or publishing is meant that some users either are owners, creators or both of documents. The owner is the one in charge of the content of the document, but he or she can choose to delegate to write and publish the document. Other users are simply users, and they are not producing anything except if they give comments to already existing documentation. The TMS training (an online web-course) also consists of two parts, where one is mandatory for all users and the second one is an optional for those who are creating and publishing information as well. Though this is not black and white, because many of the employees will be in positions where they encounter both situations. In fact, this will be valid for everyone not located either on the very top or at the bottom of the hierarchy. A mid-level manager will both have to comply with directives cascaded down from his or hers management, as well as making sure the same rules are followed by the employees below his or hers position. The person might also be in a position where responsible for creating own requirements for his or hers worker, and act as a document owner of these. It is important to highlight that all users are able to use TMS as a two way communication tool, by using for example the built in comment-functionality. This question has nothing to with those people, it is just to separate users who *owns* or *publish* documentation. The survey results for this question are as shown in the table below.

Do you create and/or publish any Documents / Requirements in the TMS system?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	80	85	85	85
	No	14	15	15	100
	Total	94	100	100	

Table 6.1.5

The unbalanced split of the respondents comes from the fact that most of the offshore users with computer access, and hereby would have been invited to answer this survey, are managers of different types. Many offshore workers only see paper copies of procedures and work descriptions, and these are not easy to reach with a

survey. However, as shown in the table, around 15% of the respondents were such 'end-users' of TMS.

Next question were asked only to those 80 who are also producing and publishing content within TMS, as it is not relevant for the rest. The intention of the question was to see how these TMS users felt that TMS is working as a communicating tool. This is a very interesting question as it is directly linked to one of the chosen criteria for success of the implementation of TMS (Communicate requirements). The answers are showed in the SPSS table below.

How good do you feel TMS is at communicating your Directives / Procedures / Detailed Instructions to its target groups?				
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Unsatisfied	1	1	1	1
	Unsatisfied	3	3	4	5
	Indifferent	26	28	33	38
	Satisfied	42	45	53	91
	Very Satisfied	7	7	9	100
	Total	79	84	100	
Missing	-9	15	16		
Total		94	100		

Table 6.1.6

As seen in the table this one has 15 missing values, but there were only 14 people not receiving the question. Again, this is caused by one respondent choosing not to answer the questions, for an unknown reason. One can immediately see the shift towards the high satisfaction end of the scale, where for example 42 + 7 = 49 persons have chosen the top two alternatives; versus 1+3 = 4 persons have chosen the bottom two.

A final question for sorting the respondents (demographic questions) was if they have completed the online training course or not. The training course is a 'do-it-yourself' module on the Seadrill intranet, describing in detail the intentions and use of TMS. The respondents answered according to SPSS table below.

Have you completed the online web training for TMS?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	84	89	90	90
	No	9	9	10	100
	Total	93	99	100	
Missing	-9	1	1		
Total		94	100		

Table 6.1.7

90% of the respondents have completed the TMS online training course. Again there was one respondent choosing not to answer the question, leaving valid number of respondents to 93. The training course is mandatory but is completed "on your own", and among new employees or on rigs where TMS I fairly newly taken into use there will probably always be someone not having the training course, at any given point in time. It can therefore be considered impossible to get a level of 100% on this question.

The next two questions were asked because they give an indication of how much the system is used, and how it is used. The questions were also asked in the survey in 2009, so they will be a good indication for increased or decreased use of the system. The SPSS tables are presented below; the first one covers electronic versions of information found in TMS, and the second one covers paper copies of information from TMS.

How often do you use a computer to retrieve electronic versions of Directives / Procedures / Detailed Instructions from TMS?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rarely (Few times pr year)	1	1	1	1
	Now and Then (Monthly)	15	16	16	17
	Regularely (Weekly)	42	45	45	62
	Frequently (Daily)	36	38	38	100
	Total	94	100	100	

Table 6.1.8

How often do you use paper copies of Directives / Procedures / Detailed Instructions from TMS?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	3	3	3	3
	Rarely (Few times pr year)	11	12	12	15
	Now and Then (Monthly)	41	43	43	59
	Regularely (Weekly)	30	32	32	90
	Frequently (Daily)	9	10	10	100
	Total	94	100	100	

Table 6.1.9

As the questions reveal, both electronic and paper copies are widely used. Paper copies are according to the TMS documentation just that; paper copies. The only valid and updated versions of any kind of documentation are the one found on the TMS web pages.

The following question is linked to the quality of the content found in TMS, and in addition to providing useful information for the management of Seadrill, it relates to the criteria for good communication of information. It helps separate content-quality and infrastructure-quality. The respondents could here give their answer on a scale divided into 5 options, grading from 'Very Unsatisfied' to 'Very Satisfied'.

How do you consider the general Quality of Directives / Procedures / Detailed Instructions found in TMS?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Unsatisfied	3	3	3	3
	Unsatisfied	15	16	17	21
	Indifferent	31	33	36	56
	Satisfied	37	39	42	99
	Very Satisfied	1	1	1	100
	Total	87	93	100	
Missing	-9	7	7		
Total		94	100		

Table 6.1.11

For an unknown reason, 7 people did not answer this question, leaving valid number of respondents to 87. The answers here initially look like they are focused around

the mid-level of the scale, with the highest numbers of answers on 'Indifferent' and 'Satisfied'. The naming of the answer options might here also play a role, and it is worth noticing that the option 'Unsatisfied' have got a value as high as just over 17%.

The next question is related to user-friendliness, and is important for achieving a long-lasting (in other words successful) implementation.

