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Abstract

Despite a large number of books and publications about how an ideal procurement department should be structured, few of these put much emphasis on the psychological side of such a change process. In this thesis, a drilling contractor is used as a case study to evaluate this change process. This thesis is a continuation of the work initiated by Gundersen (2014), which outlined a "Lean Thinking" procurement process for the same organization. This study observes the results of the introduction of Lean Thinking into the organization. Cost savings initiatives, emotional detachment, limited transparency and unclear procedures are identified as factors that can to weaken the change initiatives. The spread of new procurement ideas is compared to the spread of virus, offering an alternative perspective on the change processes. Methods of how to increase the likelihood of implementation success are then discussed, where in particular motivational factors and the buyer-supplier relationship are highlighted as opportunities for increased implementation success.

Preface

This master's thesis concludes my master's degree in change management at the University of Stavanger (UiS). The thesis has been both challenging and highly interesting. It has given me a profound understanding of the inner workings of organizations, especially procurement processes.

I hope this thesis can be of value to other organizations. All organizations undergo changes of some sort, and one of the key insight I have learned studying change management, is that while organizations may have their own characteristics, all change processes share certain characteristics.

I would like to express my gratitude to my adviser, Tor Tønnesen, for his help and advice in guiding me toward an interesting research subject, as well as reviewing the thesis itself.

I would also like to thank Dolphin Drilling AS for giving me an interesting place to work and being invaluable in providing information and evidence for my research. Especially, the procurement manager, Cato Gundersen has been very helpful in giving me a sound background into the workings the organization. During my stay there, he granted me continuous support and included me in key meetings and decision-making processes.

Jone Haugland

Sandnes, 03.06.2015

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1. Introduction

1.1 Designing organizations

"Procurement managers are in a position something like the ancient alchemists. In the time before Mendeleev discovered the periodic table, showing how all the fundamental elements were interrelated, alchemists relied on a patchwork quilt of rules of thumb about how different chemicals could combine. These were necessarily incomplete, sometimes incorrect, and often semi-mystical, but by using these rules, the alchemists were able to accomplish surprising things, and their pursuit of the truth eventually led to modern chemistry. Procurement managers await their Mendeleev. At this point, they have no periodic table. They have their own patchwork of principles and rules, which, less than perfect, allows them to get the job done.

Procurement is not an easy subject to write about. To truly understand procurement is to understand an incredibly complex web of creativity, psychology, art, technology, and business. Everything in this web is connected to everything else. Changing one element affects all the others, and the understanding of one element influences the understanding of all of the others.

Most experienced procurement managers have built up this web in their minds, slowly, over many years, learning the elements and relationships by trial and error. And this is what makes procurement so hard to write about. A book or an article is necessarily linear. One idea must be presented at a time. For this reason, much procurement literature has an incomplete feeling — like a guided nighttime tour with a flashlight, the reader sees a lot of interesting things, but can't really comprehend how they all fit together."

The three paragraphs above are taken from the introduction to the book: The Art of Game Design by Jessie Schell[1]. This book investigates the intellectual process behind how video games are created. Interestingly, by only changing the terms "game" and "game designer" into the terms "procurement" and "procurement manager", the basic truth of the insight remains equally applicable. Game design, procurement, or any other profession that lacks the rigor and certainty of mathematics or chemistry, is in this interesting world where decisions are made through an incomplete intellectual framework, and by the use of heuristics. Beshears & Gino (2015) similarly argues that a modern business leader have to think like an architect, constructing an organization both according to aesthetics and functionality. This thesis aims to

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[1] See introduction section of Schell (2008)

unravel some of the complexities involved with setting up a mental model of how a procurement process ideally should function, and with the implementation of such model onto an existing procurement organization with its own particular culture and history.

1.2 Background

"Dolphin Drilling AS is a company that possesses many great qualities and its personnel are always striving for perfection."
                    - Cato E. Gundersen

The above statement is found in the conclusion of Cato E. Gundersen's master's thesis of 2014. Gundersen is the current procurement manager for the Norwegian branch of the drilling contractor, Dolphin Drilling. Gundersen focused on implementing Lean Thinking into the purchasing department. The study investigated three traits that a procurement process can possess: 1) Clear ownership of certain responsibilities to individuals in the organization, 2) Integration of cross-functional procurement teams, and 3) Division of products and services procured into defined categories. Gundersen used empirical evidence that these traits, when implemented effectively, could give the purchasing organization three identified benefits: 1) increased quality in the product or service, 2) decreased prices and 3) decreased time spent on conducting and administering the purchase.

In this study, the psychological aspects of going through changes as presented in Gundersen (2014) are further investigated. The researcher's own personal experiences of working within organizations, suggest that designing organizations and business processes on paper is easier than actually getting the organization to function that way. This thesis thus seek to contribute to Gundersen (2014), and view his proposals within a change management framework.

Research questions
The research questions can be formulated as the following:
How well is Lean Thinking implemented in DDAS? (How)
Which factors can weaken successful implementation of Lean Thinking? (Why)
How can implementation of Lean Thinking be made more effective (How)

By conducting an in depth study of a single organization, the goal is to gain a good understanding of the underlying causal mechanisms that drive organizational behavior. The results could be relevant not only to Dolphin Drilling, but could contribute to the understanding of procurement change processes. Conceivably, some of the insight gained from the field of

procurement might also be useful for similar change processes in other fields. The spread of Lean Thinking ideas, such as Total Cost of Ownership and Category Management, is compared to spread of viral infections, offering an interesting alternative view of change processes.

1.3 Thesis structure

Section 2 contains an overview of two theoretical frameworks. First, the principles of Lean Thinking are outlined and presented as an ideal state. Second, how Lean Thinking can become a pervasive mindset is compared to the spread of viruses in the human body. The remaining chapters of Section 2, explains certain key concepts within procurement, and argues that each of these can be viewed as aspects of Lean Thinking.

Section 3 contains a description of the methodology used in this case study and a discussion of its strengths and weaknesses, as well as ethical challenges in doing the research.

The first chapter of Section 4 presents in general terms the organization observed, Dolphin Drilling AS, while the next chapter views the procurement department. The last chapter explains how the market conditions for drilling rigs have worsened, and argue that this can influence the employees' willingness to reform business processes.

Section 5 contains observations done regarding proposed change initiatives. The effectiveness of such initiatives and factors weakening the change process are evaluated.

Section 6 contains an analysis of the change processes, viewed in accordance with virus theory, and proposals on how to ensure employee motivation and good supplier relationships.

A conclusion of the research done at Dolphin Drilling is found in Section 7, while a list of references is included in Section 8.

1.4 Abbreviations

Abbreviations and acronyms used in this thesis are listed below:

CAPEX	Capital Expenditures
CEO	Chief Executive Officer
CSR	Corporate Social Responsibility
DDAS	Dolphin Drilling AS
DDL	Dolphin Drilling Ltd.

ERP   Enterprise Resource Planning

FOE   Fred. Olsen Energy ASA

LCI   Life Cycle Information

MOU   Mobile Offshore Unit

NOK   Norwegian Kroner

OPEX   Operational Expenditures

PM   Procurement Manager

SAP   Systems, Applications & Products (a software product)

TCO   Total Cost of Ownership

USD   United States Dollar

2. Theory

Changes can be viewed through a variety of lenses and perspectives. In chapter 2.1, Lean Thinking is described as consisting of five activities: Identify value, Map the value stream, Create flow, Establish pull and Seek perfection. Chapter 2.2 then presents Lean as a type of mindset that actors in an organization can obtain. The spread of Lean Thinking is compared to how virus epidemics spread.

Chapter 2.3 is devoted to outline current trends within procurement theory that are being recommended by much of mainstream procurement literature (e.g. Van Weele, 2011), and details how such changes is causing the expectations of procurement personnel to evolve. A special emphasis is put on the concepts of Total Cost of Ownership and Category Management, and arguments are presented for why these can be viewed as aspects of Lean Thinking.

2.1 Lean Thinking

Lean management is a term that is widely used in the management industry. After being introduced by Krafcik (1988), the word "Lean" has become a buzzword that many organizations strive after achieving. Many different definitions of this principle exist, but most of them involve the term "reducing waste". For example, Womack & Jones (1994) defines it as "the systematic removal of waste by all members of the organization from all areas of the values stream". "Waste" in this regard does not merely point to physical garbage, but everything that does not create value to the organization. All actions require some sort of resource as input, either in the form of time or money. In lean management, all actions taken should create a value for the organization that is higher than the resources required as input.

Lean theory originated with manufacturing firms with a defined production line, especially with Japanese car manufacturers such as Toyota. Western management theorists looked to Japan in the 1980s, as its firms seemed consistently to perform better than its western competitors did.

One important aspect of Lean Thinking is to actually be aware of what value is and which actions adds value. Womack & Jones (1996) identifies five principles that constitutes Lean Thinking. These principles and their relationships are visualized in Figure 2.1.
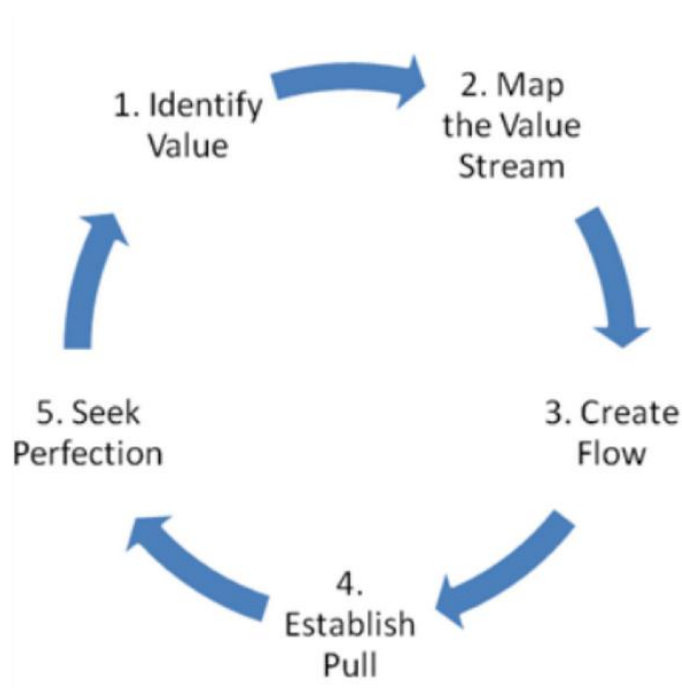
Figure 2.1 – *Five principles of Lean Thinking.*

1. Identify value – What is valuable is determined by the customers of the organization, those who are willing to spend money on the product or service of the organization.

2. Map the value stream - When one knows what value is, the manager should outline all steps involved in producing value to the customer. If some steps are performed today, but no value can be identified, they will be considered wasteful and should be removed. They recommend making a flow chart of how the value creation functions currently, and then make a separate flow chart of how an ideal value creation process should look.

3. Create flow - When the ideal process has been created, a manager should strive to ensure that value flows as freely as possible through the value chain. The less time it takes from beginning to end, the more effective the process is.

4. Establish pull - At the end of the process is ultimately the customer. A manager should seek to increase customers' demand for the products.

5. Seek perfection – The organization must seek to continuously gain knowledge of the products and the market and improve the business processes. Often, this notion is called Kaizen, and is sometimes found separately from "lean". It involves seeking new incremental improvements of existing processes, and never be completely satisfied.

Some criticism of this outlook is that it is too abstract, and can be challenging to convert to practice (McCullogh 2011). Lean Thinking tends to view an organization as a kind of machine that one can set up to run with as high an efficiency as possible. The lean framework mentions little of the differences between parts of a machine and the parts of an organization. While the parts of a machine can be expected to behave identically under similar circumstances, how human beings will behave can be substantially more challenging to predict. Furthermore, each person cannot be expected to behave in the same way as every other person. This added complexity puts the philosophy of a lean organization on slightly more unstable ground. If human beings behave differently than cogs in a machine, how can one then claim to apply the machine-principle and expect good results? Most likely, human beings would resent being compared with parts of a large machine.

Still, there are insight from the Lean Thinking paradigm. The idea of reducing waste as a principle to strive for is difficult to argue against. Organizations and individuals might find insight in focusing on seeking to increase the benefits in selling the products to the customer, and reduce the amount of work that does not further such goals. While there no doubt are ambiguous cases where the amount of extracted benefits may be challenging to discern, there will also be cases that are more clear-cut. The idea of reduced waste could serve as a mental model to consider when conducting day-to-day operations.

Organizations may also be able to achieve greater insight into how the organization actually functions by employing a process-oriented perspective as opposed to a strictly structural approach. A process is by definition something that implies movement and change. It also emphasizes interactions between various business units.

2.2 Virus theory

Traditional economics and management theory view people utility maximizing beings. In organizations, employees are expected to behave in a predictable manner under influence of outside forces, such as by senior management. Change initiatives are thus something that comes from an independent change agent. This view is drawn from Newtonian physics, in that the organization is compared to matter, which will remain at constant speed unless outside forces are being exerted upon it.

The last decades, this view of organizations have increasingly come under criticism. Kahneman & Tversky (1979) developed a theory of human decision making that involved heuristics, rather than predictable rationality. What people do, are being influenced by what they believe, and what they believe can be influenced others. Many have noted how management ideas seem to "come and go" much akin to a clothing fashion, but without much lasting effect. This can create a cynical outlook in employees when exposed to new initiatives that are supposed to increase effectiveness. Lean Thinking could potentially also be a fashion. For example, McCullogh (2011) called Lean Thinking a "fad diet", and argued that savings obtained through lean methods could only be temporary. After the initial buzz had left, the employees would revert to older ways working.

Management theoreticians that instead of physics, uses ideas from biology as a way to understand organizational behavior have done some of the most interesting developments. Dawkins (1976) compared the spread of ideas to the spread of genes, and introduced the concept of the *meme* to as a way of viewing societal changes. Virus theory similarly compares the spread of ideas with the spread of viruses. Interactions between people causes ideas to spread from person to person in a manner that is intriguingly similar to how viruses spread to create epidemics. Contrary to actual viruses, ideas need not make the organization sick. Instead, such ideas can be positive and alter the way people act and interact in a manner that is beneficial both to the individuals and to the organization as a whole. Rørvik (2007) argues that *"the virus metaphor can lead to a more complex and differentiated understanding of effects, an understanding that to a larger extent than existing theories covers an array of observations of how adopted ideas work in modern organizations"*.

