Master Thesis

Bodø Graduate School of Business

Opportunities and Challenges for Exploration Companies on the Norwegian Continental Shelf

Niklas Kent Trones

Nils Fredrik Kjeverud Rusten

ABSTRACT

In this thesis, we have explored some of the challenges exploration companies on the Norwegian Continental Shelves face in their business venture and uncovered aspects of the value creation process within the petroleum sector. We have also mapped the diverse types of business strategies that oil and gas companies use on a daily basis.

Our research involves how an exploration company can become a producer, and all the interrelated synergic effects that become vital in a transition process like this. We mapped some core ideas, of how, and what to do in a given transition like the one described above.

To describe our main findings, we would like to rephrase the famous saying that goes: All roads Lead to Rome, and say: there are many ways to Rome. What we are trying to say is that our respondents and we as researcher see many opportunities to become a production company. The following study will show that a good mixture of strategy, competence, portfolio management, financial management, and risk management becomes crucial to keep balanced when a company develops. However, despite many opportunities, it takes time to find all the roads to Rome, and companies that wants to accomplish a success full transition, must be aware of all the challenges that becomes essential during an expansion.

PREFACE

This master thesis is the final acknowledgement and contribution in our journey of academics. We hope that the Master of Science in Energy Management could open new and exciting work opportunities for us. Our excitement and liking for this thesis and course has made it possible for us to see an interesting career within the oil and gas industry.

At times, our thesis has made us frustrated and left us wondering, but most of all it has been a joy and excitement working with it. One thing that this thesis has taught us:

An investment in knowledge always pays the best interest

It all began with a meeting with Det Norske Oljeselskap, with a strong interest of finding the right research problem that could meet our expectations and ambitions. We would like to give sincere thanks to, Det Norske Oljeselskap, Noreco, North Energy, and Concedo that has contributed to this thesis to become a reality and their time and engagement that they gave us. We would also like to thank the High North Center for Business and Governance for funding our study tour to Oslo, attending the OLF conference. Secondly, we would like to thank our adviser Frode Mellemvik at Bodø Graduate School of Business, for constructive conversations and good contributions, not to mention his humor and inspiration.

Finally, we want to thank our family and friends for keeping us in a good mood all through our master thesis. In addition, we have to show our gratitude to Paul Rusten, Nils Rusten's father that has given us constructive feedback during the whole process.

SAMMENDRAG

I denne oppgaven har vi utforsket noen av de utfordringene leteselskapene på Norsk sokkel står overfor i sin virksomhet og avdekket sider ved verdiskapningsprosessen innen petroleumssektoren. Vi har også kartlagt de ulike typer av forretningsstrategier som olje-og gasselskaper benytter seg av på daglig basis.

Vår forskning innebærer hvordan et leteselskap kan bli en produsent, og alle de innbyrdes synergieffekter som blir avgjørende i en overgangsprosess som dette. Vi kartlagt ut noen kjerneideer om hvordan, og hva et leteskelskap kan gjøre i en slik gitt overgang, som beskrevet ovenfor. For å beskrive våre hovedfunn, ønsker vi å omformulere det berømte ordtaket: *Alle veier fører til Roma,* og heller si: *det er mange måter til Roma*. Det vi prøver å si er at våre respondenter og vi som forskere ser mange muligheter til å bli et produksjonsselskap. Den følgende studien viser at en god blanding av strategi, kompetanse, porteføljeforvaltning, økonomi- og risikostyring blir avgjørende for å holde balanse når et selskap utvikler seg. Til tross for mange muligheter, tar det tid å finne veiene til Roma, og selskaper som ønsker å oppnå en suksessfull overgang, må være klar over alle de utfordringer som blir viktige i løpet av en slik prosess.

Table of contents

List of Figures

List of Tables:

1 INTRODUCTION

As students in Master of Science in Energy Management, a unique program, we have been studying topics within the complex and dynamic oil and gas industry the last two years. The MSc is a joint Russian/Norwegian program where the essence is about how the global geopolitical energy situation in many ways is the backdrop of the world economy, and the key to understanding many of the issues the world community is facing.

There is also a special focus on the Norwegian and Russian continental shelf and the whole industry operating on it. The last semester is spent researching and writing a master thesis, which we see as a unique opportunity to shed lights on some of the uncertainties and challenges that faces the oil and gas industry.

1.1 Motivation

The history of the Norwegian petroleum industry is rather short with its 40+ years, but despite this it has quickly grown to be the most important part of the Norwegian economy, and Norway is now considered as one of the wealthiest nations in the world.

If we look back, there have been many controversial episodes and difficult challenges along the way, which could be expected given the complexity and pioneer nature of the offshore oil and gas industry in the North Sea. All of these episodes and challenges have obviously provided business managers and the regulators with a lot of tough and demanding decisions. In retrospect however, we think it is safe to say that way these issues have been dealt with, have led the Norwegian Continental Shelf to become one of the most competitive and interesting areas for oil and gas activity throughout the world.

Why is this so? How is the situation today? How can we continue this, and what obstacles are in the way?

Questions like these were imperative for us when we applied for this program, and laid the foundation for our initial master thesis process. At this stage we were already genuinely determined that we wanted to make the most of this unique opportunity to really learn something new and broaden our knowledge about the oil and gas industry. As part of our preparation, we reviewed a few quality dissertations with the same ambition, and were further inspired by their works. We wanted to contribute with more knowledge in a field that has not been researched much, for the benefit of ourselves as well as for others. While we were aware

that such an approach is challenging, we remained firm in our belief that we are capable of doing so.

1.2 The Aim and Purpose of our Research

When we set out to find the topic we wanted to explore, the process started by thinking of key events on the Norwegian Continental Shelf (NCS) and what has characterized it the recent years. Before 2000, major international oil companies dominated the NCS along with Statoil and Hydro. The industry itself wanted to change this, so in 2000 the Norwegian Government made it easier for smaller companies to take part in licenses and gain operator status. However, the oil and gas industry is very capital intensive, which produces high entry barriers to the industry, and the business structure remained largely the same.

Since production on the NCS peaked in 2001, the North Sea part of it has been considered mature, with the rest of the shelf being little explored. The government's primary initiative to achieve more exploration on the NCS came in 2005, when the petroleum tax reform was enacted. The reformed petroleum tax act made it possible for exploration companies running a deficit to get the taxable value (78%) of this deficit paid out the following year. As expected, this resulted in an upswing of new exploration companies. Even though the number of exploration companies has blossomed, we are just starting to see the fruits of this in the form of increased exploration, as building complex oil companies take a lot of time and effort. When we started the process of finding our problem statement, it was with the following question in mind:

What are the main issues for exploration companies on the NCS today?

We approached different companies within the oil industry to find out what kind of challenges the industry were facing right now. One of these companies was Det Norske Oljeselskap, and we arranged a meeting with them during the summer of 2009. As it turned out, they had identified several problem areas they would like to know more about. Some were strictly economical, and some were about the legal and tax system in the oil and gas sector, but in many ways they all caught our attention.