How easy / difficult do you find it to retrieve relevant information from TMS?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Difficult 1	2	2	2	2
	2	7	7	7	10
	3	10	11	11	20
	4	29	31	31	51
	5	32	34	34	85
	Easy 6	14	15	15	100
	Total	94	100	100	

Table 6.1.10

The initial results show that most of the respondents are on 4 and 5 on the scale stretching from one to six, and the largest group is on 5. A total of 65% is on these two numbers. The top option 6 also has 15% of the respondents, whilst the bottom two options have less than 10% in total.

The next question also seeks to measure the quality of the content of the system. It is of high importance that the information the employees take out of TMS is helpful, relevant and updated. SPSS table below.

How relevant is the information you find in TMS for your work?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	2	2	2
	3	7	7	8	10
	4	16	17	17	27
	5	37	39	40	67
	Very relevant 6	30	32	33	100
	Total	92	98	100	
Missing	-9	2	2		
Total		94	100		

Table 6.1.12

Two respondents chose not to answer this question. The trend is quite clear on this question as well. Over 72% of the respondents are on the top two alternatives, versus less than 10% on the bottom two alternatives. This can be seen as an indicator on the chance of people continuing the usage of TMS, which is crucial for the implementation to be successful.

The following question attempts to look into the bottom-up feedback aspect of the management system. TMS has a built-in functionality for the users to give comments to the documentation they use, and these comments will show up on the system of the document owner/creator. All comments have to be assessed and taken action upon within TMS, and the goal with this is to keep the documentation 'alive' and in line with the perceptions of the people using it. This is also a method to document 'best practice', as it is a formal and easy channel for the workers to give feedback to management on the work processes described in the documentation they use. If relevant, this feedback can than again be put into an updated procedure or work description and be distributed to relevant onshore and offshore installations and personnel. SPSS table on the received answers below.

Have you applied the comment functionality and provided feedback to a Directive / Procedure / Detailed Instruction directly in TMS?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No, I was not aware of this functionality	13	14	14	14
	I know it is possible but have never used it	42	45	45	59
	Yes, I have used this function at least once	39	41	41	100
	Total	94	100	100	

Table 6.1.13

Three alternatives were given, as it is seen important to separate those who know about the functionality but have not used it, and those who are not aware of it at all. Over 86% are either aware of the possibility or have used it, and there is no obvious reason to separate those two groups. Around 14% were not aware of it, and one immediate assumption can be that these are among the same personnel who have not conducted the TMS training course.

Next question is also covering the best practice aspect, and seeks to reveal if employees uses various functions in TMS to actively seek for and look up relevant information. This can be done by using a search function or one can manually go onto other rigs and departments sites to look at their specific documentation etc. SPSS table below.

Do you look to other rigs, departments or organisational units for supplementary information via TMS? (e.g when you are seeking information or developing a new document)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No, I did not know this was possible	2	2	2	2
	I have not done it, but I know it is possible	30	32	32	34
	Yes, I have done this at least once	62	66	66	100
	Total	94	100	100	

Table 6.1.14

The answers on this is quite clear, with close to 98% of the respondents either know about but have not used it, or they have done this at least once. This can be indicators on that the users actively use TMS to find the information they need, not just print the information found on the rig-specific start page of TMS. As it is impossible to tailor *all* information to each rig, not leaving out anything or not including anything not relevant, it is necessary for the employees to be familiar with functions like the ones mentioned.

Nest question seeks to reveal if TMS has changed the usage pattern of management systems among employees. If the workers use TMS more than previous systems (if they have been in positions with other available systems), it is also a success indicator. SPSS table below.

How frequently do you use TMS compared to any previous system you have used?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I have not used anything else than TMS	3	3	3	3
	I use TMS less frequently	10	11	11	14
	About the same	50	53	53	67
	I use TMS more frequently	31	33	33	100
	Total	94	100	100	

Table 6.1.15

All respondents answered this question, and just three percent had no familiarity with other systems. These can be assumed to be new employees or employees new to the positions where TMS comes into use. The major part, around 53%, claims that there is no difference in usage, but 33 also say they use TMS more frequently. One cannot however state that more use = a better implemented system, actively usage can be said to be a factor in a system that is updated and alive in the organisation.

The next question was also related to usage of TMS versus any other known system, and knowing where it is placed among other system can be very useful information in the continuous TMS development. Answers received as in SPSS table below.

How would you say TMS overall is, compared to any previous system you have used?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	TMS is not as good as previous systems	11	12	12	12
	TMS is equivalent to other systems	22	23	24	35
	TMS is better than other systems	57	61	62	97
	N.A. (I am not familiar with any other systems)	3	3	3	100
	Total	93	99	100	
Missing	-9	1	1		
Total		94	100		

Table 6.1.16

One person did not respond to this question. The majority, just over 61% rates TMS as a better system, and 23% are indifferent comparing TMS to other systems. It is also worth noticing that close to 12% claims that TMS is not as good as other systems they have used.

The final question with a rating option, were how satisfied they were with TMS, overall. Answers in SPSS table below.

What is your overall satisfaction with TMS?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Unsatisfied	2	2	2	2
	Indifferent	31	33	34	37
	Satisfied	52	55	58	94
	Very Satisfied	5	5	6	100
	Total	90	96	100	
Missing	-9	4	5		
Total		94	100		

Table 6.1.17

Summed up, over 63% states they are satisfied or very satisfied with TMS, and only 2% are very unsatisfied. A major group of 34% are also indifferent. What would be

considered bad or good on this summarising question is left to Seadrill to decide, but such a low percentage on the very unsatisfied option is definitely worth noticing.