Although comparing ideas to viruses may reveal certain insight or patterns of behavior that would not otherwise be apparent, it adopting such a metaphor also comes with certain risks. The theoretician can in a sense come to believe that the ideas are exactly like viruses, and thus automatically attribute to ideas other virus-related properties that are not equally suitable. Rørvik (2007) states that a social scientist should not only look for similarities when adopting a metaphorical concept, but also be conscious of the differences. By adhering too closely to the

virus metaphor, one risks being procrustean in that information might be collected in order to fit one particular model.

Rørvik (2007) identifies seven properties that viruses have, which management ideas also appears to possess:

1. Form, contents and origin: Viruses are simple beings that exists in an in-between space between living organisms and dead matter. Management ideas are also often criticized for being simplistic (McCullogh 2011). Viruses cannot exist without a host, similar to how a management idea cannot be conceived of existing without people to communicate it. Management ideas also tend to come in packages, for example "Lean Thinking", in a way similar to how a virus come inside a shell structure.

2. Infection: Viruses can spread from host to host in one of two ways. Either through direct contact between sick and healthy, or through carriers that are not themselves sick. When viruses enter a human body, proteins in the virus membrane is taken up by the cells in the body, which then proceeds to create new viruses. Ideas also tend to spread her person to person through conversations, either directly by a proponent of new ideas (who is thus infected or sick) to a person unexposed to the new ideas, or eventually through third parties. When a person is convinced of the effectiveness of certain changes, this person is then likely to contribute to spreading the ideas further in the organization.

3. Immunity: When a human body is exposed to viral infections, certain defense mechanisms in the immune system are triggered to combat the intruders. Such mechanisms can be present from birth, or having been developed through previous exposure. The defense mechanism will try to eliminate the virus infection by eliminating virus and exposed cells. The resistance to change in many organizations can be seen as a kind of autoimmune response toward external threats. When new ideas enter become the center of discussion, the ideas can be resented and their proponents ostracized, thus eliminating the threat. From such a perspective, every failed change initiative is likely to cause the organization to become more resistant to changes.

4. Incubation time: From a virus infection starts to the person actually becomes sick, a certain incubation time is required. Similarly, an organization does not immediately change upon the first exposure to a new idea. Rather, the ideas need to be discussed over time in order to ensure any lasting changes. The incubation time can depend on how aggressively the ideas are spread into the organization, as well as the strength of the autoimmune responses.

5. Mechanisms: How viruses cause disease symptoms to emerge is a complex process and can be difficult to predict. When viruses attach themselves to cells, it causes the cells to produce replicas of themselves, which will then proceed to infect new cells. When employees in an organization become exposed to ideas they believe in, they may communicate and argue their ideas to their colleagues through informal conversations and other interactions.

6. Mutations: In human bodies, the virus can itself undergo changes due to random irregularities in the replication process. The mutated virus is usually less effective than its predecessors are, but occasionally beneficial alterations in the virus occur. In organizations, ideas are also mutated when spread from person to person, as each person will make slight alteration in what the idea is when communicating with other. Most of the time, the ideas communicated may be an imperfect version of the idea as presented in textbooks, but it is also possible that the ideas become even more potent when discussed.

7. Activation and deactivation: Some viral infections are completely removed when defeated by the immune system, while others tend to linger alter between an active and a passive mode, and symptoms may come back after a period of no symptoms. Ideas also functions in a similar way, in that some may come and go, and never be heard from again, while others are never really forgotten, and can come back later, maybe in a mutated form.

Comparing a management idea to a fashion trend naturally generates a rather cynical view of deliberate changes. Fashions by their very nature does not last long, so that any lasting changes are nearly impossible. Through a virus analogy, it may be easier argue how some change initiatives are actually successful. While a human body may employ its autoimmune resistances to viral infections, some of the time, the person nonetheless become sick. One of the challenges with a virus metaphor is that a successful viral infection will make a person sick, which is a rather negative outcome. The goal of implementing changes to the organization is actually to make organization function better.

The strength of the virus theory is that is emphasizes the importance of conversations and interactions between employees. Rather than something to be implemented from above by senior management on an unwilling organization, it revolves around bringing small groups of people together and facilitate discussions about ideas, so that the ones with the best ideas will infect the others. As all group members then go about the organization, they will meet other people and infect others. Such peer-to-peer sharing is very powerful. People have been shown to be more likely to be persuaded by people who are in a situation like themselves, rather than by an outsider who does not share the same background (Roberto 2011).

In a well-known study, Jerry Sternin studied malnutrition in Vietnam in the early 1990s (Heath & Heath 2010). He had studied how malnutrition were killing thousands of people each year, and how various previous attempts at addressing the issue had failed due to cultural customs and conservatism. Instead of trying to convince the population to adopt what was considered healthy foods, he initially just interacted with villagers in an attempt to understand the situation. What he discovered was that while malnutrition was a major problem, there were different degrees of malnutrition. Certain families and villages had less malnutrition than the population as a whole. He believed that if these "bright spots" could be identified and highlighted, they could serve as role models for others. Sternin identified children in villages that appeared larger and healthier than the rest of the population, and found startling differences regarding how they lived, ate, prepared meals, etc. He then facilitated gatherings of villagers where they would cook meals together. Instead of an outsider telling the villagers how to eat and live, families were teaching other families about how to do healthy cooking. By interacting with each other, they persuaded each other to adopt new habits.

The results of this basic method were tremendous. The new technique spread very quickly from family to family, village to village, region to region. Malnutrition has now ceased to be a major concern on the Vietnamese countryside. Such a successful story is something every change manager would like to achieve, and it involved creating an epidemic of people infecting each other with rather simple ideas about cooking. Earlier efforts had failed due to autoimmune responses in the form of customs, but by facilitating interactions between peer, these responses were weakened, allowing the viral ideas to take hold. It is also likely that the ideas themselves underwent substantial mutations as they were being discussed at the local level.

2.3. Procurement theory

2.3.1 General

Procurement itself is an elusive term that is difficult to pin down. Various terms exist for labeling the acquisition of products and services from a supplier. Some of these are "purchasing", "buying", "materials management", "inventory management", "sourcing", "logistics", "supply chain management", "vendor relations management" and "contract management". These words are related to the same tasks, and convey similar, but not identical meanings.

Van Weele (2011) is one of the most influential theorists on procurement, and he defines procurement simply as *"all activities required in order to get a product from the supplier to its final destination"*.

Thus, it would encompass the purchasing function itself, inventories, freight, inspection and quality control, as well as maintaining a strategic relationship with suppliers.

Cox (1996) provides a slightly different emphasis by defining procurement as *"a process or method for achieving a 'sustainable position' for an organization within specific supply and value chains"*, while Jahns (2005) calls it *"a company-wide process with a special focus on the security and cost aspects of purchasing"*.

Typically, the procurement function has traditionally been characterized by low skilled workers, whose main job is to issue purchase orders for goods and services required by other departments in the organization (Cousins & Speckmann 2003). Purchasers has been sometimes been called purchasing secretaries in a slightly derogatory way, as they were a necessary part of acquiring goods and services, but believed to contribute little value to the process themselves. As procurement personnel generally cannot be technical experts in the goods that are required, the technical engineers may prefer to deal with the suppliers directly in order to secure that the products that are being supplied are correct. Buyers are then called in after a *de facto* contract has been agreed between the engineers and the suppliers in order to formalize the actual Purchase Orders. For many orders, the buyers have very little say in its actual content.

According to Cousins & Speckman (2003), the role of the procurement professional is undergoing changes, and buyers will require other skills in order to retain its position. There has been a trend in many organizations to move away from buyers with a strictly transactional and administrative function towards more strategic roles that emphasize more close partnerships and frame agreements. Due to the increased capabilities of computer software, much of the transactional processing may occur without the need for a human being. The Enterprise Resource Planning (ERP) software can do many of the steps done in a typical procurement process automatically. A study in Frey & Osbourne (2013) that evaluated a large amount of different job roles concerning automation possibility and the value created for the organizations. They estimated that the likelihood that role of operational buyer would disappear completely within ten years to be 89 %.

Tassabehji & Moorhouse (2007) studied how this nature of the procurement professionals are changing, and will have to adopt new skills in order to be a valuable asset to organizations. When interviewing 17 buyers in various roles within procurement, they identified that procurement professionals tended to have a different idea of the nature of their own function than the ideas of different departments. Although individual organizations varied considerably, procurement professionals tended to report that other departments viewed procurement as a strictly administrative and transactional function. The role of procurement professionals,

according to them, were to formalize the paperwork involved necessary to get the supplier to be willing to deliver the goods or service. They believed other departments viewed them as unnecessary and a bottleneck that only seemed to increased time required obtaining the products or services.

Paulraj et al. (2006) argue that procurement needs to be included in the highest strategic level in order to achieve optimal integration of cross-organizational teams, and note that many organizations do not follow this principle. The weakness of allowing personnel, whose main function is to secure technical quality, is that the commercial aspects of the delivery may not be optimal. Without professional buyers involved from the earliest stages, costs have a tendency to be considered merely as an afterthought.

2.3.2 Total Cost of Ownership

Van Weele (2011) stresses that it is paramount for an effective procurement organization to allow companies to make supplier selection decisions based on total cost of ownership (TCO), rather than price alone. Total Cost of Ownership is a philosophy and methodology that looks beyond prices of a purchase to include many other procurement-related costs. TCO is related to another concept called Life-cycle management. According to Ferrin & Frank (2002), both of these concepts suggest (1) that goods and services are purchased with the long-term perspective in mind, (2) that impacts on other business functions are analyzed before making a specific purchase, and (3) that the costs of all activities related to the purchase are calculated as accurately as possible. It involves considering costs of opportunity by making a particular investment rather than other alternative investments.

Total Costs of Ownership is a fairly well known concept within organizational environments, but Milligan (1999) argues that actually tracking TCO is nearly impossible. Often, it remains just a distant ideal that is difficult to utilize in any consistent manner in the present. Milligan (1999) concluded that the difficulty arose because most organizations did not understand the calculations themselves, did not have the necessary data, or would not share such information freely. Employing a TCO-perspective involves making some predictions into the future based on historical data. If the surrounding setting is expected to change, what was previously true may not continue to be so in the future. In order to take into account all possible contingencies, the calculations can acquire an increasing amount of complexity and sophistication. The risk of attempting to consider too many variables is that the calculations can become challenging to understand, and supplier choice may thus paradoxically be more difficult to evaluate and justify.

Meckbach (1998) argues that TCO is difficult to implement due to no commonly understood

way of performing the calculations and because qualitative properties such as user satisfaction and other business benefits are challenging to incorporate. Thus, it can be viewed more as a philosophy rather than an actual method. It is generally wise to ascertain future costs involved in procurement of products and services, and not merely look at the initial prices, but the method for actually determining which products to purchase, or which supplier to choose, may have to be evaluated on a case-by-case basis both qualitative as well as quantitative. Avery (1999) noted how some organizations have successfully reduced total cost of ownership using project teams focused specifically on total overall cost reductions, including indirect costs. In other words, she suggested that indirect costs would not fall by themselves, or because of reduced direct costs, but because of management's focus on controlling indirect costs.

In a sense, the TCO approach represents an aspect of Lean Thinking. It revolves around a process to identify what really generates value to the organization, not just what appears to create value. There are often no perfect answer as to which purchase or which decision will result in the lowest TCO, so making any decision through TCO analysis may depends highly on the professionals conducting the procurement. Due to the complexity of determining the TCO, lack of perfect visibility and the numerous unseen and indirect costs, calculation the TCO will be a challenge. What can suggested is to view TCO as a state of mind. It will seldom give perfect and unambiguous answers to supplier selection or other decision-making processes, but whoever keeps the principle in their mind might be able to ask better questions and be more active in pursuing value to the organization.

2.3.3 Category management

Some goods and services need to be considered in a different way than others. Kraljic (1983) defined four categories of procurement situations that have been very influential in determining procurement strategies. These categories are aligned along two axes. Along the vertical axis is the profit impact of a purchase on the organization. The profit impact points to the cost of acquiring the product and should ideally be determined by the Total Cost of Ownership principle. Along the horizontal axis are the risks involved with the purchase. Such risks could be due to scarce raw materials, when the supply could be affected by government instability or natural disasters, when delivery logistics are difficult and could easily be disrupted, or when secure delivery is hinging on the performance of a few key suppliers.