The representatives from Det Norske continued to reflect a lot upon the two main ways of doing business on the Norwegian Continental Shelf: exploration versus producing. In addition they were concerned about how Norwegian laws and regulations affect small exploration

companies like them, with an outspoken goal of becoming a producing company. Together we developed the following problem statement:

«How can Det Norske Oljeselskap develop from being an exploration company to becoming a production company? »

This was a really interesting question for Det Norske and for us as researchers, as it touches upon many interesting pros and cons in economical and legal sphere of the Norwegian petroleum sector.

In December 2009, Det Norske and Aker Exploration announced their decision to merge, and with that decision it was reasonable for us to believe that they had taken a step closer to reach their goal of being a producing company. However, a merger or acquisition is only one of many possible strategies to obtain production, and as we found out during our initial literature review, it has not been carried out much formal research work in this particular field before.

This discovery made us think about what we really wanted to learn during our master thesis experience. So after conversations with our advisors and discussions between the two of us, we decided that we wanted to have a broader angle, and make our research project relevant to other companies and stakeholders on the NCS in addition to Det Norske. As a consequence we chose to alter our problem statement slightly, to reflect our new perspective. Our final research question became as follows:

«How can an exploration company on the NCS become a production company?»

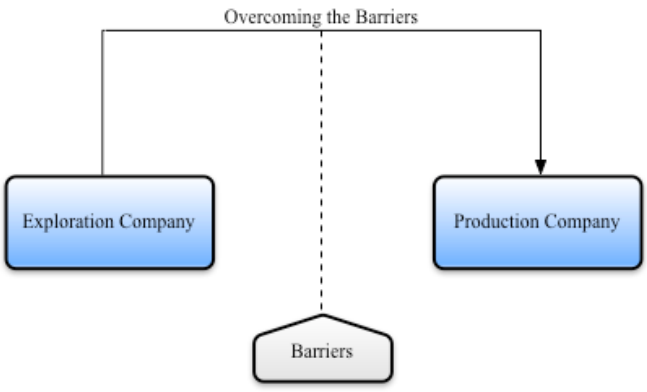


Figure 1: A Visual Illustration of the Research Problem

By changing our problem statement, we figured that we could include several companies that are either in the development, exploration, or production phase. By doing this we have managed to extend the potential data sample greatly, as we now can choose informants from the different stages in the value chain, here by focusing on development, exploration and production phase of the industry.

What we found out was that even though there's been done little or no formal research work in this specific field before, the knowledge and know-how is most certainly there and ever-developing, the point is that it only exists as practical knowledge in the industry.

Our thesis will consist of two elements; descriptive and analytic. The descriptive element will describe the companies and how their strategies evolve in different stages of the value chain. The second element is the analysis where we will try to understand and map the challenges that face companies and how these are met on the NCS. We will reflect upon this from the frame of reference we have chosen.

In the next chapter, we will give a short overview of the NCS that will give the reader an introduction of the regulatory regime within the industry. This we have done because we feel that the reader needs to have some general understanding of the industry.

2 AN OVERVIEW OF THE NORWEGIAN CONTINENTAL SHELF

Figure 2: The Norwegian Continental Shelf (Source: Noreco)

Figure 2 shows the Norwegian Continental Shelf (NCS). According to Wood Mackenzie there are 38 billion barrels of oil equivalents remaining, making it larger than the UK, Netherlands, Denmark and the Faroe Islands combined (NPF Conference 2010). The NCS with its fiscal and regulatory regime have many unique features that separate it from the rest of the world. We feel that it is imperative to give the readers of this thesis an understanding of these features, to understand the challenges facing the companies we are examining. As a result, we will in the following chapter make an effort to describe the main characteristics of the NCS in terms of regulatory, fiscal, and political regimes.

2.1 The Petroleum Act: The Essence of the Legal Framework

§1-1 (Norge, 1996) *"the state of Norway has property rights of undersea petroleum deposits and the exclusive right to resource management"*. §1-1 renders in short terms the exclusive rights and principles for petroleum deposits, which is reflected through the Genève convention and United Nations Convention on the Law of the Sea (Hammer, 2009). The petroleum act applies only to exploitation of undersea petroleum deposits.

Property rights are also reflected in §1-1. The provision concerns the petroleum deposit and not the continental shelf. The state still owns the petroleum deposits despite the fact that a company is given the production and exploration permit (Hammer, 2009). Resource management by the state is defined in the petroleum law as: securing optimum development, production, and extraction of petroleum and choice of transportation systems. The finance department is responsible for petroleum tax law and it also have responsibility of oil companies' tax payments (Hammer, 2009).

§1-2 states that the management of the resource rent should benefit the Norwegian society and not only the company. This is fundamental for the Norwegian petroleum act, and should never be neglected. It is also an understanding that regional policy should have an influence when a prospect is considered developed. It is important for Norway to strive for a dynamic market that shows development in all regions of Norway. This leads back to distributing the resource rent all over Norway, not only in the central areas. Extraction of petroleum should be considered as a "long term perspective". The provision could indirectly indicate the production pace on the NCS. Petroleum resources should not be extracted all at once, this because it should contribute to sustainable development and possible contribution to the total national wealth (Hammer, 2009).

§1-3 specifies that no other than the government can carry out petroleum's operations without the permits, approval and consent that are specified by the petroleum act. Permits, approvals and consents are essential management tools to control and restrict the petroleum extraction (Hammer, 2009). Exploration drilling includes drilling of wells for exploration and appraisal of petroleum deposits. To conduct an exploration drilling it is assumed that the company has an exploration permit and the exploration drilling is preformed mainly in the initial period of the production permit.

§1-6 k) describes an operator as a leader of the license given by the state. The company that is awarded the operatorship is responsible for the daily operations. It is usual on the NCS to

awards a group of companies to a license, and given one of the companies the task to lead the daily operations. The operator of a production license is appointed by the OED (Ministry of Petroleum), when the permit is awarded. It is also some examples of the operatorship are divided between two companies. The Troll field is an example of this, where there is an operator for oil, and one for gas (Hammer, 2009).

§2-1 refers to the different permits, exploration and production. There is a fundamental and practical difference between these two permits. The exploration permit does not give any exclusive right: the awarded company to the exploration permit does not hold an exclusive right to conduct investigations in the area of licensing terms. It gives no preference at a later award of production licenses in the area. While it is primarily oil companies that apply for exploration licenses, it is also common for straight seismic companies to apply for such licenses. It is also normal that the OED hire such companies to investigate and gather seismic of an area, this is done partly in the Barents Sea. The exploration permit has duration of 3 years, and it is supposed to be the general rule. A study permit gives the right to exploration for petroleum, but it gives no exclusive right to recover any findings.