The last question was not a question, but an open text field for the respondents to give comments to the survey or TMS. The comments will not be addressed here in this thesis, but they are given separately to Seadrill for their own internal processing. Many of the respondents left long comments, but they were mostly describing pure technical issues they were having with TMS. However, many comments were also of the positive kind, giving credit to the implementation and usage of one common system for the entire company.

6.2: Analyses

With the results from the individual questions presented, the next step will be to see the results from a wider angle, and see if they, either individually or in combination, can support the selected success criteria for the implementation process. With the demographic questions initially asked it is here relevant to see if there is any connection between how the employees perceives TMS and workplace, experience, rig type, training etc. This can give indications of how well the implementation process has been conducted on the different sites, and discover potential improvement areas. In addition, second hand data available through the previous conducted survey are presented as simple comparisons between the answers on the latest survey and the older ones. The direct comparison is possible because a few of the questions were repeated in the last survey. This is interesting in many ways, as it gives an indication to how the management systems in Seadrill have developed *over time* amongst Seadrill employees. To determine what to analyse there is need to take a look at the success indicators once again. As described in detail in chapter 5.2.2, the chosen success indicators were;

- **Communication of management and operational information**
- **Catch best practice, including communicating and learning from it**

In the following part results from correlations, regression analysis and comparisons will be presented, to show support of the success indicators. The analysis will be

backed up with statistical theory as good as possible, but it is also important to know that any conclusions drawn from the data material will always have a touch of subjectivity attached to them. The main theoretical model the analysis are supporting are the VVV model by Einar Brandsdal described in chapter 5.3.2. Earlier on this model was connected to the implementation process through theory E and O, and in the following part the collected data will be held up against these theoretical views. The first ones to assess are the two chosen success criteria, each one supporting top down and bottom up communication aspects of TMS.

6.2.1: Success criteria 1:

Communication of management and operational information. This criterion is mainly about how TMS function as a top-down communication tool for the management of Seadrill. It is the most vital part of TMS, to get the information out to the different parts of the organisation. The following survey questions were chosen as indicators on this criterion:

- Q6 'How good do you feel TMS is at communicating your Directives / Procedures / Detailed Instructions to its target groups?'
- Q8 'How often do you use a computer to retrieve electronic versions of Directives / Procedures / Detailed Instructions from TMS?'
- Q9 'How often do you use paper copies of Directives / Procedures / Detailed Instructions from TMS?'
- Q10 'How do you consider the general quality of Directives / Procedures / Detailed Work Instructions found in TMS?'
- Q11 'How easy / difficult do you find it to retrieve relevant information from TMS?'
- Q15 'How frequently do you use TMS compared to any previous system you have used?'

One can always argue for other combinations of questions, but the selected ones are believed to be a good representation of the success criteria. First, all the above mentioned questions were tested for correlations as earlier described. Results were as shown in the SPSS table below.

Correlations		Q6	Q8	Q9	Q10	Q11	Q15
Q6	Pearson Correlation	1	.289**	.021	.612**	.468**	.176
	Sig. (2-tailed)		.010	.856	.000	.000	.120
	N	79	79	79	77	79	79
Q8	Pearson Correlation	.289**	1	.468**	.233*	.277**	.275**
	Sig. (2-tailed)	.010		.000	.030	.007	.007
	N	79	94	94	87	94	94
Q9	Pearson Correlation	.021	468**	1	.133	.020	.207*
	Sig. (2-tailed)	.856	.000		.220	.845	.046
	N	79	94	94	87	94	94
Q10	Pearson Correlation	.612**	.233*	.133	1	.482**	.108
	Sig. (2-tailed)	.000	.030	.220		.000	.320
	N	77	87	87	87	87	87
Q11	Pearson Correlation	.468**	.277**	.020	.482**	1	.221*
	Sig. (2-tailed)	.000	.007	.845	.000		.032
	N	79	94	94	87	94	94
Q15	Pearson Correlation	.176	.275**	.207*	.108	.221*	1
	Sig. (2-tailed)	.120	.007	.046	.320	.032	
	N	79	94	94	87	94	94
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

Table 6.2.1.1

The significance level used is as earlier the 95% level, and in the table all significant correlations are marked with green. The text in gray typing is marking the duplicated part of the table, for easier reading. Many of the questions are correlated, but not all. Question 9 and 15 does not fit so well in to the correlation pattern, so the correlation matrix is run once again with those questions removed. Results are shown in the table below.

Correlations		Q6	Q8	Q10	Q11
Q6	Pearson Correlation	1	.289**	.612**	.468**
	Sig. (2-tailed)		.010	.000	.000
	N	79	79	77	79
Q8	Pearson Correlation	.289**	1	.233*	.277**
	Sig. (2-tailed)	.010		.030	.007
	N	79	94	87	94
Q10	Pearson Correlation	.612**	.233*	1	.482**
	Sig. (2-tailed)	.000	.030		.000
	N	77	87	87	87
Q11	Pearson Correlation	.468**	.277**	.482**	1
	Sig. (2-tailed)	.000	.007	.000	
	N	79	94	87	94
**. Correlation is significant at the 0.01 level (2-tailed).					
*. Correlation is significant at the 0.05 level (2-tailed).					

Table 6.2.1.2

As now seen, the remaining four questions are all correlated on the 95% level and one knows that the individual respondents tended to answer low/high on all four questions. One can also see on the Pearson correlation coefficients that the strength of the correlation is quite high, varying from around 0,3 to 0,6. These four questions can now be re-coded into one new variable, and this new variable will be used in the further analyses. Before doing that one needs to make sure that the answer alternatives on the questions are on a same type of scale, otherwise the combination will be wrong. The variables are therefore via SPSS computed to z-scores. A z-score is the specific value of an answer (for example 4), subtracted with the mean of all answers in the variable and divided on the standard deviation of the variable (Skog 2009). Now all the scores are standardised, and these can now be merged into a single variable called 'TopDownComm', symbolising 'top down communication' as the first success criterion. This would not have to be done if the scale on all four question were identical, which it was not in this case. The four variables were merged in SPSS via a function for computing new variables. There are many possible ways of doing this process, and one common way chosen not to use here is by using factor analysis. But the outcome from a correlation matrix and also some use of good old 'common sense' when combining questions also works.