This creates a matrix structure of categories akin to that seen in Figure 2.2. Strategic items are goods or services that have a major impact on profit and represent substantial risk if not delivered properly. Leverage items are products with a high cost, but without the risk of not receiving the products on time. Bottleneck items are those that do not constitute a major cost to the organization, but can cause pain when not delivered as planned. Lastly, the non-critical

items are products or services that neither cost much nor represent a major risk to the organization.
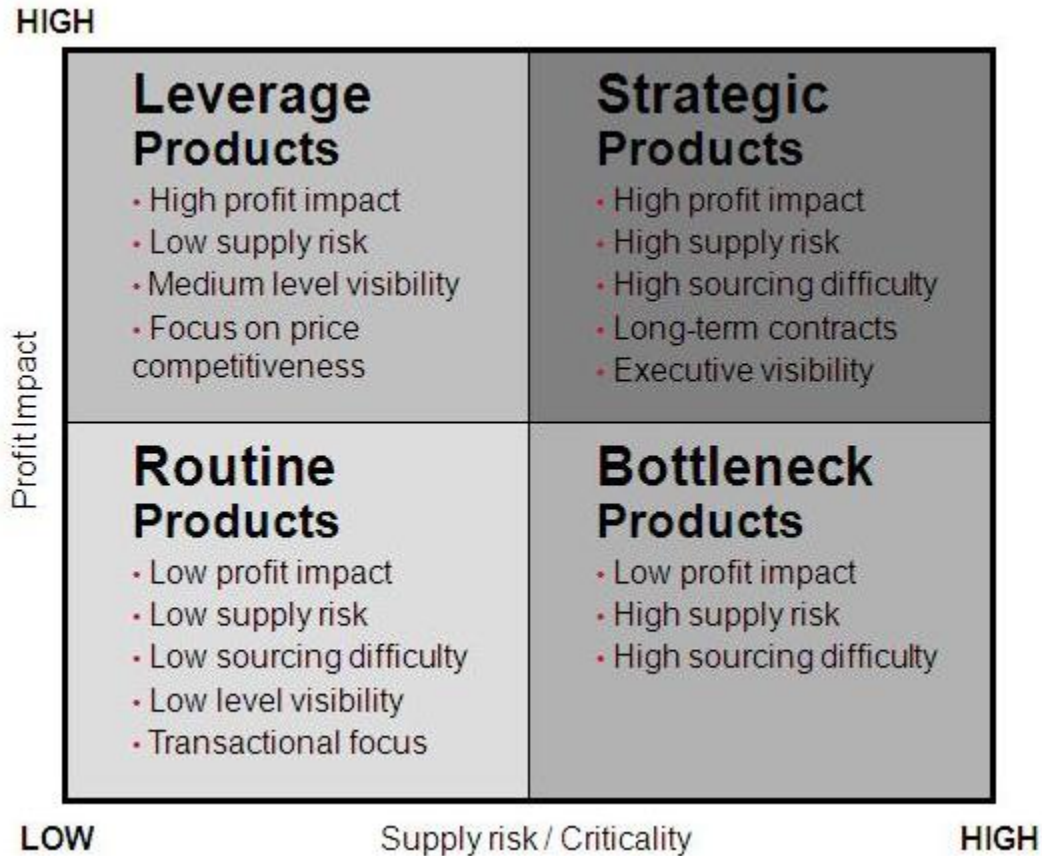
Figure 2.2 – *Kraljic Portfolio Analysis matrix*

Kraljic suggests viewing products belonging to different categories differently, and apply different strategies to procuring them.

Strategic items – These products can be high-tech products, products with one source of supply, and is representing a high share of the total costs in company. The suggested strategy is to spend a high amount of time and resources in order to make the purchase, as focus on this group can substantially reduce costs and risks of delivery issues. The buyer should engage in frequent communication with the supplier in order to secure satisfactory delivery.

Leverage items – These products can be of a high cost, but the nature of the products are usually simpler, and multiple suppliers exist that can offer the same products. Comparing

suppliers and switching from one supplier to another represents relatively little challenge. Kraljic advises to bundle products together into packages

Bottleneck items - These items only represent a small impact on cost, but can be highly critical if not obtained. Monopolies and ineffective market situations exist so that other suppliers have barriers of entry. The strategy is to be less focused on cost, and more focused on creating a secure delivery. The organization may also decide to keep larger stock levels

Non-critical items – These are routine purchases of low value, where even large discrepancies between prices paid and optimal prices does not result in major impact on profits. Neither do they confer any particular risks if not delivered satisfactorily. The suggested strategy for these products are to spend as little resources as possible on their acquisition. Outsourcing and automation are the two most prevalent methods of procurement.

The act of assigning products and services into categories is done in order to identify value to the organization, and could thus be viewed as an aspect of Lean Thinking, similar to TCO. By doing the rather laborious task of categorization, the idea is to enable more deliberate procurement strategies to be possible. Still, it is unlikely that this categorization is ever going to be fully complete, so here too category management should be viewed as a mindset rather than perfect methodology. The mindset involves asking critical questions about what strategies to use for each product.

2.4. Harnessing emotions

When managers do research into what aspects of an organization that require changes, it is ideally a rational decision process. Even if managers have their own personal biases, the methodology used for gathering data and ways of analyzing it is still done by what could be called rational methods, such as plans, flow charts, spreadsheets, etc. During the planning phase, such methods are invaluable, and often reveal quite profound insight about the nature of the organization. Still, during the actual execution of changes, such rational methods may be lackluster, and often even detrimental. Roberto (2011) argues that leaders have to not only engage the intellect of their employees, but also communicate with their emotions. There is a distinct duality between the skills required to do a successful planning phase of a change process, and the skills required to ensure its effective implementation into the organization. Table 2.1 shows that while the planning phase has to engage mainly right-brain activities, the execution of such changes requires "softer" activities, more connected to the left side of the brain of both the manager and the employees.

Kahneman (2013) showed that people have two separate decision making frameworks. He labeled this duality as System 1 and System 2. The former is automated, based on instincts evolved through thousands of years. It adopts mental shortcuts in order to solve problems as they arise. It enables people to reach conclusions, often correct ones, without effort through intuition. As it works subconsciously, it also has the weakness that it can be tricked, and thus lead astray. The latter functions much slower, and requires more mental resources because it uses conscious thought. People can use System 2 to "override" System 1 when needed, but it is often very difficult to be completely rid of System 1-thinking even when a rational is wanted.

Table 2.1 - *Skills and abilities required for planning and executing changes*

Planning phase			Execution phase	
Intellect	Facts		Emotions	Narrative
Rationality	Mathematics		Presentation	Vision
Deliberate	Conscious		Instinct	Subconscious

Most people have been shown to have a natural affinity for either the right or the left side of the brain. Such affinity is based on genetics and one's own history. Still, a person can to a substantial degree, according to Haidt (2006), train to become competent in activities more associated with the side of the brain opposed to one's natural affinity. Therefore, if a manager has a natural tendency to view reality in terms of logic and rationality, through training and development, he or she can acquire the skill set to be able to engage the emotions effectively. Likewise, someone who is more inclined to understand emotions, but struggles or gets bored with rationalistic subjects, the latter can be learned. Certain literature separates l*eadership* and *management* in order to discuss the duality of skills required to work effectively in a position of authority. A person has the role of manager when engaged with right-brained activities, and a leader when dealing with emotions.

Haidt (2006) uses a metaphor of *the elephant and the rider* to describe this duality. The elephant represents emotions, short-term gratification, but at the same time also great power. The rider represents the reason, long-term outlook, but he lacks the strength of the great beast. Therefore, the rider needs to get the elephant under his sway to be truly effective. However, if the elephant does not want to do what the rider wants, the rider is going to lose that conflict. If

the conflict goes on for too long, the rider is going to be exhausted.

Heath & Heath (2010) investigate further the balance between reason and emotion when leading a transformation process. One of their research subjects was a procurement manager in a manufacturing firm in the US, and how he went about in his organization to persuade others to sign up for his ideas. First he engaged a summer intern to gather data on how much the company spent on work gloves, and how much were they purchasing and at what cost. The results he found was that the company bought 424 different kinds of gloves, supplied by a large amount of very small vendors. Furthermore, the prices were shown to vary considerably from location to location. These facts convinced the procurement manager that there was a huge opportunity to save costs for the company by developing a more strategic and planned supply of gloves, and other types of products.

He also understood that reaching such cost savings would require large changes to the way the organization operated, and that this would be a hard sell, as each factory had established ways of doing business and its own culture. One way of persuading would be to share the data and the analysis openly, through spreadsheets and graphs. The numbers could then be allowed to speak for themselves, and convince others as it had convinced him. Instead, he collected one sample of each type of glove that had been purchased and brought them all to corporate management on a conference table, and attached a price tag with the latest purchase prices onto each pair of gloves. Then he assembled a meeting with personnel from all departments just to look at the large pile of gloves.

While such a method is not about presenting arguments in a logical manner, and probably was not 100% correct, it certainly created a memorable image and got people talking. Everybody who saw the pile agreed that this was not the most effective way to procure gloves, and that something had to be done. It is unlikely that a PowerPoint-presentation with numbers and graphs would have made the same effect.

Afterwards, the procurement manager traveled to the individual factories and presented the same gloves to the workers in order to promote the idea broadly throughout the organization. Even if people disagreed on how to rectify the situation, he managed to convince almost everybody that there was need for rectification. When business processes later were altered with less autonomy for individuals to purchase work gloves they wanted, workers were more inclined to accept the changes, as they grasped the purpose of the changes. If the company had not invested as much time and resources to convince the workers of the situation, they would most likely respond less well to reduces autonomy to purchase what they wanted.

There is a dilemma on how much to rely on emotions when arguing for changes. If fancy and populist presentations are not supported by sound analysis, they may backfire on the change manager. If management is trying to convince them to through erroneous statements, faulty logic or incomplete or selective data gathering, they may come to view the manager as incompetent or even deceptive in order to forward his own agenda. A situation where employees lack trust in managers are likely to result in even higher inefficiencies and may damage future efforts to implement changes. It is thus essential, in order to preserve legitimacy, which even if presentations are low on facts and logical analysis, such analysis lies at the foundation and can be provided for review on demand.

3. Method

The investigation was done while I was working as a consultant contractor hired by DDAS' procurement department. The work for DDAS started in September 2013. While the deliberate observations of change processes did not start before mid-January 2015, I had obtained a good understanding of the working processes before that. Observations were completed in mid-May 2015. By working in the organization full-time, this allowed for natural observations of the actors in the organization without the necessity of conducting formal interviews as a stranger.

3.1 Evaluation of research method

The methodological approach of this study is an in-depth, qualitative single case study of the purchasing function in Dolphin Drilling AS. It involved reviewing existing theories, both procurement and the management of change. The choice of virus theory as a theoretical framework for observing change initiatives was made due to its applicability for the spread of ideas.

The single case study, as presented by Yin (2013), functions as a methodological framework for the research. Yin (2013) argues that the single case study allows for an in-depth understanding of organizations, which may otherwise be missed when multiple organizations are considered on a more superficial level. The effects of the implementation of Lean Thinking can be directly observed over time. Ideally, by having access to the inner life of the organization, deeper knowledge of the relationships between its actors may be possible. Yin (2013) further argues that in-depth studies are most appropriate when concerned with "why" and "how" questions. A broader study of multiple organizations may be better to identify "what" phenomena occur and to what extent they appear. He argues that a broad approach is less good for correctly and

completely comprehend the underlying causal mechanisms at the basis of social phenomena. Case-based research also provides a good means to examining time-dependent relationships. By observing and interacting with the subjects, one can identify changes as they happen.

The weakness of such a method is that the scientist and observer can come to identify too much with the actors, and therefore have problems in remaining neutral. The line between a passive observer and an active participant who can influence the results of the observations can become blurred. As I have worked with the actors, both the procurement manager, his employees and other parts of the organization, this generated friendships that can make it difficult to evaluate actions and organizational qualities critically. Voss et al. (2002) describe disadvantages with single case studies, and identify subjectivity, biases and limitations regarding generalizability of conclusions drawn as the major limiting factors. As an attempt to increase the credibility, this thesis uses multiple data sources. When practicable, personal observations is supplied with more structured interviews and numerical data when applicable.

Research was done abductively. The research was done whilst working in the organization. While some informal interviews were conducted with informants in the procurement department and with DDAS' suppliers, most of the information was obtained by engaging actively with the subjects in study. The advantage of such a method is that it increases the likelihood of gaining a sound understanding of the organization, including what its strengths and weaknesses are, and how processes fit together in the organization. The easy access to data and the possibility of doing informal observations over an extended period, as well as personal attendance at meetings and workshops have been valuable in obtaining knowledge of how the organization works.

The weakness with an abductive approach is that definite conclusions are unlikely to arise. Instead, scattered pieces of insight might be gathered, but then they need to be assembled together into some sort of coherent structure or narrative. This assembly of various smaller pieces of knowledge will necessarily be dependent on the researcher. Thus, one researcher may arrive at a substantially different narrative than another researcher, who has the same data available. Furthermore, since the researcher is a part of the organization, the lines between researcher and subject is less clear, and the researcher could potentially alter the organizational interactions as part of the research.

3.2 Research validity and reliability

Yin (2013) identifies four criteria for evaluating the strengths and weaknesses of the research. Challenges with the research related to these criteria are presented below.

Internal validity: How logical is the causal relationship between variables and observations? The problems defined are "how" and "why" questions, and a single case abductive study is generally well suited to come to an understanding of those. In order to improve the internal validity, this thesis has adopted Rørvik's (2007) virus theory as a model for understanding change, but triangulated with theory from other traditions when applicable, such as Lean Thinking, procurement theory and psychology, as well as comparing observations with earlier studies.

Construct validity: How well does the research measure what it claims to be measuring? Lean Thinking is an abstract concept and not something that can easily be measured in an objective manner. Since causal mechanisms will need to be interpreted, it is thus subject to researcher bias. This thesis uses multiple sources of evidence in order to strengthen the construct validity, including informal interviews, participation in meetings and historical purchasing data.

External validity: How well can the results be generalizable to other organizations? Some of the observations may only be relevant for this particular organization. Companies in the petroleum industry is likely to have the most in common with DDAS, but some insight might be applicable to other industries as well. In order to increase the external validity, the organization has been described in detail to allow readers to understand better which insight might be relevant for other organizations.

Reliability: Will other researchers be able to repeat the research with the same data?
Since the research was done on a single organization, through observation and informal informant interviews repeating the research for scientists will be difficult. Even if another researcher proceeds to do a follow-up study on DDAS, the conditions may have changed from when this research was done. Before submitting the study, the procurement manager reviewed the thesis in its entirety in order to strengthen the reliability of the observations.

3.3 Ethical considerations

In research on human beings, there are various ethical challenges involved. The Social Research Association states that in order to keep up with ethical obligations towards research subjects, *"social researchers must strive to protect subjects from undue harm arising as a consequence of their participation in research. This requires that subjects' participation should be voluntary and as fully informed as possible and no group should be disadvantaged by routinely being excluded*

from consideration" [2].

Using the abductive method, the idea is to observe the subjects in their natural situations, so little harm should come from any experimental design. Instead, there may arise possible harm when publishing the thesis if individuals could be directly identified. In order to minimize this issue, care has been taken to anonymize any quotations from employees of Dolphin Drilling, so that confidentiality is not compromised.

The procurement manager has been an active motivator in the research, and can be said to be both fully informed and participated completely voluntary. The other employees in the department were well aware of the research being done, and no one has expressed any protests in participating. One could still question whether their participation was voluntary. When the manager sympathizes with the research, it can be difficult for employees to protest. Another consideration is the somewhat blurry line between working for the organization, and researching the same organization. Since observations were done continuously and through informal interviews, the subjects may not always have known when a conversation were a part of data gathering for this thesis, or when it was merely a "regular" conversation about work.