§3-3 second paragraph states that it should be formal requirements for the licensee and that a license can be permitted to a legal person. Alternatively, a production license can also be awarded an individual resident within the EU. With the financial risk relating to the petroleum industry, it is hardly applicable to a individual resident to apply for a product license (Hammer, 2009).All the legal terms must be obtained at the grant date, but the applicant (company) can apply for a license and obtain the legal terms within the application period.

§ 3-4 is concerned around making agreements on cooperation. The law describes that cooperation for a production license should be sent to the OED before the actual permit is granted. By allowing companies to apply together in a group application, the Norwegian government aims to provide cost efficiencies in different stages in the license process. Such cost efficiencies can be to distribute the work and the costs of preparing and designing the application, instead of doing their work separately. By doing this the group of companies can gain significant savings in terms of exploration and processing seismic data. Savings like this may contribute to increase focus on marginal fields and lower the entry barriers for new players on the NCS. This is a development that would be in line with government's desire for great diversity in terms of companies operating on the NCS (Hammer, 2009).

2.2 Attracting newcomers on the Norwegian Continental Shelf

Attracting newcomers becomes even more essential after the oil production had its peak in 2001. This is both important and crucial if the Norwegian petroleum industry is to sustain its growth. Regulation and incentives are purposely given by Norway, so that the NCS becomes an attractive, strategic and important place for international oil companies to carry out their business. The Ministry of Petroleum (OED) tries to include a wide specter of companies, both exploration and producing companies, this is to indirectly create a diversified industry. Norway is also seen historically as a mature continental shelf, this means that the "easy" resources are already found. For an oil company this means higher requirements for skilled workers and financial strength.

In 2003 the Petroleum Directorate by managing director Bente Nyland stated that they were initiating a campaign to attract more participants to the Norwegian waters. Nyland said, *"We want to prove that the Norwegian shelf is still an attractive area for exploration and production. There are still a lot of resources to explore for, even if part of the shelf are mature"* (Quinlan, 2004). Particular interest for Norway is the medium sized international companies with some experience in deep water drilling. The aim is to conduct more exploration in less mature areas, and to gain companies that can / will carry such risks. This is a step towards a never-ending battle for the biggest and best international oil companies.

The director of EnCana says *"We see Norway's principal attraction as offering exploration opportunities with the potential of undiscovered reserves within a politically stable environment"*. As stated by EnCana, it is important to have a stable political regime and attractive prospect to offer when a company is to enter the NCS. If Norway can establish such premises they can reach out to bigger companies willing to take the risk that the NCS requires.

2.3 The Fiscal Regime: Implications of the 2005 Petroleum Tax Act

The Norwegian Tax act shows that it is a marginal tax rate of 78% whereas 28% is corporate tax and 50% is "special tax". Norm price is based on the actual price obtained in the market, and is given quarterly, although the norm price is set as a monthly price. This makes it easier for companies to determine taxable income. Norm price can be higher or lower than the actual price obtained in the market. If the market price is higher than the norm price the extra profit gain is not taxed, but if market price is lower than norm price, tax loss will be a fact.

Starting in January 2005, an upstream oil company is refunded the tax value of exploration expense for each tax year loss. Such tax refunds are related to indirect and direct exploration expenses. This taxation incentive opens up for a third party opportunity, whereas the bank can use the tax refund for the exploration cost as collateral. This means that the banks may be willing to fund 80% - 90% of the tax value of the exploration tax refund (i.e., 65% to 70% of the exploration cost basis) (Eivind Galta, 2009).

Det Norske Oljeselskap provided us with a real life scenario to show how the Norwegian tax system works in practice for an oil company with little or no-production income:

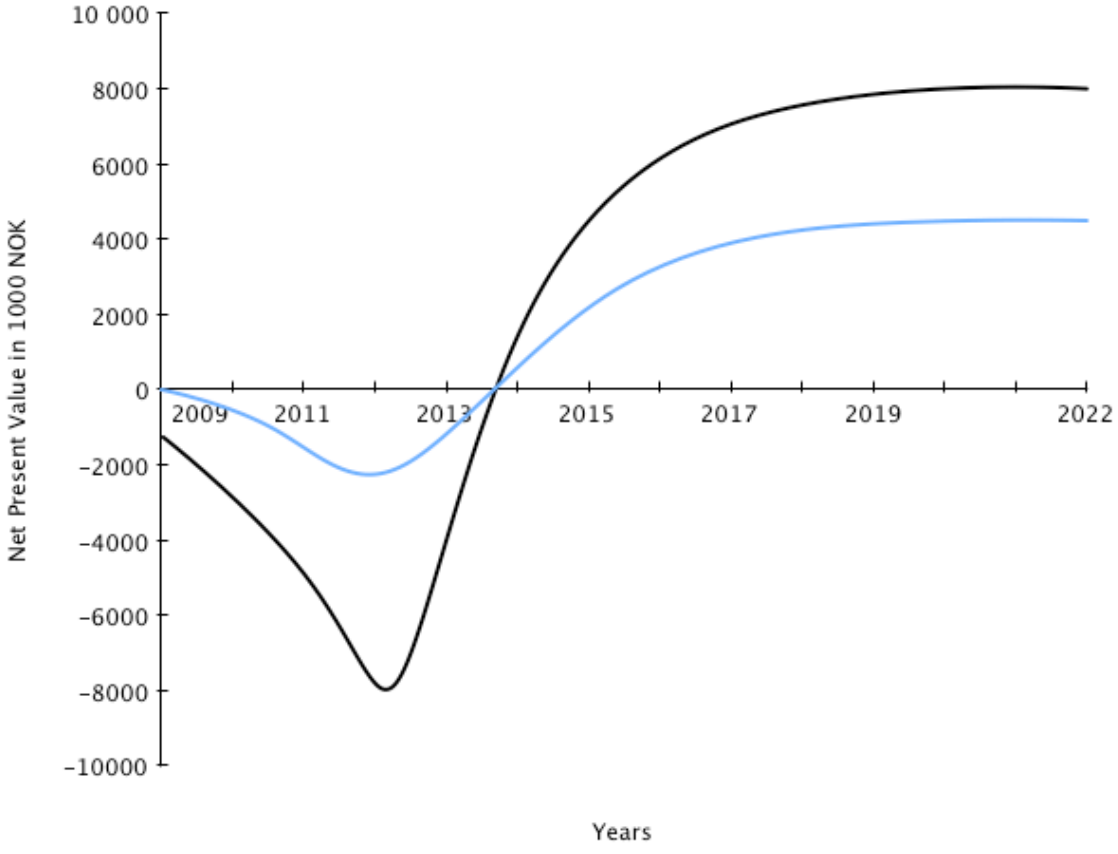


Figure 3: CAPEX in the Development Phase

The development cash flow represented by the black line in figure 3 is significantly larger than the actual exposure shown with the blue line for a company without significant petroleum income. This means that for a small company like Det Norske among others (black) with no or little income from producing oil fields, the capital expenditure (CAPEX) for developing a field is 3-4 times higher than for a company like Statoil, with plenty of income to write of deductions (blue). This effectively prevents small companies from being the lead field developer.