Next step is to use this new variable and look for connections with the demographical variables asked. This can be done in many ways, but the chosen is a simple linear regression analysis as described in the chapter 5.2.4. This way one can see if there is significantly move in the dependent variable when changing the independent one. The first one tried was to see if there was any difference in the perception of top down communication amongst offshore and onshore users of TMS. The table is interpreted this way: The constant of the equation is the computed variable for top down communication, and the independent variable is workplace. The variable for workplace has been recoded and values of 0 means 'onshore' and 1 means 'offshore'. The regressions coefficient show what is happening with the top down communication variable when moving the workplace variable from 0 to 1 (increased by the value of 1). In other words, the change of the respondents answers on the combined variable. The value of -0,114 indicates that the offshore users are slightly less supportive of TMS as a top down communication tool than the onshore users. However, the significance level of 0,867 says that the chance of this being incorrect is 86,7%. Therefore the conclusion has to be that there is no significant difference in the perception of TMS as a top down communication tool amongst onshore or offshore users.

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.226	.458		.493	.623
	(R) Where is your workplace?	-.114	.679	-.019	-.168	.867
a. Dependent Variable: (Z) TopDownComm						

Table 6.2.1.3

Next regression was run with the independent variable of how long the respondents have been working with Seadrill. The results are displayed below.

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-1.167	.714		-1.634	.107
	How many years have you worked for Seadrill / Smedvig?	.587	.278	.237	2.113	.038
a. Dependent Variable: (Z) TopDownComm						

Table 6.2.1.4

Here there is a much clearer connection, with a regression coefficient of 0,587. This one is statistically valid with only 3,8% chance of this being wrong. This clearly indicates that satisfaction with how TMS works at communicating information downwards increases with increased experience in the company. There can be a number of reasons for this, but a close thought is that the more experienced personnel probably possess higher position and are more frequently users of TMS. Another output from the same regression analysis is the value of R square, shown in the SPSS table below.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.237[a]	.056	.044	2.88130
a. Predictors: (Constant), How many years have you worked for Seadrill / Smedvig?				

Table 6.2.1.5

R square is a number representing how much of the observed changes in dependent variable in the regression are being explained by the independent variable. A value of 0,56 means that 5,6% of the observed changes in top down communication satisfaction is explained by working experience. The rest is explained by other variables. Overall not very high, but it has an explanation effect.

The next variable tested were those having completed the online training or not. The constant in the equation equals to those who have not completed the training and the move from 0 to 1 on the independent variable therefore demonstrate the changes in satisfaction when having completed the training. Results are shown in SPSS table below.

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-1.989	1.015		-1.960	.054
	(R) Have you completed the online web training for TMS?	2.414	1.072	.252	2.251	.027
a. Dependent Variable: (Z) TopDownComm						

Table 6.2.1.6

The positive value of 2,414 indicates that there is a clear increase in satisfaction when having completed the training module. The significance level of 2,7% chance of this not being correct also supports this. This can be seen as an indicator that the training module works well, as well as demonstrating the importance of having such a module available. This relates back to Brandsdals VVV-model where he is claiming that training and knowledge around a new system is essential for implementation success. R square for this regression turned out at 6,3%, so again a quite low explanation force of this variable also. This again suggests that there are other factors contributing to the changes in the dependent variable.

There are a few more variables that is relevant to check here, and that is if the perception of TMS as a top down communication tool changes in the different regions and on the different types of installations (rig types). However since these data are not on a scale where one can use regression, other methods have to be applied. A new variable (A) 'TopDownComm' was therefore computed, giving the average score on the four variables Q6, Q8, Q10 and Q11. These averages can than be compared to the different demographical variables to see which ones of the groups are having the highest satisfaction of TMS as a top down communication tool. The statistical function used in SPSS is a simple "Compare Means" tool.

The first demographical variable to assess was the very first question; "Which region do you belong to". The results are showed in the SPSS table below.

Report			
(A) TopDownComm			
Which Region do you belong to?	Mean	N	Std. Deviation
Corporate	3.6	7	.77536
Americas	3.9	21	.70034
Africa - Middle East	3.4	17	.87998
Europe	3.8	22	.90154
Asia Pacific	3.4	27	.80064
Total	3.6	94	.83087

Table 6.2.1.7

It is important to note that the values are average values of the respondents ratings on the different questions included in the variable, and the variations in the vale 'Mean' will therefore not be large. The standard deviation is also a valuable indicator, and the lower the value here is the closer (more consistent) the respondents answers were to the mean value. It is seen from the table that Africa – Middle East and Asia Pacific were the regions with lowest satisfaction. Americas and Europe have the most satisfied users, whereas Corporate users are coming out close to the overall average value. Some of the people working in corporate might be in positions related to the different regions as well, so it might be correct that they are close to average.

The next variable tested in the same way was the grouping of different rig types. Results from this analysis in SPSS table below.