4. Case study: Dolphin Drilling AS

The following section elaborate on the researched organization, Dolphin Drilling AS. Subsection 2.1 details how DDAS is organized and how it generate revenues for its owners. The next subsection explains how the reduced oil prices in 2014-15, combined with a spike in costs for oilfield supplies and altered currency exchange rates, increases the demand for cost reductions and procurement effectiveness.

4.1 Organization

Dolphin Drilling AS (DDAS) is part of a larger organizational structure. DDAS is owned 100 % by the publicly traded company Fred. Olsen Energy ASA (FOE) along with its sister company Dolphin Drilling Ltd. (DDL). DDAS is a relatively old company, having been founded in 1965. The Fred. Olsen family, which owns FOE, has even longer roots, tracing the start of their prominence to the early 1800s.

Both DDAS and DDL operates Mobile Drilling Units (MOUs). DDAS is based in Tananger, and

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[2] See "Ethical Guidelines" by the *Social Research Association*

supports the MOUs that are operating on the Norwegian Continental Shelf, while DDL is based in Aberdeen and supports all MOUs operating elsewhere. Currently, DDL's MOUs operates MOUs in waters outside Scotland, Mozambique, Columbia as well as overseeing the construction of a new MOU in the Republic of Korea.

Both DDAS and DDL have historically been operated independently (along with the now defunct Brazilian sister company, Navis Drilling Ltda). According to the previous procurement manager, very little communication and coordination was done between the procurement departments of the two companies. When Ivar Brandvold became the CEO of FOE in 2009, he expressed a goal of closer cooperation between FOE's subsidiaries. The vision was to facilitate learning from each other, find and implement best practices and better utilize economies of scale. As of 2015, this is still an ongoing process. DDAS traditionally employed personnel with mainly operational experience, but little in terms of academic knowledge. The rate of personnel with a college degree has been rising steadily and is currently close to a 50/50 split.

DDAS and DDL rents its MOUs to oil producing companies. As of 2015, two of the MOUs (Bideford and Borgland) are on long-term contracts with Statoil ASA and Rig Management Norway AS, a consortium acting on the behalf of multiple oil producers. The third (Bredford) is on a short-term contract with a consortium where Statoil is the leader.

Table 4.1 - *Current data for DDAS*

	Bideford Dolphin	Borgland Dolphin	Bredford Dolphin
Customer	Statoil ASA	Rig Management Norway AS	Statoil ASA (Consortium)
Day rate (USD)	$474 000	$525 000	$442 000
Contract expiry	Mid 2017	Mid 2017	August 2015

From a Lean Thinking perspective, the value generated for the owners of the organization, value comes from renting out the rigs. The drilling industry is characterized by its low number of very high-value revenue sources. Naturally, the organization becomes very dependent on keeping all three rigs operational 24 hours every day of the year. Unexpected shutdowns on even just one of the rigs will result in major losses of revenue. The rigs themselves are highly complex products, with a wide array of different machinery that all have to work sufficiently to

ensure a stable operation. The way from input to output in such a structure is long, and it can be almost impossible to identify how much of the revenue is caused by actions from single individuals in the organization.

Every five years, each MOU has to renew its certificate to operate. Such recertification is always preceded by a major renewal project. The costs of these renewal projects are notoriously difficult to estimate in advance, and typically takes a lot longer and cost a lot more than is expected.

Figure 4.1 show the formal organizational structure of the company. The Procurement & Logistics Manager (PM) reports directly to the chief executive officer (CEO), and participates in a management team of ten representatives from senior management. The procurement department was until autumn 2014 positioned under the vice president of operations, so one could say that it has increased its influence.
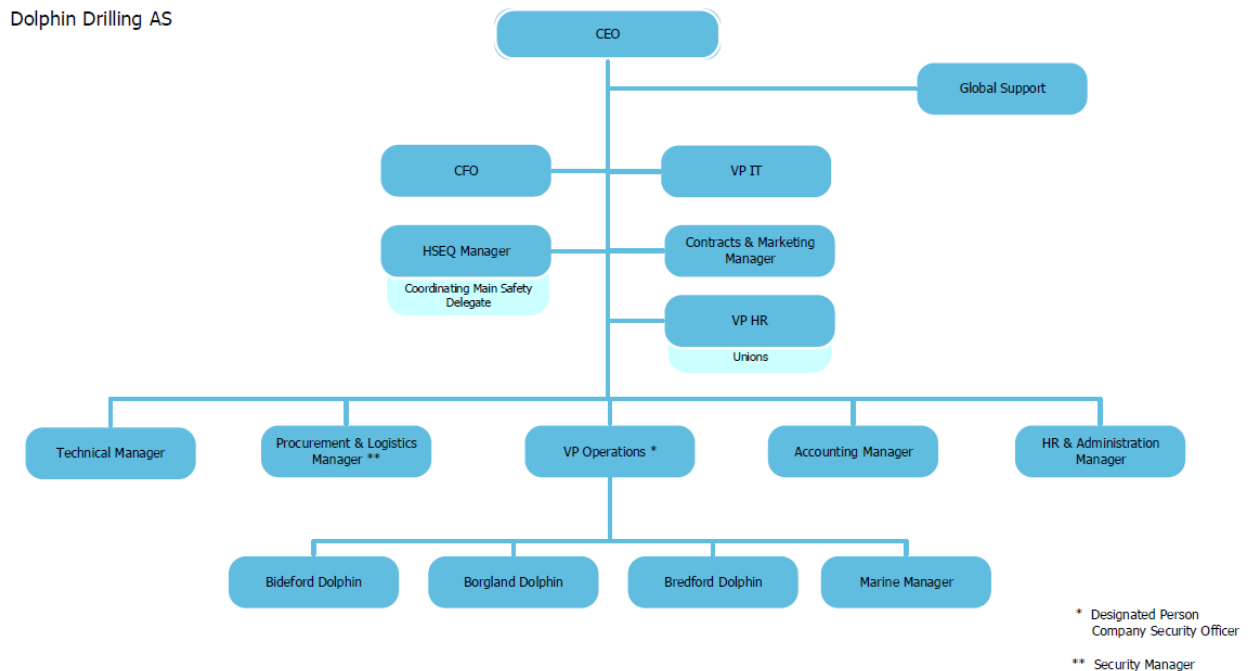

Figure 4.1 – *Dolphin Drilling AS Organization chart. Source: DDAS Management System*

4.2 Procurement in DDAS

The procurement department consists of the procurement manager, three operational expenditure (OPEX) buyers, each having the responsibilities to support each MOU with goods and services by issuing purchase orders, and one buyer is dedicated to acquiring capital expenditure (CAPEX) goods for all three MOUs. In addition, two employees in the department work with negotiating long-term frame agreements and maintaining supplier relationships.

The department also has two employees acting as administrators of the ERP-software (see below) and three contracted warehouse workers from the forwarding agent company, SR Group responsible for receiving and shipping goods, and following up future deliveries.

In the beginning of 2014, much of goods and services were purchased on an ad hoc basis. Few agreements were in place, and those that existed previously had been allowed to expire without any renewal process. The suppliers usually continued to deliver, but prices soared for many of the suppliers. In mid-2014, DDAS also hired a contractor to act as a supervisor of vendor relations, with the responsibility to secure long-term agreements with key suppliers.

The benefits of having one buyer serving one rig is to enable that person to get to get to gain a deeper understanding of the technical aspects of their respective rig, as well as creating a personal relationship with the end users. Having a rig, for which one is responsible, can create a sense of ownership to support the rig as best as possible. The weakness is that one can get too focused on only that particular rig and not seeking to do purchases that benefit the entire organization. There can be a distinct conflict between loyalty to one's particular rig and the loyalty towards the organization as a whole. Occasionally, solutions that may seem beneficial to a particular rig may not be optimal when considering the organization as a whole. Additionally, being responsible for all purchase for the rig makes it difficult to attain any sort of expertise on specific parts of the procurement portfolio.

If the each buyer instead had responsibility for a defined product category (e.g. electrical equipment), the buyer could become an expert on this type of equipment, and might be better at negotiating without having to rely on offshore technicians for technical expertise. The buyers would then be able to better view the fleet as a whole, and consider economies of scale when procuring products and services. The negative aspects of such a change could be a loss of ownership for the rig, which could result in less motivation.

4.3 Current market conditions

This thesis is being written at a time when the prices of oil is experiencing a sudden downturn. Figure 4.2 shows the price of Brent Crude, an index made up of the actual prices of crude oil being extracted from the largest fields in the North Sea. This product serves a benchmark for all fields on all Norwegian fields and many other fields worldwide.
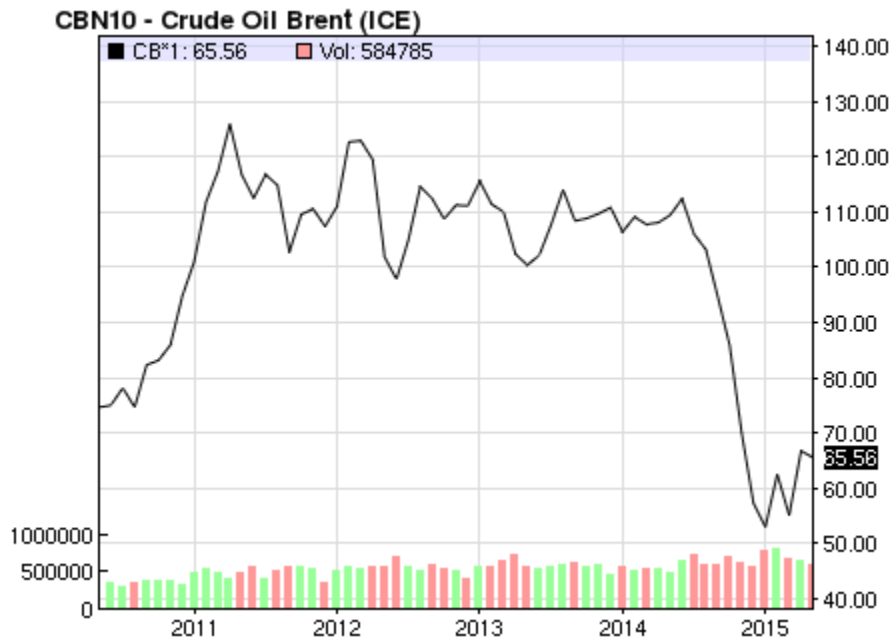
Figure 4.2 – Price development of one barrel of Brent Crude (USD).
(Source: http://www.nasdaq.com/markets/crude-oil-brent.aspx?timeframe=10y)

As a result, oil producers see their profit margins reduced and many oil producers must cut costs. DDAS has received signals that for future contracts, the day rates (described earlier) will have to be reduced. In order to be able to rent out its MOUs and at the same time remain profitable, DDAS will have to reduce its own costs. This then will create a pressure on the suppliers to cut their own costs.

The result is likely to be that profit margins for all actors in the supply chain will be reduced, but the process itself is not a smooth change. At the same time, oilfield suppliers are struggling with the increased costs for manufacturing its products. According to the Norwegian Central Bureau of Statistics (Statistisk Sentralbyrå), there has been a dramatic increase in the cost of the extraction of oil & gas, although the increase appears to have leveled off and even started to decrease, as shown in Figure 4.3.

Figure 4.3 *– SSB's producer price index for "extraction of oil and natural gas and related services" 2000 – 2015. Source: Statistisk Sentralbyrå.*

Suppliers also report that they experience increased costs due to the fluctuation of currencies. Figure 4.4 shows the value of one US Dollar (USD) in Norwegian Kroner (NOK). Most equipment is sold in NOK, while the suppliers themselves procure their materials from foreign subcontractors in USD. As the USD has increased substantially in value compared to the NOK since the start of 2014, many suppliers feel they are being squeezed from both sides with increased costs of manufacturing and demands for reduced prices.

Figure 4.4 *– US Dollars to Norwegian Kroner exchange rates 2005 – 2015*
Source: http://www.xe.com/currencycharts/?from=USD&to=NOK&view=10Y

Fred. Olsen Energy, the owner of Dolphin Drilling, is listed on the Oslo Stock Exchange. Due to the present market conditions, the value of its stocks has declined substantially. The price of

one share of FOE was per 15.05.2015 worth 71,95 NOK, compared to almost 300 NOK in September 2013. Figure 4.5 shows how the value of the FOE-stock has developed over the last five years. It is not known whether oil prices, currency rates or increased costs of production are the determining factor of the declined stock value. Most likely, they all play a part in this development.

Figure 4.5 - *Value of Fred. Olsen Energy Stocks. Source: https://www.nordnet.no/mux/web/marknaden/aktiehemsidan/index.html?identifier=27721&marketid=15*

5. Observations

5.1 Cost savings initiatives

Due to the pressing market situating, there were increased demands for cutting costs during spring 2015. During a meeting, a spreadsheet was presented as a way to register savings done. One type of saving would be calculated by comparing quotes from different suppliers. All purchases worth more than 5000 USD were to be registered in the spreadsheet, with the total price of all quotes compared to each other. The difference between the superior quote and the average of the other quotes was determined to be used as a measure for savings. Employees still were to engage in a little friendly competition with each other, and compare their savings amounts. No rewards or penalties were introduced to the employees through incentivized compensation schemes, Even though there were no concrete protests were given, but one got the impression that they did not particularly like it either. Introducing competition between employees into organizations has been before studied (Milkman et al. 2010). The

results of such studies varies from positive to very negative. While efficiency and productivity can get a boost because of competition, such scheme may also induce worker related stress, thus forcing increased sick leave and even causing employees to leave the organization. Competition between employees has also been believed to cause employees to be more reluctant to share insight with each other, thereby killing the team spirit. Cultural differences can be a strong factor in evaluating the likelihood of employees responding positively to competition.

DDAS has long had a procedure requiring all purchases worth more than 5000 USD would have to be conducted through a bidding process of a minimum of three suppliers. This rule had never been strictly enforced. No accurate data existed for how many quotes were obtained. The buyers estimated that they conducted such a bid process in less than 10 % of the purchases. When asked why they only sparingly obtained quotations from multiple suppliers, they gave the following reasons:
1. "It would take too much time to inquire minimum three suppliers for quotes"
2. "We already have the experience to know which suppliers are the best for the equipment we buy"
3. "Often you do not want to pick the cheapest equipment to buy".
4. "We do not have the competence to evaluate equipment on technical qualities".