3 RESEARCH APPROACH

In the following chapter, we will make an effort to account for how we have carried through our research process in order to address the research problem properly. It will be based on our practical experiences during the research, and supported by relevant theory. We will structure it by the idea that every research process has a beginning, a mid- and an end phase, which all presents the researcher with different challenges and choices to be made. For us, this process started the summer of 2009 as we have described in the introduction chapter. It continued with acquiring knowledge about the topic we chose, and ends with reporting our findings in the form of this written master thesis.

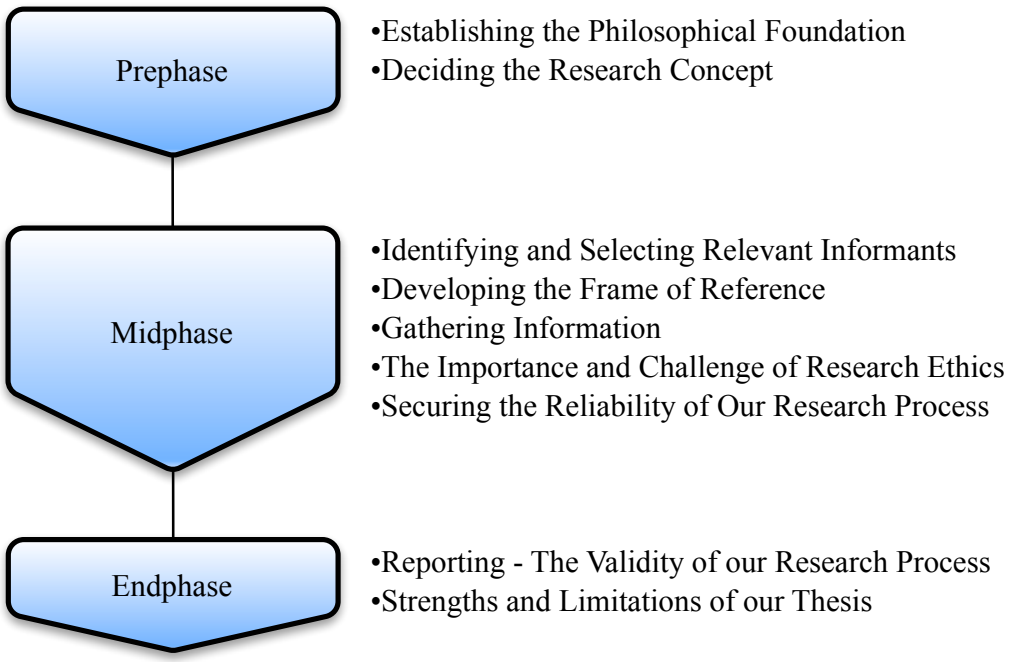


Figure 4: Research Approach

3.1 Prephase – The Beginning

During the initial phase when we approached different oil companies to learn more about the challenges they were facing, we realized that most of them involved decision making in some way or another. Further, we saw that a close focus on collaboration between stakeholders and employees in a company is essential to succeed in moving into a new business area. Our research problem is concerned about how an exploration company can make such a transition, and with the acknowledgement that collaboration and interaction is an important aspect of organizational change, we began reflecting upon how we best could answer it.

3.1.1 Establishing the Philosophical Foundation

When conducting a research, the aim is to develop an understanding of the defined research problem. Many choices are made in the process, which makes it important to be aware of why these are made, and the implications they lead to for the study. Due to this reason the first choice of philosophical position, or how we as researchers view the world, becomes of special importance. In our search for a suitable research philosophy, we learned about two opposing philosophical traditions called social constructionism and positivism. The main difference between them is that positivism focuses on an externally created world, which should be measured objectively by "numbers". Social constructionist tradition on the other hand, argues that people create the world, and that it should be understood within the context of interaction. (Easterby-Smith, Thorpe and Jackson, 2008)

As mentioned above there are many factors that interplay when choosing the right philosophical position, and there is certainly many ways to Rome. However, the purpose of our research is to understand a phenomenon concerning organizational change and we believed that the best approach to our research problem is to dig into the social context. Social constructionism focuses on understanding phenomena through experiences that people has made in different settings (Easterby-Smith et al., 2008) and this gave us confidence that we had chosen an appropriate philosophical foundation.

3.1.2 Deciding the research design

When developing the research design, in other words choosing the concept of the study, one has to think of the best approach to understand the research problem. We considered several different designs, but eventually decided on case study with a primarily explorative approach. A case study design is suitable when the aim is to gain a rich understanding of a phenomenon, and allows the researcher to utilize a wide range of methods to achieve it. (Saunders, Lewis and Thornhill, 2009). This means that although the primary approach of our study is to explore the research problem within the context of each case, it will also contain certain elements of descriptive and explanatory methods. We chose this approach because it lets us gather qualitative data in the form of in-depth information and enable us to analyze and draw conclusions from it.

3.2 The Mid-Phase - Gathering and Analyzing Information

After deciding on which philosophical position and research design, the next thing we did was to consider what kind of information we wanted to collect and how this information could and should be acquired.

3.2.1 The Identification and Selection of Relevant Informants

Through our education and initial research we have learned that the Norwegian Continental Shelf (NCS) and the companies operating on it are complex and difficult to comprehend. Because of this, we early understood that if we were to succeed in addressing our research problem properly, it would be essential for us to get access to knowledgeable and experienced informants. A while after establishing contact with Det Norske Oljeselskap (Det Norske), one of the people we met with, Sjur Børve, quit his job as a business developer to start a new company. He still wanted to contribute as an independent consultant, so now the case sample consisted of one company and one consultant. By this stage, we had learned that being in the business of petroleum exploration is complex, and involves a variety of business areas that needs to be dealt with. As described in the introduction chapter, we wanted to further broaden the perspective of our research, which both Det Norske and Børve thought would be interesting. Due to the nature of our research problem, we therefore felt that additional cases should represent something different in order to get a better understanding of the phenomena. We found that identifying and selecting companies that suited our study was a challenging task, so to help us in this, we developed the followed value chain together with Det Norske.

Figure 5: Value Chain of the Petroleum Industry

The value chain is a simplified illustration of how the value creation process in a petroleum industry can be broken down in six stages, and we have used this to classify each company in the empirical findings chapter. Getting acreage involves participating in licensing rounds, and obtaining the licenses that the company wants to explore for resources. This leads to the next stage of making discoveries by doing exploration in the licenses that have been acquired. If the license proves to contain resources, the discovery has to be appraised, primarily in the form of drilling appraisal wells to determine the extent and quality of it. Next, if the results are promising, the company must apply for participation in the production license, and

together the license partners have to submit a Plan for Development and Operation (PDO). In the operation and production phase, each company within the license becomes responsible for their own share in the license, and has to sell their own share of produced oil into the market or they can make agreements that another company within the license provides this process. The final stage of abandonment represents the phase when a field has been depleted, and the installations must be removed. Even though it may be argued that the separation of the value chain is artificial, it serves the purpose of illustrating the diversity of business processes inherent in the petroleum industry.