Report			
(A) TopDownComm			
Which Rig-type do you belong to?	Mean	N	Std. Deviation
Drillship	3.6	20	.82826
Semi-submersable	3.6	34	.83964
Benign Jack-up	2.9	5	1.02470
Harsh Environment Jack-up	4.7	1	.
Tender/Semi-tender	3.3	5	.81777
Oher	3.8	21	.74781
Total	3.6	86	.83905

Table 6.2.1.8

The mean values initially look a bit more spread on this question, but here one have to notice the small amounts of respondents on a few of the rig types. Harsh Environment Jack-up for example, has only one respondent, leaving that totally statistical invaluable. On the other alternatives there is not much variation, and that way it can be said that it does not look like there are different perceptions on TMS as a top down communication tool based on which rig type one is looking at.

The last variable tested this way is the question asking for working experience within Seadrill or parent company. The alternatives here were four groups, and results are shown in the SPSS table below.

Report			
(A) TopDownComm			
How many years have you worked for Seadrill / Smedvig?	Mean	N	Std. Deviation
0-2 Years	3.5	31	.71617
3-5 Years	3.6	34	.90911
6-10 Years	4.0	2	1.06066
More Than 10 Years	3.7	27	.86972
Total	3.6	94	.83087

Table 6.2.1.9

Also here, as pointed out in the initial description of the survey results, there were very few respondents in the category of 6-10 years experience. Ignoring this one, it is easy to see a slight increase in satisfaction parallel with working experience. There might be many reasons for such a trend, like for example that experienced personnel have more knowledge about the organisation as a whole and therefore better understand how TMS is built and are working.

6.2.2: Success criteria 2:

Catch best practice, including communication and learning from it. This criterion seeks to reveal how TMS is perceived as a tool for bottom up-communication. This concept this is a little bit more complicated, as it not just seeks to reveal how TMS

works as tool to transport information up the hierarchy, but also how best practices and good working practices are being caught, communicated and learned from. It is in a way the opposite of the first chosen criterion. Questions from the questionnaire attempting to cover this side of the system follow below.

- Q12 'How relevant is the information you find in TMS for your work?'
- Q13 'Have you applied the comment functionality and provided feedback to a Directive / Procedure / Detailed Instructions directly in TMS?'
- Q14 'Do you look to other rigs, departments or organisational units for supplementary information via TMS? (e.g. when you are seeking information or developing a new document)'
- Q15 'How frequently do you use TMS compared to any previous system you have used?'

This collection of questions is intended to throw some light upon how TMS works the other way; up the hierarchy. It is also a point to find out if the organisation is undertaking any learning through the information caught in TMS. However, only Q12 is answered on a numerical scale, whilst the three last questions have a more qualitative approach in its alternatives. In opposite to the questions in previous chapter, these qualitative alternatives do not give much meaning if put onto a scale. Therefore it is not adequate to do compare these in a correlation matrix and try to create one common variable for the intention of the measurement indicator. Instead, simple comparisons between the mean score values of the individual questions and some of the demographical variables were chosen.

Question 12 was the first one assessed, and compared with the variables of regions. Results were as shown in table below.

Report			
How relevant is the information you find in TMS for your work?			
Which Region do you belong to?	Mean	N	Std. Deviation
Corporate	5.0	7	1.155
Americas	5.0	20	1.099
Africa - Middle East	4.8	16	.750
Europe	5.2	22	.853
Asia Pacific	4.7	27	1.137
Total	4.9	92	1.003

Table 6.2.2.1

The scale on this question stretches from one to six, and here all regions consistently answer around 5. This should leave no doubt about the importance of the system, and also it is an indication that the quality of the content found around the world is perceived as quite good.

The next variable to check the same question against was the different rig types.

Report			
How relevant is the information you find in TMS for your work?			
Which Rig-type do you belong to?	Mean	N	Std. Deviation
Drillship	5.1	19	.658
Semi-submersable	4.9	33	1.053
Benign Jack-up	4.2	5	1.789
Harsh Environment Jack-up	5.0	1	.
Tender/Semi-tender	4.4	5	.548
Oher	5.1	21	.995
Total	4.9	84	.996

Table 6.2.2.2

Once again the distribution is quite even, and the exceptions here are the same as seen earlier in the project; the rig types with very few respondents. These should not be seen as statistically valid, so the conclusion here ends up with there being no observable differences amongst the different rig types.

The variable was than run against the working experience categories.

Report			
How relevant is the information you find in TMS for your work?			
How many years have you worked for Seadrill / Smedvig?	Mean	N	Std. Deviation
0-2 Years	5.0	30	1.066
3-5 Years	4.6	33	1.113
6-10 Years	5.5	2	.707
More Than 10 Years	5.2	27	.698
Total	4.9	92	1.003

Table 6.2.2.3

As seen before with the working experience, there is an increase in the values with increased experience. Here this means that the higher level of seniority, the more relevant the information found in TMS is seen as.

Moving on to the next question of the set, question 13 and 14 about knowing about or have used the comment functionality of TMS and looking to other rigs for information. These questions have three qualitative alternatives which are not possible to range towards each other. The best way to analyse these questions are therefore by looking at the responses as was done in chapter 6.1

Question 15 can again be compared by using Comparing Mean techniques. The results of these were very evenly distributed, regardless of which demographical variable taken into calculation. This can be an indicator of that the question is not formulated in such a way that it is a good indicator to say anything about TMS and the implementation process.

6.2.4: Comparing with 2009 survey

As mentioned before a few (three) of the questions in the most recent survey were questions repeated from a survey conducted in 2009, prior to implementing TMS in full scale. This was a part of the process leading up to TMS, where Seadrill were mapping the needs and thoughts around current and a new management system. Amongst previous used systems were TQM (Total Quality Management), but this

was not a system used world wide and by all rigs and departments. Some of the demographic questions in the two surveys were identical, but these are not of any interest to compare as the respondents distributed themselves roughly in the same way in both of the surveys. Also, the data from the 2009 were not available in raw data format, which made SPSS analysis of the data impossible. This mean that any differences discussed along the comparisons of the questions must be seen as potential indicators, as it is not possible to say if the differences are statistically valid. The 2009 survey had around 110-114 respondents on most of the questions. The first comparable question was:

2009 survey:

- How often do you use a computer to retrieve electronic versions of documents / procedures / checklists in the current management system?