5.2 Other change initiatives

In addition to aiming to change the organization in order to achieve short-term savings, multiple other initiatives were under various stages of implementation.

One overarching change initiative is transferring data and processes from something that is stored locally on individual employees computers to something that is more transparent, and less dependent on individuals. This initiative is mainly led by the IT-department, but will affect the nature of procurement processes in a very fundamental manner. A substantial part of procurement is conducted using information technology. Thus, the choices in software and computer systems will govern how procurement functions in practice.

DDAS, along with its UK sister company DDL, utilizes a wide amount of software to run and support its operations. At the base of this is the Enterprise Resource Planning (ERP) system, which is used for procurement, material management, accounting and human resources. The current ERP software is supplied by SAP (abbr. from: Systems, Applications & Products), the German company which is the market leader in ERP systems. Implementation of the current ERP system was run in 2010, by converting data from the previous ERP system, Onix.

As of 2015, there is an ongoing process to implement SAP for the technical and maintenance departments. This conversion process started in 2012, and is not expected to be finished before 2017. Data for one MOU is converted at a time to ensure each MOU learns from the other MOUs experiences. Furthermore, converting one MOU at a time can prevent a total blackout of the entire fleet if some unexpected mistakes happen.

According to Bingia et al. (1999), the implementation of an ERP software is a highly complex endeavor that will have wide consequences for the nature of the whole organization. In order to ensure a successful implementation of an ERP system, there are many concerns that needs to be carefully addressed. This includes the degree of commitment from top management, reengineering required on the existing processes, integration of the ERP with other business information systems, selection and management of consultants and employees, and how employees using the new system will be trained.

Large organizations have been on the forefront in utilizing ERP software to run their business, particularly multi-national corporations. The advantages of ERP is that it can be used to achieve greater levels of standardization of business processes across various locations and a greater centralization of IT resources. According to Carton & Adam (2003), the most common scenario for an ERP implementation in a large multi-national firm is the *phased rollout*, whereby the modules of the application are implemented in all the sites in a series of waves. A standard implementation, as determined by the central headquarters, is copied at each location. Such a one-sided and top-down way of implementing an ERP system can be quite traumatic for individual locations, argues the authors. Local practices become abandoned, which are well established and acquired through a long history of organizational learning. As can be expected, large scale organizational issues then emerges. These problems then are addressed, but require large resources to reduce or remove.

While the actual Purchase Orders have been issued using the ERP-software, communication between buyers and suppliers have been done using e-mail and telephone. As a result of this, the information exchanged between the parties have been stored on personal computers and in personal e-mail inboxes. While individual employees may have some sort of control of what is being communicated, there is a major challenge coordinating what is being said and decided. One employee could agree something with a supplier that nobody else ever learns.

In an attempt to standardize how communication is being done, and increase the transparency thereof, the procurement manager and the IT department has purchased a Customer

Relationship Management (CRM) software[3]. The CRM is developed by a consultancy company using Microsoft Dynamics. The CRM is a database of supplier information, current contracts and ongoing tendering processes. It also links to the e-mail system allowing employees to connect a particular e-mail to the relevant entry in the CRM. By doing so, one can reduce the likelihood of communication being lost.

In addition, the IT-department has implemented a cloud-based storage of electronic documentation. This is a system based on Microsoft SharePoint, and allows the employees to work with documents online rather than on their own computers. SharePoint and CRM is synchronized, to that folders in SharePoint is created when new entries are created in CRM.

5.3 Unclear purchase situations

In DDAS, the purchasing process is formally standardized for all products and services. First, a demand arises on the rigs, either through a maintenance project, or when the stock levels decreases under a defined threshold. The technicians offshore will then create a requisition in the ERP system, where they will request the amount of items they need. The requisition will then be sent to the relevant technical chief officer to approve that the specifications are correct. The requisition is afterwards transferred to an onshore buyer who will inquire in the market to see where the products or services can be obtained for the best prices, best quality and best delivery times. If the products are covered in a valid frame agreement, the buyer should buy the products from the contractor according to agreed terms. If not, the buyer is required to obtain quotations from minimum three suppliers. When the buyer has compared the quotations, he will create a purchase order that will have to be approved by the relevant budget holder. Who the budget holder is will depend on the total purchase order amount. If approved, the buyer will sign and issue the purchase order by e-mail to the supplier. The purchase order will state quantities to be delivered, unit prices, delivery terms and payment terms, as well as certain other factors such as documentation requirements, regulatory references, etc.

In practice, the process is a little more blurry. Moreover, it can vary from purchase to purchase. Unofficially, the company recognizes purchasing the categories shown under. No specific procedure exists for how the various categories should be acquired, but some of them are separated due to the different accounting principles applicable to the various categories.

1. Capital Equipment: Large machinery, with a considerable cost. This equipment is expected to

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[3] A slight misnomer in this case, since the procurement department is dealing with suppliers, not customers.

have a lifetime spanning over multiple years and will require to service, spare parts and repairs in order to function. In the budgets, they are considered assets and follow the principle of depreciation. Purchasing a new capital equipment is a complicated process, where many actors will have their say. The technical complexity is typically very high and cannot be determined completely on a requisition. Typically, engineers, buyers, and maybe a department head will have to sit down with the supplier to discuss together what the exact specifications of the new equipment are supposed to be. As can be expected, conducting a completely unbiased bidding process with a minimum of three suppliers can be challenging when the specifications are not determined in advance. Judging which quotation is superior is equally difficult, due to the fact that choosing a certain supplier for capital equipment may determine which suppliers can be used for spare parts, service engineers or repair work later, so the actual total costs may be difficult to compare directly.

2. Spare Parts: Equipment that is required to maintain Capital Equipment over its lifetime. The value and complexity of individual items is typically lower than for capital equipment. The rigs keep substantial stock levels of many critical spare parts in order to secure that machinery does not break down. Akin to capital equipment, spare parts may require high technical competence to evaluate. A buyer cannot simply look at the prices and pick the least expensive. Often, the spare parts are being used for maintenance on capital equipment. If the spare parts are not correct, this may cause the capital equipment to be damaged or function suboptimally. The terms for purchasing capital equipment may also contain warranty clauses that can be voided if the customer maintain it with spare parts from other suppliers.

3. Consumables: Materials that are consumed upon usage, or when the value is so low that the principles of depreciation would be impracticable. This includes personal protective equipment, hand tools, lubricants, paint and various other low value products. This category is where the official procedure is most applicable. The equipment usually have low complexity, and there is a substantial freedom to obtain the products from many different suppliers. However, the amounts are generally low compared with the other categories. The amount of savings that can be obtained from a thorough sourcing in the market is limited.

4. Service engineers: A service is not a physical thing that needs to be delivered. Rather it is personnel hired to come on board the rigs, often to perform work that DDAS' personnel do not have the competence or capacity to perform. Such services include inspections, repair of equipment on board, certifications, painting. Most drilling rigs are not mass produced, especially older one. Thus, service engineers usually perform a better and faster service if they have deep knowledge of the rigs. Otherwise, a lot of time can be spent familiarizing with the

rigs. In such instances, whoever supplier performed the service last time will have a distinct advantage over someone who has never been on the rigs before. Often, the rig teams will have requirements not only of which supplier should perform the services, but also of which individual. Certain suppliers are in practice being rendered non-replaceable. Too heavy reliance on certain suppliers makes DDAS' negotiating position weaker, and enable suppliers to charge exorbitantly high rates. It can also create problems for the suppliers themselves, as they will be forced to keep certain key personnel or risk losing their service contracts.

5. Repair: This category is for Capital equipment that needs to be dismantled and sent onshore. Typically, the supplier performs an inspection on the equipment, and submits a report of what needs to be repaired. If large repairs are required, DDAS will make a decision whether to repair or purchase new machinery. The manufacturer of the equipment to be repaired may set requirements on who can repair the equipment. If other suppliers work with the equipment, it may render certain warranty clauses void. If no such limitations exist, the equipment generally need to be transported to the supplier's facilities in order for them to do an inspection on it. Naturally, it is impractical to transport such equipment, which are often large and bulky, to three different suppliers and have them inspect it in order to obtain three different repair quotations. In practice, which supplier gets to inspect and repair the equipment is determined by the technicians on board.

6. Rental: If equipment are only required for a short duration, or is unpractical to have ownership of, DDAS may rent various equipment for a specific day-rate. This can be equipment that contracted service personnel use for their work, or equipment that requires periodic maintenance and certification such as mooring equipment or cargo carrying units. For the former, the suppliers generally decide what equipment to use for their work, and tend to charge a high premium on the rental rates. Since suppliers' service, engineers typically are more effective when using familiar equipment, DDAS seldom overrides their choice of equipment. If not directly used by suppliers, the equipment is usually rented on a long-term rental agreement. Only occasionally are these rental agreements benchmarked to other suppliers.

In addition, there are categories of expenses that are not handled by the procurement department, but can be argued to be a type of procurement nonetheless. Major expenses that are not handled by the procurement department are food and groceries, IT-services, training courses, consultancy services, security and HSEQ-surveys. Minor expenses not covered by purchase orders include gifts, social events or magazine subscriptions. In 2015, there has been a focus for the procurement department to obtain better oversight of the terms governing these arrangements, in order to search for possible savings.

Operational buyers reported that they would welcome earlier involvement in the purchasing processes. They often feel they are being left out in deciding which what products to purchase and which supplier to choose. *"When purchasing services, we usually have little impact on the purchase order"* one buyer reported. They also believed that if they could be included earlier, they could add more value to the process and be able to generate savings. In the worst cases, they become involved after the products have been delivered and invoice is received.

In order to process the invoice, they have to create a purchase order in the ERP-system. The buyers reported that they felt more motivated to seek to add value for purchases where they had been involved early in the process. Nevertheless, they also reported that they would like not to be involved when there was technical uncertainty with the goods to be delivered. In the communication between the technicians and the suppliers, they felt they were acting as intermediaries forwarding information back and forth. Since there is a large geographic distance between the buyers, which are placed in the corporate headquarters, and the technicians, which work offshore, getting early involvement from buyers can be a challenge.

5.4 Clarifying business processes

There is an effort to standardize how procurement of complex products and services are conducted. A procurement process generally consist of phases or sub-tasks that naturally follow each other sequentially or needs to be performed simultaneously. Each task can be estimated to take some amount of time, and require some amount of internal resources. Some of the tasks will naturally have a higher impact on the performance of the total procurement project as a whole. Other tasks will be less impacting on the total resources and time spent. A new procedure and project plan describe the various tasks involved in making a decision for which supplier to choose in an open tendering process.

The tender planning phase aims to describe in as adequate a way as possible what exactly should be delivered, and how the suppliers should be evaluated. This description could be as thorough or superficial as is deemed best in the particular case. A thorough description ensures that the products or services are as close to reality as possible, but at the same time, it can require a large amount of research. A more superficial description will not only take shorter time to accomplish, but can also allow for more creative freedom on the part of the suppliers. If the description is vague, the suppliers can be encouraged to come up with their own solutions, which may be superior to what the internal requisitioners could. Usually, the engineers will have to be responsible for providing the technical description, while the buyers and engineers in cooperation should determine how the evaluation should be conducted.

Parallel to determining a thorough description of the demand, the buyers will source the market for potential suppliers. In general, only a very basic description of the product or service is required in order to identify which suppliers would have the competency to deliver what is needed. This phase is known as a pre-qualification. In order for the procurement project to be done in a timely manner, the pre-qualification should be done simultaneously as the tender planning phase. In that way, the buyers will be able to issue a formal invitation to tender (ITT), also known as request for quotation (RFQ).

The rest of the process can be viewed in more detail in the Appendix. Most procurement processes will be simpler than this one, and might not require a formal project plan to ensure its success. Thinking in terms of a procurement project can be useful to identify how a procurement process by its nature is a collaborative effort and that it contains various stages, whose effectiveness relies upon previous stages in the process.

5.5 Departmental interaction

A key issue in many organizations above a certain size involve the uneasy relationship between operational procurement and strategic procurement (Cousins & Speckman 2003). Communication between the two groups is a challenge because of their different perspectives and focus.

Operational procurement typically has a limited and short-term outlook. The goal is to respond to specific requests from the end users and obtain the requested products or services within a period so that it does not cause problems with the drilling operation. Due to the extremely large amounts of losses incurred when drilling operation is stopped, focus is not generally on prices, but on securing that the products are there on time. In DDAS, the operational buyers are the buyers serving each MOU.

Strategic buyers typically negotiates long-term frame agreements, which determines prices for a set duration. Strategic buyers do not usually respond to requests, and so has a lesser emphasis on securing continued operation. Due to the longer perspective, the actual procurement costs become apparent, and so the strategic buyers generally put a higher emphasis on prices. Strategic buyers typically have either a college degree or experience from a managerial position. In DDAS, the role of strategic buyer can be said to include the procurement manager, the vendor relations supervisor, and the buyer of CAPEX-products. The two former positions have been with DDAS a limited period (1-3 years). The researcher can also be said to belong to this category.

Table 5.1 shows a non-comprehensive list of areas where the organizational and strategic buyer

differ.

Table 5.1 - *Comparison of operational and strategic buyers*

	Operational buyer	Strategic buyer
Perspective	Short term	Long term
Education	High School	College
Stay with company	Long (in DDAS)	Short (in DDAS)
Loyalty	Respective rig	Senior management
Focus	Secure supply	Costs

Even though there is a different emphasis, there is a consensus that clear communication between the groups are key in generating success. Without strategic buyers, the operational buyers are forced to put more efforts into inquiring for quotations for every purchase they make. If the strategic buyers have negotiated frame agreements, the operational buyers can then make call-offs against the frame agreement and receive better prices than if they made separate inquiries for each purchase.

Through interviews, the operational buyers reported a lack of transparency into the frame agreements created by the strategic buyers. *"I find it difficult to know which frame agreements are valid and which are expired"* one buyer noted. Ideally, the operational buyers would read and understand the frame agreements as they were being negotiated, but instead they reported not knowing with which suppliers there was a frame agreement.