The development of this value chain enabled us to define which business areas various companies were operating within, making it easier to identify companies with differing characteristics than Det Norske had. Methodological theory describes many different sampling techniques that we could use identify relevant targets, but before we moved on, we had to address the aspect of sample size. It is important to match the sample size to the scope and purpose of the study, according to Patton (Saunders et al., 2009)Again, as with the choice of research concept, we have used a combination of several methods. When we approached Det Norske, it was because it is one of the most high-profiled exploration companies and we thought they could have something to offer us. Saunders et al. describes this technique as purposive sampling, and is very well suited for case studies like we were going to do. In the further process we used what we would call a purposive snowball sampling method, which is described in the following way by Saunders et al. (2009) The first thing to do is make contact with one or more cases in the population. Then you ask these cases to identify further cases, and repeat this stage until no additional cases are given or the sample is as large as is manageable.

Several exploration companies and stakeholders on the NCS were approached by an email where we presented our research topic in a short summary and asked if they could and would assist us, and if not, maybe knew about someone who could. The reason we chose to present our topic first like we did was to ensure that those who responded would be qualified to help us explore the research problem in light of their company.

The first respondent was an advisor to the oil and gas industry from DnB NOR Markets' corporate finance department. They became interested in our thesis from a financial point of view, and provided us with a number of investor presentations from exploration companies they thought could be of our interest. Soon after we had established contact with several of

them, and below we have listed what became the final case sample and the respective informants.

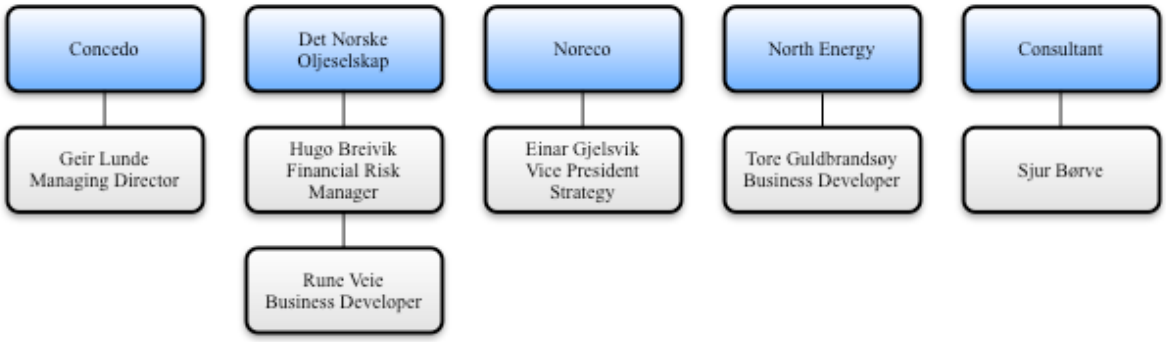


Figure 6: Sample Cases and Informants

The reason why we selected exactly these cases was as argued above, based on the intention of examining exploration companies that represented different phases of the value chain in the industry. With these cases we felt that this was achieved, and that the interviewees were an experienced and knowledgeable group of people that was qualified to speak on behalf of their respective companies.

3.2.2 Developing the Frame of Reference

There are mainly two types of approaches to research, one is labeled deductive and the other inductive. Deductive research is concerned with developing a theory framework to test and help analyzing any findings you may have to address the research problem. Inductive approach on the other hand is all about developing theories from your analysis of the findings in the study. Saunders et al. argues that the latter approach requires extensive knowledge about the subject you are studying, and even though our education is related to energy topics, we acknowledged that our competence within the theme we were about to study was limited.

Therefore we began reviewing literature with the aim of developing a theoretical frame of reference to support our research, and help us understand the research problem within the context of the cases we had identified. The exploration company as stand-alone business units were not very widespread on the NCS before the petroleum tax act change in 2005, and we quickly discovered that because of this reason, there did not exist much literature directly concerning our research problem. We found an article by Charles Stabell discussing strategy and value creation in exploration companies (Stabell, 2001), and although it was written before the petroleum tax act change in 2005, it still included many aspects that were interesting for us.

In our further search for suitable theory, it became clear that the strategy theme was vital in light of our research problem. As a result of developing the value chain, we knew that exploration companies engage in various business processes, and that each of them requires different tools to deal with. We discussed how we should address this in our frame of reference together with our academic advisor Frode Mellemvik. Following our literature review and discussion with Mellemvik, we had developed an understanding that there were certain drivers of the transition to become a producing company, and that we should focus on these in the frame of reference. We named them *"driving forces"* of strategy, and includes; general company strategy; managing capital; building a portfolio of assets; handling risk and managing knowledge. There are many ways to run a business however, so we decided that the frame of reference should focus on how the companies were working with these drivers of transition on a strategic level, rather than to define specific means of handling them and testing it against the findings. Lastly, it is important to note that these drivers to a large degree are interrelated and that our detachment of them was done for the purpose of simplifying the further research process.

3.2.3 Gathering Information

The case study design and exploratory approach allowed us to collect information from a variety of sources. Semi-structured interviews with our informants became the primary way of gathering relevant information, as our research problem concerns company specific information not so readily available in public channels. The structure of the interviews built on the frame of reference, meaning that in the interview guide, the driving forces we had identified represented a set of main topics we wanted to cover. Further, it was identical to all the interviews we conducted, and the semi-structured approach enabled informants to speak freely without interruption and at the same time helping us to maintain a degree of control.

The interviews were carried out by telephone, recorded and then transcribed in agreement with the informants. This was essential both to avoid bias and memory loss. Interviews were not our only mode of gathering information however. One could think that asking companies knowing that they would be compared with others to tell about themselves would make them inclined to offer biased opinions. Due to this, and that the nature of some of the information we received through the interviews made it difficult to confirm it with other sources, and as a result we have as far as possible tried to make use of a concept called triangulation, which basically means crosschecking findings against other sources. In this process we have

reviewed secondary data like company websites and presentations, in addition to published articles, both online and in journals.

In mid-April we attended a conference hosted by the Norwegian Petroleum Association (NPF), which also was a step in our data collection. It gave us a great opportunity to gather loose ends within our research, as well as discussing our project and findings with other members and stakeholders of the petroleum industry. The topic of the conference was "A new dawn after the financial crisis", and the speakers addressed many of the subjects we had discovered as important for us. Some of the presentations were more interesting than others regarding our research project, and in these cases we contacted the respective speakers for further discussions.

When we interviewed our consultant Sjur Børve, we discussed the themes and some of the findings that we had done through the interviews with the other companies. He also explained certain aspects within the exploration and production phase that we didn't quite understand during the other interviews. This helped us clarify some of the uncertainties that could lead to wrongful interpretations and conclusions.