2011 survey:

- How often do you use a computer to retrieve electronic versions of Directives / Procedures / Detailed Instructions from TMS?

The slightly different wording is caused by newer terminology used in the most recent survey. The answer alternatives and the results are shown in the Excel graphic below.
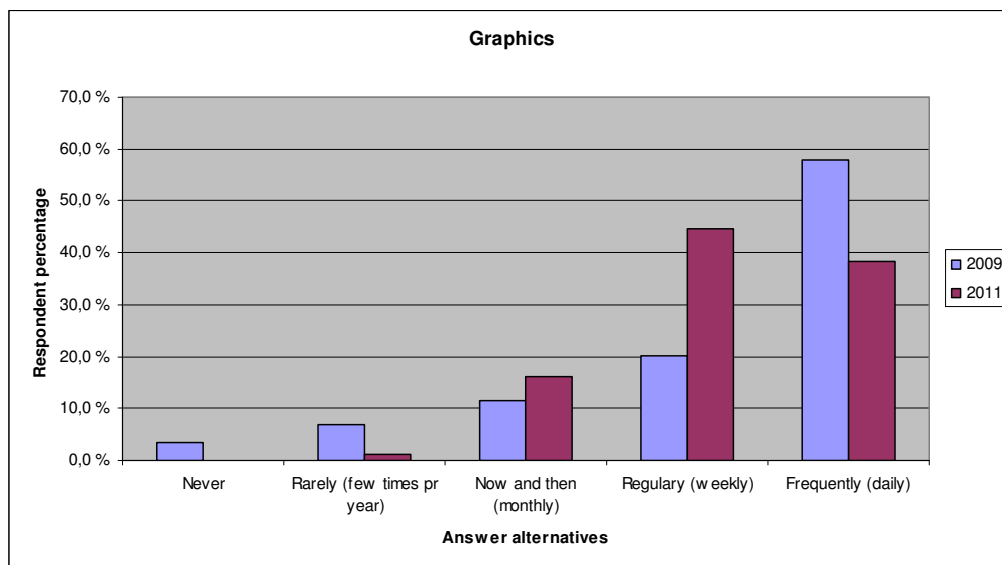
Graphic illustration 6.2.4.1

Not much difference is seen among the users not using a management system/TMS often. But amongst the more frequent users there seemed to have been a small change towards that TMS is not as frequently used as previous systems in the oldest survey. The reasons for this is not easy to say anything about, and pure statistically it might not be as much difference as the graphs are giving the impression of. But without the raw data from the 2009 survey this is not possible to investigate any further.

The next assessed question was the same except one here looked at use of paper copies of documentation from the management systems.

2009 survey:
-   How often do you use paper copies of documents / procedures / checklists to support you in your daily work?

2011 survey:
-   How often do you use paper copies of Directives / Procedures / Detailed Instructions from TMS?

Once again there is a small difference in the chosen wording of the questions, but still they are comparable. The results on this one is quite a lot clearer than on the questions regarding use of electronic versions. Excel graphics below.
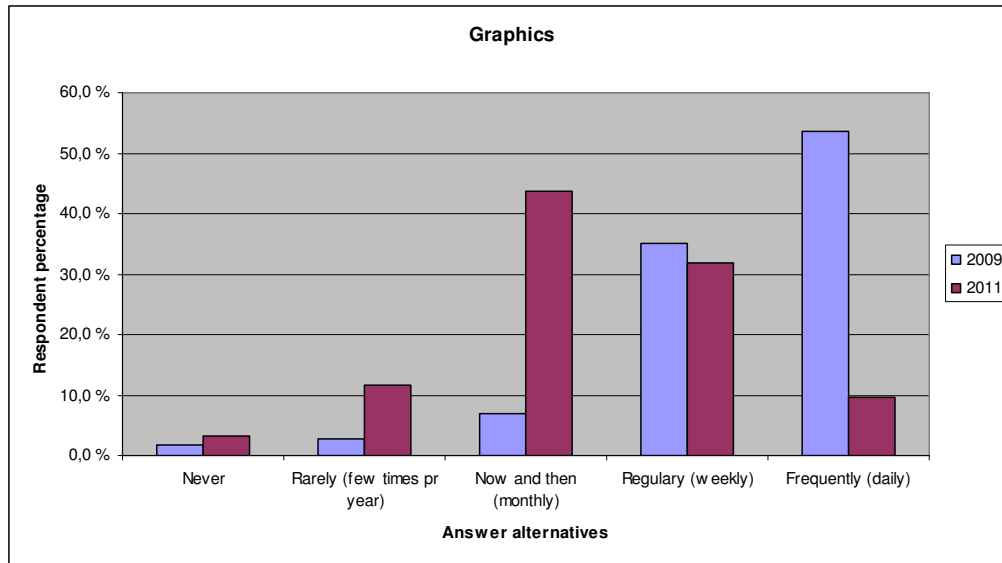
Graphic illustration 6.2.4.2

Here one can easily see a clear shift towards less use of paper based documentation. If this is caused by the introduction of TMS or just the 'change in time' is hard to say, but it is positive for maintaining a live system such as TMS. The documentation of TMS states that the only valid versions of all documentation are the versions found online on TMS, and print-outs should be treated as copies only. With a flow of feedback information up the hierarchy and therefore possible new and updated versions of documentation more often, the decrease in use of paper copies are undoubtedly positive.