Up until 2015, frame agreements were either stored on local hard disks or archived in folders in the offices of individual strategic buyers. This made it difficult for others to gain any overview of the frame agreements without consulting the strategic buyers. In order to increase transparency and allow easier access, certain initiatives have been taken. All long-term agreements were scanned and uploaded electronically onto a shared space on SharePoint.

While the buyers welcomed this, they had troubles using them effectively. Frame agreements are written in a dense and legalistic language. For someone not being involved in drafting the agreement, it can be very challenging to understand what is being agreed. Even the part of an agreement that is most widely read, the price list, can be a challenge to understand, as the

descriptions there may not match that which is used in the ERP system they use on a daily basis. A multitude of different discounts, which sets in when certain conditions are fulfilled, can also be quite bewildering. While the strategic buyers may negotiate good prices on the products or services covered in the frame agreement, there is very little verification whether the invoiced prices are those that were agreed. When asked, the operational buyers wanted a more easily understood way of utilizing agreements in their daily purchases and reported that they did not have time to read and look for specific passages in the agreement that they needed.

5.6 Layoffs

On 27.04.2015, the general manager of DDAS called the entire onshore staff to inform that they had not been able to renew the rig contract for Bredford Dolphin, and that the rig likely would cease its operation in August/September. While the work to secure a new contract continues, the general mood is not particularly optimistic. According to the general manager Due to the reduced activity, the company would have to lay off approximately 160 offshore employees and 20 onshore employees. Since many companies in the oil industry have to downsize at the same time, finding new jobs might be difficult. Thus, this downsizing is likely to induce great emotional distress to many people. Some workers admitted to trembling and sleep troubles on the nights after the announcement.

At the time of writing, the outcome of such a downsizing process is undetermined, and not specifically the subject of this research. However, after the announcement, the employees in general appeared more eager to engage in conversations on how to reform the procurement department. Instead of being busy with their day-to-day work, they were more willing to discuss specific purchases, and asking for advice on how they could obtain savings. While these market conditions can be dramatic to live through, they also generates an urgency that can be used to enforce changes within the organization. Kotter (1995) argued that an important prerequisite for change is the perceived threat from the outside. The Kotter-model for implementing changes states that workers are more intellectually flexible, and thus more likely to respond positively to changes in cases of urgency. In fact, it is the very first step, and if no urgency currently exists, he advocates constructing one. The expired rig contract can be said to have created urgency for increased efficiency. For a manager wishing to change the organization, the crisis then represents an opportunity to engage in active discussions about reforms.

6. Opportunities

6.1 Lean Thinking as a virus

Lean philosophy is a set of ideas rests in the minds of people. The following subchapter analyses the spread of procurement ideas in light of the virus theory perspective as described by Rørvik (2007).

6.1.1 Spread of new ideas in DDAS

1) Form, contents and origins: The ideas of Lean Thinking, Total Cost of Ownership and Category Management are all packages of ideas. It appears that the ideas are largely compatible (Ch. 2.3.2 & 2.3.3), but use different language and terminology. They offer a simple idealized picture, and offer insight in improving business processes, but are not easily adapted to complex real organizations such as DDAS. The origins of Lean Thinking in DDAS are difficult to pin down, as predicted by Rørvik (2007). Even if the procurement manager have been active in discussing these ideas, the principles of Lean Thinking were known before he started, especially among senior management (Gundersen 2014). TCO and category management were also known, especially by the experienced buyers, but nobody could say when they first heard of them.

2) Infection: The procurement manager can be viewed as one of the infected, or idea bearer (Rørvik 2007), and is continuously advocating ideas and looking for improvements. The exact term Lean Thinking is rarely mentioned in regular interactions, but procurement terms like TCO and category management are. Conversations regarding these concepts can occasionally also be heard between other members of the department, without the PM leading the conversation. An increased amount of conversations regarding specific purchases also seems to occur, compared to when the research started. This can be seen as evidence for an infectious spread of new ideas.

3) Immunity: There is evidence of resistances towards changing the business processes. The high economic risks resulting in a rig ceasing operation (Ch. 4.1), multiple and complex purchase situations (Ch. 5.3) and occasional lack of transparency (Ch. 5.4) seems to make many members averse to changes. Ideas can therefore be met with skepticism initially, such as the cost savings initiative through quote comparisons (Ch. 5.1). As a result, future creativity towards seeking improvements may be reduced, as ones intrinsic motivation to contribute to

the organization decreases (Ch. 6.2.2). Some buyers also report that similar ideas had been tried implemented before, with limited success. "Five years ago, everybody was talking about automating the purchasing of consumables. Still nothing has happened.", one buyer noted. They therefore expressed doubt that they would have much chance of succeeding this time. This type of resistance can be attributed to an immunity that have developed over time due to previous exposure to similar change efforts.

4) Incubation time: The procurement manager reports being a proponent for challenging existing business processes since he started in the company in 2012. He actively communicates Lean Thinking ideas them in meetings and conversations, both internally in the procurement department and externally to other departments and suppliers. While support have been expressed both from senior management, end users and the procurement department, actual behavior have been slow to change. Lately, though, the PM reports seeing increased focus from multiple places in the organization, especially on cost savings, but also on working more effectively. This all suggests that ideas need to be communicated consistently over time in order to have lasting effect.

5) Mechanisms: When a mindset of reducing waste and focus on customer value emerge, the spread of this can be difficult to track and understand. It involves at least two factors: engaging with each other through *conversations*, and having the *motivation* actually welcome change (Ch. 2.4 & 6.2). In DDAS, the interdepartmental teams supporting each MOU meet on two days per week during morning meetings. This facilitates that ideas can be spread from department to department. Meetings with suppliers are also conducted, which allows ideas to spread from organization to organization. These meetings are generally initiated by suppliers in order to sell products or services. Through a development of strategic relationships, an increased flow of insight might be obtained, resulting in a better mutual understanding (Ch. 6.3).

6) Mutations: The ideas also seems to have undergone changes during the incubation time. While an effort to categorize the different purchase categories have been done, for example Kraljic's (1983) four categories (outlined in 2.3) were not deemed to be fully applicable to DDAS. Instead, six categories (presented in 5.3) were determined to hold more relevance to actual purchasing situations. The ideas from Kraljic have not been forgotten, but can be said to have mutated into a different form.

7) Activation and deactivation: The ideas from Kraljic (1983) are not new, and according to the more experienced buyers, have been brought up from time to time in previous years. Since the ideas have only been mentioned without much efforts to actually implement them, they can be said to have been in a more passive state. When the new procurement manager puts an

increased effort in product categorization, the ideas become active in the organization. The worsened market conditions seems to have lowered the defense mechanisms, which might be an indicator that the time when ideas go to an active state is partially determined by outside crisis, contributing to a sense of urgency as described by Kotter (1996).

6.1.2. Actors to infect

This study identifies four main groups of actors that can be infected with the Lean Thinking virus. These actors are described below.

1) *The procurement department* – The people who the PM leads are the ones that can be most directly influenced by the PMs decisions. The procurement department consists of three types of employees: Strategic buyers (including the procurement manager), operational buyers, and ERP-software administrators.

2) *The suppliers* - By engaging in active conversations with the suppliers, both a better understanding of the product and service categorization and the total costs of ownership may be obtained. As suppliers can be invited to express their own views, DDAS might better how it as a customer can contribute to reduce the suppliers' own internal costs. As of 2014, DDAS acquired goods and services from 858 suppliers in total, out of which 421 suppliers was paid more than 100 000 NOK. It is very difficult to maintain a close relationship with that many suppliers.

3) *Senior management* – Most of them are likely to be familiar with the principles of lean management, so they are supportive of initiatives to increase effectiveness.

4) *End users* – The end users of the goods and services procured are engineers and technicians working offshore. Characteristics of these actors are that they are usually task minded, and view the procurement process as bureaucratic and slow. They work in a physically demanding environment and their access to an office space offshore is usually rather limited. They communicate frustration when required to write long descriptions of what they require, and many prefer to communicate directly with suppliers in order to speed the process. Although most state their interest in cutting cost, commercial aspects are usually not their focus.

The next chapters outline methods for how to facilitate the spread of Lean Thinking within the procurement department itself, and how to form closer relationships with the suppliers in order to gain mutual understanding. The role of senior management and the end users has not been considered in this study, but might prove fruitful for further research.

6.1.3 Ideas to be spread

The virus metaphor can be used to understand how knowledge is seldom enough to generate lasting change. If employees have to think about what to do every time they do it, this can create exhaustion. The organization needs to adopt beneficial *habits*. Habits are activities that are done without the need for conscious thought. In order to generate habits, activities have to be performed repeatedly. If habits become ingrained within a person, they are being initiated through the subconscious, emotionally driven System 1 (described in chapter 2.4).

Lean Thinking is not merely implemented by writing it in a procedure. It involves engaging employees on a deep level and provide them with motivation. Sayer & Williams (2012), in their practical approach, advocate that a manager identify some concrete habits, with which to infect the rest of the organization. They found that asking the employees to try out simple changes that had immediate but small benefits was substantially more effective than communicating abstract concepts in grandiose terms. This short-term and limited perspective when arguing for altered behavior was more effective in obtaining real changes. Below are four examples of lower level habits that can be developed related to Lean Thinking (Sayer & Williams 2012):

1) Customer focus: As a drilling contractor have a few very influential customers, and the value chain is less clearly defined in terms of product input and output, there is a tendency within procurement and other supportive departments not to be particularly concerned with the customers' requirements and wishes. In reality, the mobile offshore units (MOUs) are products that are being marketed and sold, and for procurement to be more conscious towards actual customer needs might enable the MOUs to stand out in the market and ensure renewed contracts. Another alternative is to identify internal customers, whose demands are to be satisfied. The important internal customers are the end users of products and services. Already there is a focus on meeting engineering specifications, but this process is mainly driven by the end users themselves.

2) Reducing cost and time: Employees can be trained to be more focused on work that generate value to the customer. For a professional in the procurement department, it involves developing a mindset of seeking savings opportunities whenever possible. Spending more capital than is strictly required could be viewed as wasteful.

3) Continuous learning: Employees can be encouraged to challenge existing ways of working and be self-motivated to improve processes. Often one can gain new insight by playing the role of *devil's advocate.* The purchasing function is ideally placed to play such a role, as it already acts as a barrier for end users to place purchase orders. By questioning the fundamentals of incoming requisitions to a larger degree, both engineers and the procurement department

should develop a greater understanding of the supplier market, and thus understand better what opportunities exist.

4) Quantifying work: By measuring key aspects of the work, one should be able to gain quantified information. While one often has opinions about what is effective and what is wasteful, this could clarify actual gains in a more predicable manner. This approach is akin to the scientific management methods developed by Frederick Taylor (Taylor 1911). By widening measuring possibilities through new technology could make this even more fruitful. Buyers could be encouraged to measure the areas of interest, and could thus be able to find improvement possibilities.

6.2 Motivation

It is clear that the owners and senior management could be motivated to improve the procurement processes, but the gains from the employees themselves are less clear. Except the possible increased likelihood of keeping one's job, there seems to be little emphasis on what the buyers and end-users would gain by adopting a Lean Thinking-mindset. Category management and TCO require a larger degree of critical thinking and analysis.

The following subchapters discuss how employees can be better motivated, and so to facilitate them to think creatively about improving work processes. By keeping them emotionally invested, their goals could be better aligned with the organization as a whole. Still, one has to take into account the ethical challenges involved with creating a greater emotional attachment to the company. In a period of uncertainty, using deliberate psychological methods to increase the emotional attachment to the organization is likely to make eventual layoffs even more difficult to experience.

6.2.1 Extrinsic motivation

The cost savings sheet presented in Section 5 could conceivably be extended to not only measure cost savings, but also use it to measure the buyers' performance. Once performance has been quantified, it can also be tempting to design a model that ties the employees' salaries to the performance tracking. Whoever can document the highest amount of savings at the end of the year, could receive a bonus at the end of the year. Alternatively, the all buyers could receive a fixed percentage of their documented savings.

The advantage of introducing an incentivized compensation model is to reduce agency costs. In principal-agent theory, there is a misalignment of interests between the principals, who are the owners of the organization, and those of the agents, who are the employees and receive pay

from the organization (Guston 1996). Employees generally do not have the best interests of the owners in mind when performing day-to-day work. Instead, they are more concerned with job security, salary, power, benefits and other interests. The owners themselves do not have the capacity to monitor and control that the employees are acting in the owners' best interest. Linking performance targets with such interests is thus the main goal of principal-agent theory, so that the employees focus their efforts on work that is the most beneficial to the owners (Roberto 2011).

Although creating an incentivized performance compensation scheme may seem natural, it is well worth considering the various challenges involved with its actual implementation. In business language there is a notion of the *law of unintended consequences* (Roberto 2011). While not an actual law per se, it states that in a complex environment like a firm, with its various interactions between its employees and departments, and with its suppliers, customers and third parties, all actions that changes a certain way of operation will have consequences that is difficult to foresee in advance.

Certainly, the first proposal of tracking savings would have been easy to trick so that a buyer could report more savings than was actually reasonable. The buyer could request quotations from non-specialist suppliers, who would naturally have higher prices for non-core products. Table 6.1 shows how an honest buyer would only report very modest savings compared with a buyer who is gaming the system, even if the honest buyer actually pays less for the same product. While it may be possible to create a more sophisticated model of measuring savings, creating such a model will likely be more complicated, more difficult to understand and maintain. If the employees then discover weaknesses that can be exploited, it will most likely be harder to discover them.

Table 6.1 - *Gaming the system*

	Specialist 1	Specialist 2	Non-specialist	Reported savings
Honest buyer	100 kr	110 kr		10 kr
Devious buyer		110 kr	180 kr	70 kr

Extrinsic motivation has been linked to the tendency to commit actions that are considered unethical. Roberto (2011) reports that research has shown a correlation between higher incentivized compensation models and the likelihood of being caught for accounting frauds.