3.2.4 Ethical Considerations in our Research Process

Ethics within research is a complex but important matter, and refers to *"the appropriateness of your behavior in relation to the rights of those who become the subject of your work, or are affected by it"*(Saunders et al., 2009). We found this an interesting and important statement, which set the ethical frame for our research process. Our view on the ethical aspects is connected to norms and standards that we see as important to maintain if our research project is to be considered as serious. For us, this meant the behavior we showed towards the informants and companies during the research process. It became important that the interviewee felt comfortable with our interview and questions. Even though all of our informants are very busy people working in a fast-paced industry; they still found the time to help us in our research. This acknowledgement made us feel a strong sense of responsibility to present their statements and information about the respective companies accurately.

If the informant shared any sensitive data with us, these were not used in the thesis if they asked us not to, even if these data might have strengthened our final thesis. To ensure that the informants could feel comfortable in the interview situation, we offered them to review our empirical findings about them before turning in our thesis, an offer they all appreciated.

3.2.5 Securing the Reliability of our Research Process

"Reliability refers to the extent to which your data collection techniques or analysis procedures will yield consistent findings." (Easterby-Smith, 2008).

The author argues further that the reliability of a research project *"can be assessed by posing the following three questions: Will the measures yield the same results on other occasions?"* Right from the beginning of our research process, we have been very conscious about the importance of doing proper research work in order to achieve the result we hoped for. Every research methods and techniques we have used during this process has been the result of deliberate choices we made based on to nature of our research problem. Our findings are largely based on interviews with informants from each company. We had five interviews that we planned to conduct within a relatively short timeframe of 2 weeks. Business people are often occupied and we knew it could be a challenge to get all the interviews within the timeframe we had planned. We sent out emails that explained how much time we needed and suggestion for time and date, and recognizing the fact that our informants were very busy, we also sent a shortened version of our interview guide, consisting of the 5 driving forces we looked to cover. This eliminated any stress factors that might occur with an unplanned interview and led to a more "natural" time where the interviewees were expecting the interview.

The next question Easterby-Smith et al.(2008) asks is: *"Will similar observations be reached by other observers?"* It could be argued that there is no such thing as total objectivity, and that the researcher and perhaps informants in particular will tend to display some degree of bias. As researchers, we tried to deal with informant bias by triangulating data using several methods of gathering information. Regarding our own potential bias, we primarily dealt with this by both being present in all of the interviews, and recording the discussion of the findings afterwards. Lastly, Easterby-Smith asks the question of *"Is there transparency in how sense was made from the raw data?"* We had a clear research problem that we wanted to address. To achieve this, we have already explained how and why we utilized several techniques to gather data first. After the interviews we analyzed our findings of each company in light of the frame of reference we had developed. In the end of the research process, we compared each company to each other and described how we evaluated them, eventually coming to a conclusion. Consequently, we believe that the process of how we developed the whole research project as we have described in this chapter is quite straightforward and logical to follow. With this, we think that it is safe to say that the reliability of our research has been

maintained to a satisfactory degree, and that other researchers would have a good chance of reaching the same conclusions using the same techniques and methods as we have described.

3.3 The End-Phase – Reporting

After the time- and energy consuming mid-phase, the next phase is concerned about how to document the whole research project in an interesting and correct manner. This is a task that presented us as researchers with a considerable challenge in terms of the credibility and validity of our findings, and in the following section we will outline how we met this challenge.

3.3.1 Securing the validity of our research

Validity in our research paper is related to how we have presented our empirical findings and analysis. Validity is "*concerned with whether the findings are really about what they appear to be about"* (Easterby-Smith, 2008), and we have strived to minimize the risk of low validity by choosing what we see as an appropriate research design for our study. By studying four cases and one independent consultant, we believe that it strengthens our thesis in terms of validity. One could say that ideally, we should have interviewed additional informants from each case to increase the validity of their opinions regarding their respective companies. Due to the scope of our project being a master thesis however, we found this aspect difficult to achieve. Empirical findings should represent the companies in a prudent and correct manner as to how we as researchers perceived them. However, we decided to use some analytical measures to increase the understanding of the companies in the empirical findings as well, and tried to describe the companies strategy in each of the driving forces by a sentence or two, griping the essence of it.

Historical validity is something that we have had in mind all the way, as we have found that the petroleum industry is quite dynamic and fast-paced. This means that we had to consider a study model that was not easily influenced by big changes in the market, which we feel we have achieved by addressing company change on a strategic rather than operational level. The last big change on the NCS came in 2005 as described above, so through the experience and findings we made throughout the study, we consider the historical validity of our study good, as long as the legal and fiscal framework of the industry remain largely the same. Maturing the gathered information was also one of our means to maintain validity in our research. After conducting an interview we sat down and had a discussion about what we had learned and how it could affect our further research. On this basis we think that we can draw relevant conclusions and assumptions in terms of internal validity. External validity refers to whether

"findings may be equally applicable to other research settings, such as other organizations" (Easterby-Smith, 2008). By studying several exploration companies with focus on different parts of the value chain in the way we have outlined in this chapter, we believe we can make valid assumptions and general advice on what is important to keep in mind for an exploration company when moving into the production phase.

3.3.2 Strengths and limitations of our research

There are many pitfalls in a research process, and it is important to be aware of them. One of our biggest pitfalls could be related to if our knowledge of research methods was inaccurate, thus leading to a less suitable approach to the research problem. As explained above, our interview guide was as sent to each of the respondent before we conducted the interview. In the aftermath we think that we should have not done this because the respondents might have been to dependent on following a set of themes that we had mapped. It can be hard to understand the petroleum industry because of its complexity and special dynamics. With having a conscious and deliberate approach towards the various choices we have made regarding research methods, we believe we have met this challenge in an appropriate way. We chose to look upon the world as socially constructed and this makes room for many interpretation mistakes. One can argue that a social constructionist approach to the study is time consuming, hard to interoperate data and may not have credibility with policy makers. We understand that our findings could not enable us making a universal generalization of the whole oil and gas industry, but in our research we have sought to find trends and patterns in our cases that could shed some light on the research problem. The research can to some extent not be seen as dynamic since the informants are people and that their perception may change with time. This means that any correlating findings between the companies do not imply the same causation.

It is also important to note that we as researchers did not have any practical experience from the field. Our background is only academically and thus the only frame of reference. But, as we have seen the thesis is a continuing learning process and we felt confident in the end that the findings were analytical reflected.

Finally, it is important to note that it probably are many factors we have not discussed that could interfere with our perception of the phenomenon, but seeing that we had a constrained time frame to conduct the study within, it became difficult to address all of these factors.

3.4. Summary

In this chapter we have provided a firm explanation of our thinking when faced with the various methodological choices, and through this we hope that we have achieved our goal of establishing an understanding of how we have conducted our research. We have discussed our choice of philosophical position, research design and how we are addressing our research problem through the frame of reference. In addition we have evaluated the research ethics and strengths and limitations of our thesis. The following chapter will show the result of how we developed the frame of reference.