The last question conducted in both surveys was this one:

2009 survey:
- How is your overall satisfaction with the current management system?

2011 survey:
- What is your overall satisfaction with TMS?

Once again slightly different words used, but the meaning of the question should nevertheless be identical. Worth noticing here is that there is no available information on which other systems were in use (except partly TQM), so the comparison must be seen as between 'any unknown system' and TMS. Results are shown below.
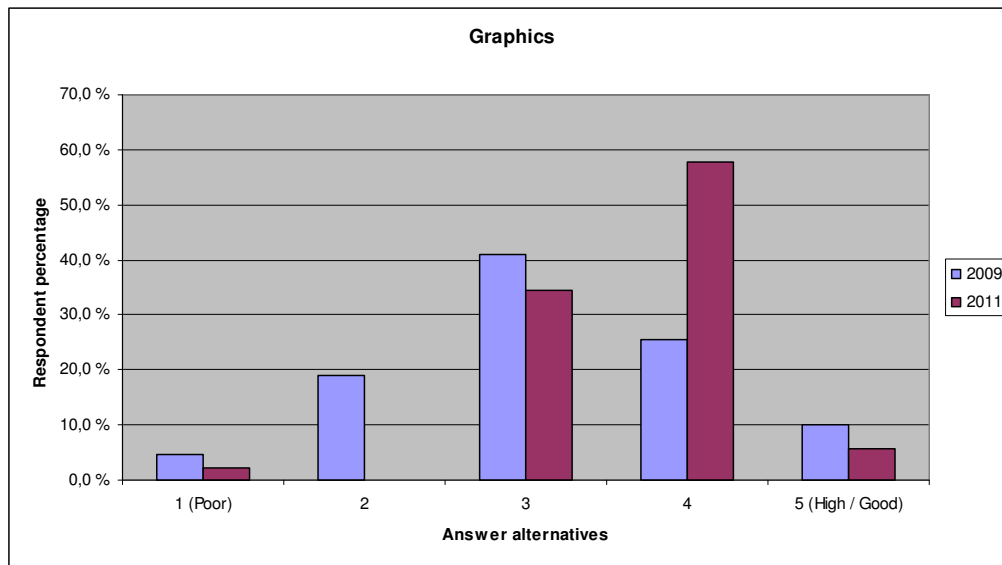
Graphic illustration 6.2.4.3

The results on this comparison initially show a general tendency of respondents being more satisfied with TMS than other systems. However, on this question the answer alternatives were slightly different on the two surveys leaving a question mark with the reliability of a direct comparison. In the 2009 survey respondents were given choices on a numerical scale from 1 (poor) to 5 (high / good), whilst on the 2011 survey this was not done. Questback did not have this option on such rating questions, but a scale graphically illustrated by 5 "smiley-faces" (See appendix 1, question 17). These were named 'Very unsatisfied', 'Unsatisfied', 'Indifferent', 'Satisfied' and 'Very satisfied'. The scale when treating the data however was the same, from 1 to 5. It is worth noticing that the share of respondents being satisfied (4) has more than doubled with the use of TMS. One can easily see a shift towards the more satisfying side of the scale among the respondents.

All in all these three comparisons are good contributors to indicating a successful TMS implementation. But again, because of lack of background material these three cannot be said to be statistically solid, and should be treated thereafter. But such data collected on several points in time can be of great help when evaluating how TMS gradually integrates into the Seadrill organisation.

Chapter 7: Finishing comments

The problem, method, theory, results and analysis have been presented in a logical order throughout the paper, and to finish it off some last comments and critical reflections are being made in this chapter.

7.1: Summary

As seen in the results presented in the previous chapters, the overall conclusion of the implementation proves is in general very good. Vast majorities of the users are satisfied with the system, and it seems like all the resources laid down in this work the last years have been a success. But as revealed in some of the analyses there are groups of users less satisfied with the system, and resources are recommended used on identifying the causes of this. The system might not suit there needs, there might be practical or technical issues which lower the satisfaction rate or it might be related to content quality. However, with such high satisfaction rate these small findings should be seen upon as normal, and treated as rooms for improvement in the continued work of developing and running TMS in normal operations.

The results are clearer from the first of the two developed criteria for success, and this is believed to be related to poor design of the questionnaire (See chapter 8 about research reflections).

Some users' comments given at the end of the questionnaire (not discussed in the paper) pointed out room for some technical improvements within the system, but this is more related to the continuous development of the system of the Seadrill IT and management. The purpose of this thesis was to answer if the process of implementation has been done well, and these two things are important to keep separate. However, as stated early in the thesis, there is a close link between the system and the implementation phase, and to finish with a satisfying result one needs to listen to the users opinions along the way. The initial problem formulation on "How successful has the implementation of TMS in Seadrill been?" are this way believed to be answered, at least to some degree. As stated early in the paper it is difficult to say "four" or "fifteen" on this 'how' question without having comparable processes and a standardised way of approaching the measurement. But the answer can be that TMS overall seems to be well implemented, and are ready to enter the loop of continuous development and improvement within Seadrill.

If not there is chance of having to face high degrees of resistance to the imposed changes. This is a well known phenomenon and is best handled by accepting the resistance and working to turn it to constructive criticism. Then, by using this information in the implementation process, alongside with thorough communication towards the resistant fronts in the organisation, can help achieving a much better result at the end. This research were not focused around implementation resistance, and there is nothing implicating that \

7.2: Research reflections

In the chapter of methods and theory it was stated that phenomena within social sciences is not easy to measure, as they have no natural laws to rely on. With such a viewpoint on a project like this, one should therefore always keep in mind that there are other possible ways of measuring implementation success. Questions could have been formulated in other ways, more could have been asked and less could have been asked. One could have conducted interviews to support or challenge findings, the selection of respondents could have been different, other measurement techniques could have been used and so on. It is therefore natural to take a close look at the entire project, and assess any weak points of the research.