Furthermore, employees who were caught with fraud had on average received larger bonuses than those who was not caught with fraud. While an employee's personal ethics may not change completely due to monetary rewards, it may shift the organizational culture so that fraudulent behavior could become more socially acceptable. If a buyer received bonus based on savings, it could lead him to buy low cost but low quality goods. If such goods broke down quickly, it would give the buyer an opportunity to purchase more goods, and then he could report even more savings. This would give the buyer extra bonus, but would clearly be detrimental to the end-users and the organization as a whole compared with receiving high quality and durable products at a slightly higher price. In addition, it may lead the buyer to obtain products from suppliers involved in unethical behavior, such as employing child labor or disregarding safety norms.

Extrinsic rewards is likely to cause pay disparities over time, both because some employees are consistently better than others, but also because different employees may have different levels of possibility to generate savings. A buyer who procures large capital equipment and machinery will have more opportunities to generate large savings than someone who buys low value consumable items. While they until now have had relatively equal pay, an incentivized salary based on documented savings would be likely to cause these pay levels to diverge. If colleagues earn more, despite investing less effort, they tend to get demotivated because they might feel their efforts are not rewarded. Likewise, if colleagues earn less despite investing a higher amount of effort, they also might become complacent, feeling they already are doing satisfactorily.

Halevy et al. (2012) offers a counterargument. They argue that pay disparities can actually be a benefit, especially when introduced to small, close knit teams. The reason for this is that status is such a powerful regulating force, and large pay gaps creates natural hierarchies and systems of deference. Large pay disparities would lead some members to be considered "stars" while others would settle into the roles as "followers". In a team, this can reduce the amount of tension and conflict so prevalent in many team initiatives. They studied sports teams, and found a correlation between higher pay disparities and higher performance. It should be noted that efforts to produce the same results for regular business organizations have not been as conclusive, and the authors do not advocate introducing high salary disparities (Halevy et al. 2012).

Extrinsic motivation has been shown to work best for organizations that does not require as much cooperation between different employees and organizational departments (Pfeffer 1998). For DDAS, part of the strategy is to ensure more cooperation between business units, and a greater understanding of how all departments are linked together. Introducing a

compensation scheme for the procurement department, could have the effect of causing employees to be more secretive and guard their knowledge more in order to exert greater bonuses. Ideally, employees should perform actions that not only benefit their own situation, but should also benefit other parts of the organization. Designing a compensation scheme to account for such beneficial behavior is very challenging.

6.2.2 Intrinsic motivation

In contrast to extrinsic motivation described above, employees can also be driven by intrinsic motivation. Such view goes beyond assuming that employees are merely self-serving, utility maximizing beings with a predictable pattern of behavior who only responds to punishments and rewards. Instead, people are viewed as beings driven by a sense of accomplishment, who values their contribution to the greater whole, seeks to derive personal development from their work. The benefits of having employees that are intrinsically motivated is that they are genuinely interested in the well-being of the organization. In order to promote intrinsic motivation, a manager will have to focus on the work environment and create an environment that causes people to want to join, stay there a long time and have a continuously high performance.

FOE and thus DDAS owned by the Olsen-family. Wooldridge (2015) argues that family companies in itself tend to induce a larger sense of pride and loyalty than publicly traded companies do, and can better endure crises and thinking long term. One could argue that being a family owned firm can increase the intrinsic motivation in the employees. The main risks he identify is that the successor of the founder may lack his or her business abilities, and the risks of personal conflicts within the family could spill over to the organization as a whole.

One method of promote intrinsic motivation is to create an enemy to compare against. Kidder (1981) found that having a well identified enemy or set of enemies was beneficial to organizational performance, especially when the work required cooperation between business units. In DDAS, the most likely candidate for such an enemy would be its competitors. After all, there are several companies operating mobile drilling units on the Norwegian Sector. Only senior management appears to have a great consideration of the competitors in their day-to-day work. The buyers and the end-users, in general, does not give much thought to what the competitors were doing. When asked, the buyers report that they feel competitor behavior does not affect the work they do to any significant degree.

Humans have evolved as group species, and some of these instincts follow on into their work life. We have a tendency to view other people as either *in-group* or *out-group* (Aronson et al. 2009). During human evolution, the in-group is ones closest family to whom one share genes

and work together to survive, and in which the humans feel a sense of belonging. The out-group is everybody else, who have more distant genetic profiles. As human spend considerable of time in organizations, people can subconsciously come to view colleagues as members of one's own family. However, if the culture is cold, bureaucratic and competitive, unlike the extended families our ancestors lived in, such shift in mindset will not emerge. Thus, in order to harness sense of belonging, a manager could try to shift the environment to be more akin to that of an extended family.

One method to induce this sense of belonging is to introduce rituals. Rituals are actions done repeatedly for a purpose that is not apparent to an outsider. All cultures engage in rituals to a certain degree. The insight to be taken for change managers is to look more closely on how the environment can be changed to foster altered behavior. In 2014, the procurement manager introduced department meetings every second week. While the employees welcomed the opportunity to understand what was going on elsewhere in the business, such meetings can be rather stiff and formal. The meeting room is dominated by a large table, with everybody sitting around in chairs with the manager at the head of the table. At the front is a large projector for presentations. The nature of the room itself has been shown to affect an employee's willingness to express himself, and what type of subjects is discussed. Roberto (2011) for example argues that something as seemingly insignificant as removing the table and chairs in a meeting room can actually make employees respond more positively to changes. The mere act of standing together in a group, as opposed to facing each other across a table, sitting down, can alter how the mind works.

Conner (1995) and later Yukl (2006) have identified various factors that lead people to resist change. Firstly, they argued that often the employees lack the necessary trust. The employees may believe that management is wrong in their assumptions that the organization needs change. Second, they found that employees often did not find change to be plausible or feasible. Worries about their own job and income was also shown to be major concerns of the employees, as making organizations more effective may have the result of making some employees redundant. Even if redundancies were not likely, employees were wary that their job would change, and that they would not be able to cope with their new roles, this was especially true if new roles involved an increasing reliance on technology, or if they involved developing people skills. Their power and status may also be diminished with new roles, as the experience they have built up over the years may not be seen as so valuable anymore.

Furthermore, employees often expressed concerns that the costs of implementing proposed changes, both in terms of investments required and the turmoil and uncertainty involved, would be exceeding the believed benefits. For many non-profit organizations, like universities

or hospitals, changes often revolve around adopting a more market-oriented outlook, and many experienced employees may care about the ethics of such changes. Even in profit-seeking enterprises, there develops a cultural community between the employees, and this has a perceived value of its own. Changes from the top may be seen as a threat to this culture. (Conner 1995 & Yukl 2006)

If the organization is expected to perform a basic task as quickly as possible, threats and fear may be an effective strategy to induce this. Work life increasingly revolves around more complex tasks that have no apparent solution, but instead requires creative thinking. For creativity to flourish, positive emotions needs to be harnessed. The sense of urgency may be beneficial to promote change in an organization (Kotter 1996), but the urgency should not become too great, or freethinking and teamwork might suffer in the very moment when it is needed the most. Roberto (2011) argues that workers in many instances continue to maintain illusions reality even when facing grave threats. The issue with crises in many firms, organizations, governments or even the global society as a whole is that the crises do not appear immediately, but instead creep in over time. The employees thus do not perceive of a situation as one that require any changes.

Convincing people that they are already well on their way to improvements, has in many cases been shown to facilitate further improvements. Crum & Langer (2007) showed that hotel staff that were told about the health benefits of exercise, and that they were already doing a great amount of exercise through the physical nature of their work, lost a significant amount of weight during the next few weeks. A control group who were only told about the health benefits of exercise, but who did not receive information about their current level of exercise, did not show any loss of weight during the same period. It seems as if informing people that they were already performing beneficial activities make them motivated to do even more beneficial activities.

6.2.3 Persuasion
A manager has formal authority defined by a job description and a set of responsibilities. However, this authority is not absolute, and much of the influence a manager exercise comes through persuasion. In fact, attempting to initiate orders may be detrimental to the goals one seeks to reach, especially if managing a team where creativity and collaboration is key to success. According to Conger (2008), the use of orders within organization has seen a decline in effectiveness over centuries, and that power increasingly is exercised through persuasion and negotiation.

He further argues that most people use a direct, but somewhat ineffective way of persuading

others to adopt their view. This method basically stating their vision or plan in a direct and clear cut way, whilst outlining supporting arguments for why this vision should be followed. This approach is rational and logical, and uses facts and data for support. It employs System 2-thinking in its argumentation, but also speaks to the more emotional part of the brain when demonstrating persistence and passion for ones arguments.

Many view persuasive techniques as deceptive and manipulative, thus frowning upon people using them non-discriminately. Conger (2008), on the other hand, would argue that persuasion in itself is value neutral, akin to a knife, but that it can enhance the power of someone using it for either good or bad purposes. To Conger, persuasion is not merely about convincing others to agree with the manager's viewpoint, but should be seen as a learning process for both parties. By actively engaging in persuasive communication, the organization can reach solutions that are more effective for the organization as a whole than what either side initially wanted. When a solution is reached through a concerted effort, all parties understand better and buy more into any changes agreed. They feel more ownership to what could be a new reality.

Conger (2008) identifies four aspects of the persuasion methodology, each contributing to implement changes, and to increase the likelihood to the organization not reverting to old methods later. The first aspect of persuasion is credibility. A person who can appear credible within a field of expertise will have an easier time convincing others than someone who are relatively inexperienced. In Dolphin Drilling's procurement department, the manager is both younger and has less experience than the individual buyers have. Two of them have worked in the department for over fifteen years. Naturally, convincing people to adopt changes is more difficult, than if he had been a recognized authority in the realm of procurement. For this reason, many managers bring in outside experts who can assist in convincing employees of changes required. The procurement manager in DDAS obtained the services of a consultancy firm to arrange periodic workshops with as many as seventy employees, both from offshore technicians and onshore support. This firm employ recognized experts in the field of management philosophy and operations. This can be seen as a way to increase the credibility of new change initiatives, as well as foster discussions to spread and develop the ideas further.

Another aspect of persuasion is the notion of the common ground. While the manager and the employees may have different ideas of how the organization should be structured or how the work is to be performed, there will still be many ideas that both parties can agree on. A manager, who can identify the other party's needs, will have a stronger ability to connect with them and highlight all the things that are already agreed. If the other side comes to see the conflict as one where there is a lot of common ground, Roberto (2011) argues that both parties become more flexible in settling their differences. If only the differences are highlighted, the

parties come to view their positions as more fixed, and thus solving such a conflict would be more difficult. The above-mentioned workshops between the consultancy firm and DDAS can also be viewed in terms of this point. The tone in these workshops have been participatory and slow paced, and built around identifying how the complex supply chain process actually function, and finding key bottlenecks in the interactions between various organizational entities. By actively seeking feedback from the employees, it becomes easier to fundamentally understand their viewpoints, and thus finding common agreed points. It also becomes easier for the employees to grasp the inefficiencies from a management perspective.

As much as conflict can be reduced and rendered less destructive through appearing credible and identifying common ground, it is unlikely that all disagreements will disappear completely. At some point, the other side will have to be confronted with logical arguments supported by evidence. In a complex organization, such evidence can be ambiguous, challenging to grasp and difficult to obtain. As a result, evidence may either be presented in a simplistic and bombastic way, or not at all. For example, many procurement specialists often states that the total costs of processing a purchase order is a particular monetary amount (e.g. 3 000 kroner) in an attempt to argue for how low-value items should be bought in large quantities. While the costs of processing a purchase order no doubt are substantial, and purchasing in bulk generally saves money, the individual specialists tend to vary this number to a substantial degree, and very few can cite any source to back up their claim. Without clear evidence, the persuasion process is very difficult.

The last aspect of persuasion, according to Conger (2008), is the emotions. Changing ones position and viewpoint is not merely about analyzing facts logically. Humans also become emotionally attached to preexisting ways of thinking. We do not like being wrong. Losing an argument can be interpreted, either consciously or unconsciously, as a loss of status within ones social setting. Since people fear such loss of status, a manager who can reduce the emotional and social impact of changing one's view can have an easier time convincing others. Concerning this aspect, the efforts made at DDAS has been rather limited. Little conscious thought are given as to how experienced buyers will react to basically being told that how they have been working for the last decade is inadequate, insufficient, or just plain wrong. The emotional part of the brain then sets in, overriding the logical part, and it is quite possible to navigate through such conversations on instinct. Thus, when discussions arise about procurement processes, one often gets a general feeling of discomfort and worry about how sentences have to be carefully constructed so as not to appear offensive. Although the discussions usually manage to avoid high emotional distress, the cautiousness from both parties can often be of hindrance for constructive solutions to emerge.

6.3 Strategic procurement

In a period of decreased demand for drilling services, the pressures on the suppliers to cut the prices on their products are prevalent. When asked, the majority of oilfield suppliers report almost all their major customers are issuing letters asking for price reductions. Since prices are determined by their internal costs, most of them are unwilling to reduce their prices by an arbitrary percentage, as it would in the end be unsustainable. Instead, they argue that DDAS could save substantially if the suppliers were included in the planning phase of projects, so that they had better time to prepare for delivering products and services.

Engaging more actively with suppliers and discussing key deliveries may result in the spread of good ideas between the customer's organization and the supplier's organization, enabling both companies to coevolve and learn from each other. The following subchapters are devoted to elaborating on how such a strategic relationship may be constructed, also while highlighting some of the risks.

6.3.1 Long term supplier relationships

Kraljic (1983) recommends developing close strategic partnerships with a limited number of important suppliers. The relationships would be underlined by a frame agreement, determining how both parties agree to common terms, and how both parties commit to seek improvements continuously. Each type of these frame agreements will have to be tailored to the specific type of product category or service to be performed. A frame agreement can be a living document that serves as a foundation guiding the relationship, but it can also be a dead document in a folder that nobody reads. In order to secure that the agreement is up to date and improved upon, both parties will have to delegate time and resources to engage in strategic discussions on a periodic basis.

These are long-term strategies, and can be difficult to prioritize compared with shorter-term activities. Maintaining close relationships with a large amount of suppliers requires continuous investments of time and investments. Conducting fair, open and thorough tendering processes on a periodic basis is takes a substantial amount of time and it also has to be prioritized. If this work is neglected, employees are likely to revert to the old, reactionary way of procuring goods and services. All buyers asked reported that they would like to spend more time talking with suppliers, but that their day to day work was so filled with administrative affairs and following up on urgent deliveries, that finding the time develop these relationships were difficult. Even if such meeting were written down as clauses in the frame agreements, they were often forgotten or deliberately canceled.