4 FRAME OF REFERENCE

We developed the frame of reference based on what we learned during our pre-study phase as described in the research approach chapter. Our goal was to find suitable theory that could support the strategic focus that the companies were referring too. It became apparent for us that company had to have a foundation of strategy permeating the organization before they focused upon the implications that came with the chosen strategy. We named the pillars providing foundation for the strategy *"driving forces",* and they will be in an order that we felt natural after some considerations. After the initial strategy theory, we begin the strategy foundation discussion with financial reflections, continuing with portfolio and risk management while finishing with knowledge management.

4.1 Strategy – How to Enhance Value Creation in an Exploration Company

Value configuration theory(Stabell, 2001) is derived from Porter's value chain (1985), which is a framework for analyzing how a company can build competitive advantage through focus on its value chain. Except from the selective focus strategy aiming at specific parts of the market, there are two generic strategies of obtaining competitive advantage according to value chain theory (Porter, 1980); competitive cost leadership and competitive differentiation. The former requires a strict focus on cost drivers in every part of the value chain, while the latter revolves around achieving competitive advantage by focusing on differentiation drivers. Cost drivers in a generic value chain company are connected to the understanding of how, where and why costs occur in the organization, and cost leadership is achieved by using this knowledge to produce goods at a lesser cost than the competitors use. Differentiation drivers on the other hand, are about developing the core competencies and activities in the company in order to perform better than the competitors in these areas. Differentiated competitive advantage occurs when these drivers are managed in a way that are adding value to the products or service that makes customers are willing to pay a premium. While Porter argued that this theory is applicable to practically all firms, value configuration theory states that Porter's value chain fits best to traditional manufacturing industry, where the focus is on production of physical goods.

In value configuration theory, manufacturing services is defined as one out of the three basic value creation technologies, where the others are; problem solving services and mediation services, and their respective activity templates are branded the value shop, and the value

network. These are developed from Porter's original value chain, as an acknowledgement that the original lacks the tools to prove usable for two of the other basic value configurations.

Examples of value networks could be banks and logistic companies; whereas the typical value chain company could be a car manufacturer. A value shop company on the other hand is knowledge-based, like the consultancy firms McKinsey and Bolton Consulting Group. Vertically integrated major oil companies with up-, mid- and downstream activities like Exxon and Shell may be regarded as a hybrid between the value chain and value shop configuration, but how about exploration companies that have their primary focus on the upstream business?

In the Norwegian fiscal system for petroleum activity, companies are granted the right to explore them for resources rather than owning the licenses. In return, the Norwegian state reimburses 78% of all costs associated with the exploration, effectively becoming a customer of the exploration companies that pays for their services. In other words, the goal of exploration companies is essentially to solve the problem of finding economically viable petroleum resources on behalf of the state. In this respect, exploration companies should be regarded as a value shop in the value configuration framework and in the figure below we have illustrated how the value shop activity template can be applied in the context of a petroleum exploration company according to Stabell (2001):

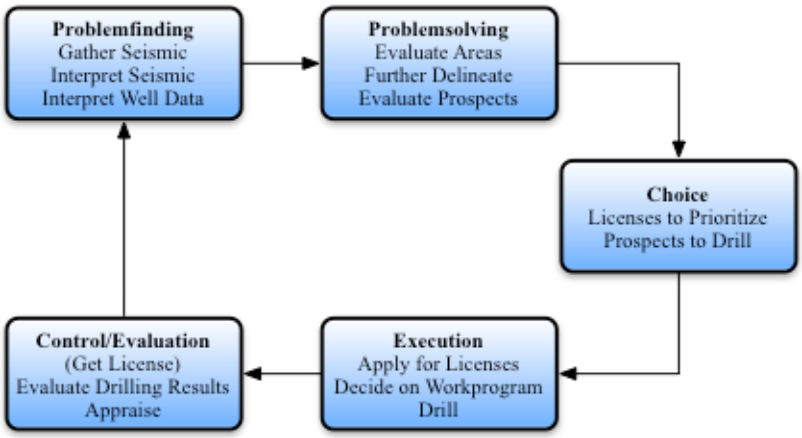


Figure 7: Value Shop Activity Template Instantiated for Petroleum Exploration

The figure depicts the value creating processes in an exploration company, and there is considerable contrast in this value shop activity template compared to Porter's original value chain. Further, value configuration theory argues that for a value shop to achieve competitive advantage, the focus must be more detailed than looking at the company as a whole. Every

value adding- and cost driving part of the activity template has to be scrutinized and classified, and the result of this process generates the foundation for analyzing the competitive strengths and weaknesses of the company. The result of such analysis applied on an exploration company may for instance show that it excels in the three first phases when evaluating and choosing which prospects to drill, but is less successful when trying to capitalize on this advantage in the two last phases, or vice versa.

The rationale for this radically different setup is that the petroleum industry has changed dramatically from its infancy. Where it earlier practically was an industry consisting of wholly integrated companies with more value chain logic, towards today's situation where the industry value chain could be seen as de-coupled like depicted in table 1.

	Acquire Assets	Explore	Develop & Produce	Transport	Refine	Distribute	Retail	
Independent	■	■	■					Chain
Shipper				■				Net
Refiner					■			Chain
Pipeline						■		Net
Retailer							■	Chain/Net
Integrated Major	■	■	■	■	■	■	■	Chain

Table 1: Prototypical Actors in the Primary Petroleum Value System

Since the fragmentation of the industry has persisted, the value creation logic in each part of the value chain has also changed. Because petroleum exploration front-most is characterized by high risks associated with geological uncertainties, the critical success factor of an exploration company becomes how able it is to make economically viable discoveries on a regular basis. The cost level of operational activities such as drilling or financing and if it is slightly higher or lower than of its competitor becomes of lesser importance, although it too certainly has to be addressed. So, if we consider an exploration company as a value shop i.e. a problem solver like we argued above, value configuration theory(Stabell, 2001) implies that the key aspect of a successful competitive strategy is linked to differentiation drivers, not the traditional cost drivers of the value chain logic.