One obvious point to look at is this floating connection between the implementation process and the design of the implemented system. It was stated early in the paper that success depends both on a good system and a good implementation process. The implementation *is* a part of the system, in the way that the system will not work as intended if poorly implemented. But does this mean that one can assess only how the system works, and by doing that determine if the implementation *process* has been successful? The answer to that is not clear, but it is the authors' opinion that focusing the measurements on the system-side is the correct way to go. Because, also as stated, there is a logical sequence between these things, and the implemented system must of course be the counting factor. The implementation process is a tool for achieving this success. This again leads to the simple conclusions, that if one is measuring how successful the system is working, one is measuring the success of the implementation process. Of course, the problem comes if the system is *not*

working as intended. If the focus has been on the results of the implementation process rather than the process, it can be harder to determine where it went wrong.

It has also come clear that a majority of the questions in the survey were covering more of the users' satisfaction with the TMS system, rather than the implementation process. Especially questions covering the second of the developed success criteria were poorly created. If this research should have been done again, more time could have been spent on developing questions related to implementation and implementation theory instead of just how the TMS users conceive the system. Some of the questions answer alternatives had a slightly wrong weighting, in terms of too many of the options were positive angled versus the negative ones. The questionnaire weaknesses resulted in not all questions being as useful as intended. Some questions should also have had a 'Not relevant' answer options instead of forcing recipients to answer non-relevant questions for their position. The questionnaire weaknesses have to some degree influenced the analysis work, by making the work of creating measurable indicators more difficult than intended. The results extracted from the data though, should still be relevant as a viewpoint of the implementation process and rate of achieved success.

X.2 References

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X.3 Exhibits

1. Questionnaire

Total Management System
Building one Seadrill

Seadrill TMS Survey

This short survey will take less than 5 minutes to complete and the results are of high importance for the continuous improvement in our operations.

---

1) Which Region do you belong to?

○ Corporate

○ Americas

○ Africa - Middle East

○ Europe

○ Asia Pacific

This box is shown in preview only.

The following criteria must be fulfilled for this question to be shown:

- Which Region do you belong to? - Americas
  or
- Which Region do you belong to? - Asia Pacific
  or
- Which Region do you belong to? - Europe
  or
- Which Region do you belong to? - Africa - Middle East

2) Which Rig-type do you belong to?

○ Drillship

○ Semi-submersable

○ Benign Jack-up

○ Harsh Environment Jack-up

○ Tender/Semi-tender

○ Oher

---

3) How many years have you worked for Seadrill / Smedvig?

○ 0-2 Years

○ 3-5 Years

○ 6-10 Years

○ More Than 10 Years

---

4) Where is your workplace?

○ Offshore

○ Onshore

**5) Do you create and/or publish any Documents / Requirements in the TMS system?**

○ Yes

○ No

This box is shown in preview only.
The following criteria must be fulfilled for this question to be shown:
■ Do you create and/or publish any Documents / Requirements in the TMS system? - Yes

6) How good do you feel TMS is at communicating your Directives / Procedures / Detailed Instructions to its target groups?

○　　○　　○　　○　　○

---
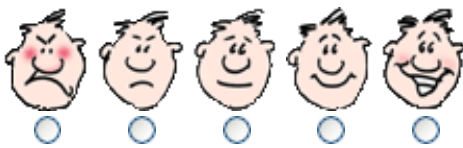
7) Have you completed the online web training for TMS?

○ Yes

○ No

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8) How often do you use a computer to retrieve electronic versions of Directives / Procedures / Detailed Instructions from TMS?

○ Never

○ Rarely (Few times pr year)

○ Now and Then (Monthly)

○ Regularely (Weekly)

○ Frequently (Daily)

---

9) How often do you use paper copies of Directives / Procedures / Detailed Instructions from TMS?

○ Never

○ Rarely (Few times pr year)

○ Now and Then (Monthly)

○ Regularely (Weekly)

○ Frequently (Daily)

---

10) How do you consider the general Quality of Directives / Procedures / Detailed Instructions found in TMS?

○   ○   ○   ○   ○

11) How easy / difficult do you find it to retrieve relevant information from TMS?

	Difficult 1	2	3	4	5	Easy 6
Choose on the scale:	○	○	○	○	○	○

12) How relevant is the information you find in TMS for your work?

	Not relevant 1	2	3	4	5	Very relevant 6
Choose on the scale:	○	○	○	○	○	○

13) Have you applied the comment functionality and provided feedback to a Directive / Procedure / Detailed Instruction directly in TMS?

○ No, I was not aware of this functionality

○ I know it is possible but have never used it

○ Yes, I have used this function at least once

14) Do you look to other rigs, departments or organisational units for supplementary information via TMS? (e.g when you are seeking information or developing a new document)

○ No, I did not know this was possible

○ I have not done it, but I know it is possible

○ Yes, I have done this at least once

15) How frequently do you use TMS compared to any previous system you have used?

○ I have not used anything else than TMS

○ I use TMS less frequently

○ About the same

○ I use TMS more frequently

16) How wold you say TMS overall is, compared to any previous system you have used?

○ TMS is not as good as previous systems

○ TMS is equivilant to other systems

○ TMS is better than other systems

○ N.A. (I am not familiar with any other systems)

17) What is your overall satisfaction with TMS?

○   ○   ○   ○   ○

18) Please provide any comments or feedback regarding TMS here, and press "Send" to finish the survey.