There are certain ethical considerations to make when developing a close and long-term relationship with a supplier. It is easy to develop a bias viewing the supplier as performing better, and being more crucial, if one develops a personal relationship. From a buyer's point of view, developing closer relationships require a balancing act. On the one hand, the buyer would like to know the supplier on a deep and fundamental level so that its needs and priorities can be identified. On the other hand, personal friendships needs to be restrained in order to maintain a professional neutrality.

6.3.2 Principled supplier negotiations

When working with procurement, professionals often are engaged in negotiations. Negotiations can range from very simple to very complex. In such negotiations, there are two parties, who each have their own goals and agendas. Freeman (2014) argues that a negotiator can enter into a negotiation with a number of predispositions: Win, Win-lose, Lose-lose, Lose-win, Win-win. Such predispositions can define how the subsequent negotiations are conducted, and the result of these negotiations.

A negotiator who adopt a Win-mindset, is mainly concerned with his own gains from the negotiations, but is not concerned of how the outcome affect the opposing party. A Win-Lose mindset creates a mental model of a limited amount of resources related to the process. In order to gain, the other party has to lose. The goal of the negotiator then becomes to claim as much of the pie as possible, and ensure the other party gets as little as possible. The lose-win mindset means that the negotiator has already conceded defeat and defers any gains upon the other side in fear. With a lose-lose mindset, the negotiator similarly concedes defeat, but seeks to make the opposing side lose as much as possible in the process.

The superior way to approach most negotiations, Freeman argues, is with a win-win mindset. By thinking win-win, the negotiator seeks not only to gain value for one's own organization from a particular business agreement, but also aims to understand the how the arrangement can create value for the other side as well. Often, some parts of an agreement that can seem inconsequential to one side can be destructive to the other side.

In Dolphin Drilling, one can see evidence of most of these predispositions in both buyers and other parts of the organization. Different procurement situations is likely to cause different negotiation mindsets. For example, where the bargaining position is considered strong (ref. Kraljic matrix: Leverage products), there is a higher focus on cutting the prices of products, while for more monopolistic suppliers, there is a distinctly more cautious tone. In a sense, the former constitutes win-lose, while the latter can be seen as a lose-win situation. There is also

slightly different perspective that can be seen for the strategic buyers compared to the operational buyers. The strategic buyers were more focused on reducing costs, while the operational buyers showed a higher emphasis on receiving a secure supply of goods.

Suppliers have noted that DDAS is one of the more trustworthy customers they do business with, but also admit that they perceive the company as somewhat unprofessional concerning its relationships with suppliers, but that this is improving. They still are happy with the company's ability and willingness to pay, resulting in little arguments around invoicing and commercial terms (Gundersen, 2014)

6.3.3 Supplier succession plans

The risks of becoming too close or too dependent on key suppliers are well known. Many of the suppliers delivering goods and services to DDAS are considered irreplaceable. For these suppliers, no clear alternatives are being considered, and the incumbent supplier is expected to continue to supply the products or services in perpetuity. If such suppliers should disappear, or for some reason decide to cease their deliveries to DDAS, this would represent a major problem for DDAS. Likely, there would be a chaotic process to quickly try to obtain such services from another, probably inferior, supplier.

In some ways, the relationship to a supplier can be compared to relationship and organization has to an employee, and there are some insight to be gained from doing so. An employee can seek to advance in rank. When advancing, the employee will get new types of work to perform, often at a higher abstraction and knowledge. However, the employee will also leave some type of work behind, for others to perform the future. This enables a natural succession process that is beneficial for both the person advancing, and the new employees. Suppliers differ from employees in this key aspect that they usually aim to maintain as much work as possible. Even if increasing their scope of work, they usually also seek to keep their existing work. Thus, there is less incentive and motivation for suppliers to ensure effective ways of succession. The supplier is more likely, if left to their own machinations, to try to create barriers of change. Their incentives are to make it as difficult for the customer as possible to switch to suppliers.

By conducting periodic tendering processes, not only does one increases the likelihood of purchasing at reasonable prices. The organization also can use the opportunity to gain higher understanding of what alternatives exist, and maybe even start developing parallel relationships with unsuccessful bidders. This would have the result of contingencies should the preferred supplier decline in performance. Thus, the supply chain would be more robust and less dependent on certain critical suppliers.

Obviously, since maintaining relationships with active suppliers is so resource and time intensive, doing the same even with suppliers that are not being used will be challenging, and difficult to sell. Determining with which suppliers to engage in closer relationships, should be a decision based on cost impact and supply risk, in accordance with the Kraljic-matrix outlined in Section 2.

Another way to increase the robustness is to demand full access to as much data as possible. Buyers should attempt to remove legal barriers to allow this data to be used for all purposes. For example, inspection reports performed by one supplier should be open and accessible even to competitors, so the cost of changing the supplier would decrease. For the suppliers, such open access of information would present both a challenge and an opportunity. On the one hand, it would make their position with existing customers weaker, as they would be considered less crucial. On the other hand, it could also open the door to other customers, as their dependence on existing suppliers would be weaker.

7. Conclusion and further research

7.1 Conclusion
In this research, Dolphin Drilling AS has been used as a case study in order to seek a better understanding of the psychological side of reforming procurement processes. The procurement ideas of Category Management and Total Cost of Ownership, have been viewed as aspects of a broader idea of Lean Thinking, and their spread in the organization is compared to the spread of a virus infection. The research questions and the main results are listed below.

How well is Lean Thinking implemented in DDAS?
DDAS is currently undertaking various change initiatives to improve and renew its organizational processes such as:
- Tracking and measuring cost savings
- Increased use of cloud-based file management allowing increased transparency
- Standardized procedure for conducting tender processes.

Which factors have weakened successful implementation of Lean Thinking?
The following factors have been identified as limiting the spread of Lean Thinking in the organization, and the employees' interest in change:
- Differing purchasing perspectives,

- Limited motivation towards change,
- High economic risks if rigs' operation are stopped due to critical
Lack of transparency and multiple different purchase situations also seem to play a role in the resistance towards change. However, there is evidence of considerable improvements in these areas as a result of cloud-based file systems and a clearer process for tendering.

How can implementation of Lean Thinking be made more effective?
Four main groups of actors are identified that play a role in the procurement change process: Buyers, suppliers, senior management and the end users. For the first two groups, the following opportunities are identified to ensure the spread of ideas:
- Buyers: Increase intrinsic motivation through communication and persuasion.
- Suppliers: Develop closer relationships to increase inter-company communication, and thus exposing the organization to new ideas.

7.2 Further research

While the degree of support for Lean Thinking in the procurement department itself and towards the suppliers has been evaluated, more research should be focused on the other two roles outlined in Chapter 6.1: senior management and the end users. They both play important factors in ensuring effective procurement.

Virus theory offers an interesting perspective of looking at changes. Further development of the virus metaphor is possible. The virus metaphor might also be used to not only explain procurement processes, but the spread of ideas in general.

It is uncertain how much of the results are specific to DDAS, and how much can be generalized to other organizations. By conducting similar research on other companies, one might identify which patterns are recurring.

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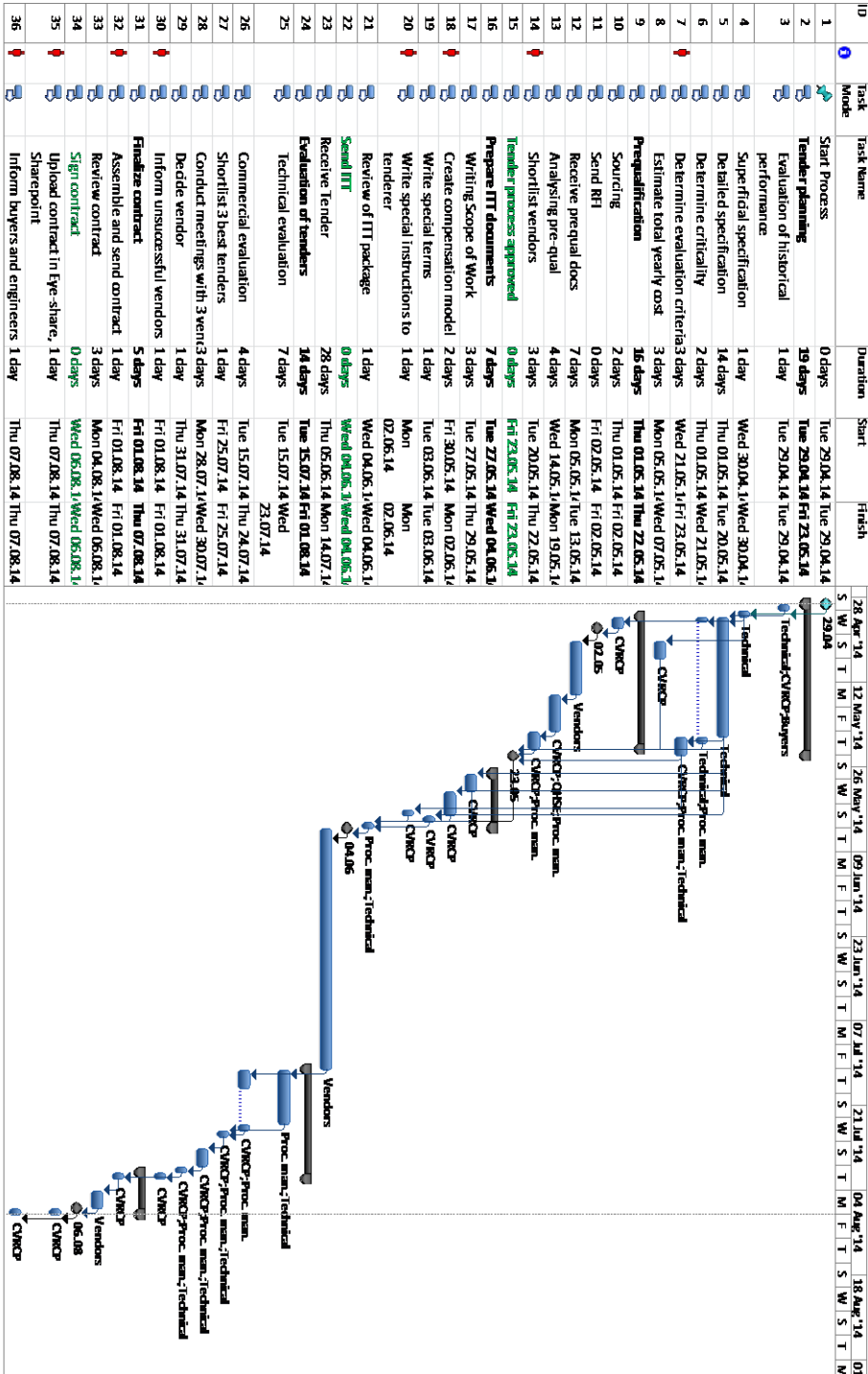Yukl, G. (2012); *Leadership in organizations*, 8th ed. Prentice Hall

Appendix

ID	Task Mode	Task Name	Duration	Start	Finish
1		Start Process	0 days	Tue 29.04.14	Tue 29.04.14
2		Tender planning	19 days	Tue 29.04.14	Fri 23.05.14
3		Evaluation of historical performance	1 day	Tue 29.04.14	Tue 29.04.14
4		Superficial specification	1 day	Wed 30.04.14	Wed 30.04.
5		Detailed specification	14 days	Thu 01.05.14	Tue 20.05.1
6		Determine criticality	2 days	Thu 01.05.14	Wed 21.05.1
7		Determine evaluation criteria	3 days	Wed 21.05.1	Fri 23.05.14
8		Estimate total yearly cost	3 days	Mon 05.05.1	Wed 07.05.1
9		Prequalification	16 days	Thu 01.05.14	Thu 22.05.14
10		Sourcing	2 days	Thu 01.05.14	Fri 02.05.14
11		Send RFI	0 days	Fri 02.05.14	Fri 02.05.14
12		Receive prequal docs	7 days	Mon 05.05.1	Tue 13.05.14
13		Analysing pre-qual	4 days	Wed 14.05.1	Mon 19.05.1
14		Shortlist vendors	3 days	Tue 20.05.14	Thu 22.05.14
15		Tender process approved	0 days	Fri 23.05.14	Fri 23.05.14
16		Prepare ITT documents	7 days	Tue 27.05.14	Wed 04.06.1
17		Writing Scope of Work	3 days	Tue 27.05.14	Thu 29.05.14
18		Create compensation model	2 days	Fri 30.05.14	Mon 02.06.1
19		Write special terms	1 day	Tue 03.06.14	Tue 03.06.14
20		Write special instructions to tenderer	1 day	Mon 02.06.14	Mon 02.06.14
21		Review of ITT package	1 day	Wed 04.06.14	Wed 04.06.1
22		Send ITT	0 days	Wed 04.06.1	Wed 04.06.1
23		Receive Tender	28 days	Thu 05.06.14	Mon 14.07.1
24		Evaluation of tenders	14 days	Tue 15.07.14	Fri 01.08.14
25		Technical evaluation	7 days	Tue 15.07.14	Wed 23.07.14
26		Commercial evaluation	4 days	Tue 15.07.14	Thu 24.07.14
27		Shortlist 3 best tenders	1 day	Fri 25.07.14	Fri 25.07.14
28		Conduct meetings with 3 ven	3 days	Mon 28.07.14	Wed 30.07.1
29		Decide vendor	1 day	Thu 31.07.14	Thu 31.07.14
30		Inform unsuccessful vendors	1 day	Fri 01.08.14	Fri 01.08.14
31		Finalize contract	5 days	Fri 01.08.14	Thu 07.08.14
32		Assemble and send contract	1 day	Fri 01.08.14	Fri 01.08.14
33		Review contract	3 days	Mon 04.08.14	Wed 06.08.1
34		Sign contract	0 days	Wed 06.08.1	Wed 06.08.1
35		Upload contract in Eye-share, Sharepoint	1 day	Thu 07.08.14	Thu 07.08.14
36		Inform buyers and engineers	1 day	Thu 07.08.14	Thu 07.08.14

Figure A.1 - *Tender procurement project plan at Dolphin Drilling AS.*