As we mentioned previously, cost activities can obviously not be disregarded when in such a capital-intensive industry like the petroleum industry. This means that even though the primary driver of competitive advantage is differentiation, exploration companies have to add another level of analysis as well, focusing on cost drivers. In the paper *"New models for value creation and competitive advantage in the petroleum industry"* (Stabell, 2001), the author conducted a survey of 30 exploration companies, asking them to determine how costs in exploration activities are distributed on the 5 activity phases of the company. Below are the results:

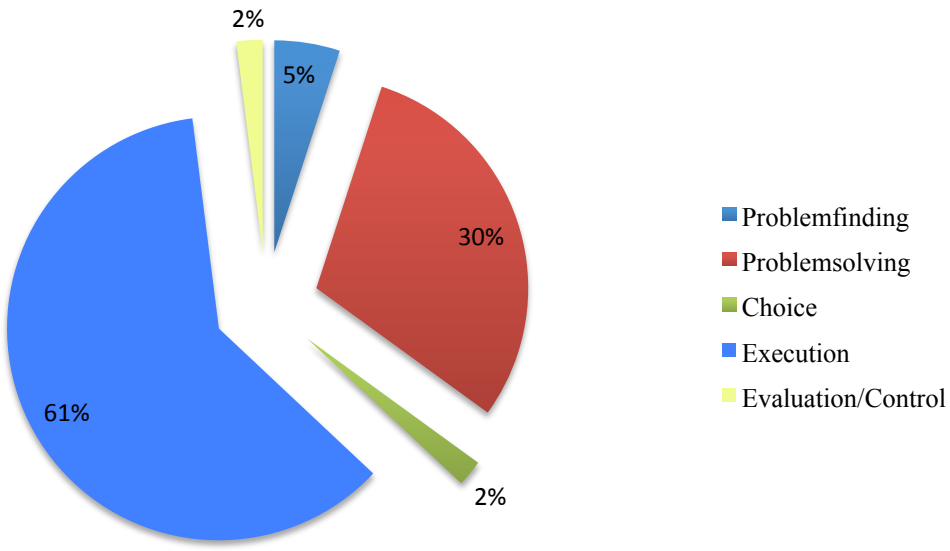


Figure 8: Hypothetical Distribution of Exploration Budget Across Activities

While the problem finding phase, which probably is the primary value creation phase only accounts for 5% of the costs, and the execution phase is the most important regarding cost activities accounting for 61%.

Mergers are also discussed by Charles Stabell see (Davis, 2007) as a opportunity to gain an balanced portfolio and strategy for growth. Other reason why such merger occurs can be numbers of reasons such as; risk of losing prospects and loss of investor interest if they stay small. Such opportunities must be taken in account when an oil company is considering developing a vertical integrated company. Texaco and Chevron is a good example to show how two large companies (on the international arena) merge to become a stronger international actor. The main reason for their merger was *"Texaco has good assets and Chevron has the management to turn them around"* (Davis, 2007). When interoperating the

joint venture, two clear arguments arise: cost and relationship where these two arguments can be seen as interrelated. A cooperation/relationship can provide access to high-quality acreage, whereas high-quality acreage has low development costs. High-quality acreage can also be seen as access to proven petroleum recourses or access to acreage with potential. New acreage can result in a differentiated portfolio that has more focus on upstream development than downstream, vice versa. This can also be seen as strategically financial placement, and could show what kind of business area the company chooses to operate in(Davis, 2007).

4.2 Driving Forces

When developing our frame of reference we found it crucial to pinpoint some of the driving forces that lay the foundation for a successful strategy. The driving forces will illustrate the importance of economical and managerial aspects, as well as the importance of market knowledge.

4.2.1 Financial Management – The Matter of Acquiring and Utilizing Capital

In some cases size does matter in terms of profitability. A bigger company can carry more of the expected cost, and endure fewer loans than a smaller oil and gas company. This can result in higher profitability, but it is not conclusive that size and profitability is correlated. Davis 2007 claims that the larger the oil company is, the more profitable it seems to be. Profitability can be defined in different ways; it depends on what economic numbers you use to determine the profitability. Sometimes smaller companies can be more profitable in producing niche products, rather than a big diversified company producing many different products.

Gaining an operatorship can also rely on reputation and size of the company. An operator has a big responsibility, which involves, developing big fields that may lack infrastructure and high-risk prospects. Operatorship is often a long-term strategic goal for some of the small- and medium sized companies. Oil companies with such status are often of certain size, have greater technological and commercial capacities, which make them capable of being involved in larger individual projects without being exposed greatly to risk. There are, however many types of risks that cannot be controlled or managed in the same way as internal risks. These risks are called external risks, and includes governmental risks and taxation regulations (Davis, 2007).

Large companies generally also have a greater potential for tax planning since they tend to have a larger and more differentiated portfolio than smaller companies. Big companies are

more likely to spread risk by locating the best field/licenses in different countries and allocating their portfolio thereafter. Size can also influence the host government and moreover give the possibilities and advantages within both license and fiscal conditions. It is also important to remember that size may have some disadvantages in terms of specialization and focus.

They might be too specialized, focused and become vulnerable in such a volatile market. Another possible disadvantage is that large enterprises have the risk of turning into big bureaucracies and information may be lost on the way to the decision makers.

Losing vital information in big enterprises can result in loss of new business opportunities, which can be unfortunate for further growth. Such disadvantages are less vital in the oil industry, because this type of industry has a long-term perspective. Commercial prospect will normally take 10-15 year from the start to end phase, and therefore is considered a long term project (Davis, 2007).

Larger oil company are less exposed to oil price volatility because they are vertically integrated and have high solidity (Davis, 2007). When companies grow lager, the more they seem to gain more downstream activity, and vice versa. Smaller company focuses more on upstream activities, such as exploration drilling and geology and geophysics work, since limited financial capital forces smaller companies to allocate capital to specific parts of the value chain. It is also important to note that the resource rent moves up and down in the value chain over time due to changing fiscal terms, laws and regulation, as well as the dynamics of the market. This can be seen as a problem for some of the smaller companies, in regards of gaining resource rent since they tend to focus on specific parts of the value chain.

When oil prices are low, companies focused on the upstream area, may be forced to sell commercial prospect due to lack of equity. Such measures may be favorable for the bigger companies, since these companies have more financial strength, they are able to carry costs and develop fields when oil prices are low. Prices of materials and salary, used in prospect development, can also be favorable in such times, and thus be of advantages for bigger companies with financial strength.

Financial strength does not mean that project cost control is not subject to improvements however. One of the major sources for problems in projects is that costs are time and again understated, which leads to cost overruns, which affects both small and big companies,

regardless of their financial strength. Flyvbjerg et al.(2008) points to two different explanations for this: Strategic behavior by actors that benefits from the construction of the project, and methodological weaknesses in the project evaluation itself(Flyvbjerg, Wee and Priemus, 2008). Strategic behavior is very hard to avoid, but it is nonetheless important to be aware of it. One way to reduce it is to implement independent committees that evaluate the reports, forecasts and calculations related to the project. Improvements in the project evaluation process are far easier to achieve, as it often is enough to apply different and/or alternative methods of calculating costs.

Another aspect that may lead to cost overruns is the so-called optimism bias, which relates to the optimism generated by project owners and managers. A way to correct for such optimism bias may be to include such a factor in the project evaluation process. In the oil and gas industry, project developments span over long periods, making the estimation process harder. It is usual that changes in the project specification itself occur, for instance the selection of a different type of technology to complete a project. Therefore, it is important that the project evaluation also takes into account possible alternatives to the initial scenario, as well as the whole project life cycle.

4.2.2 Portfolio Management - The Importance of Balance

The oil industry is a costly industry and the focus and emphasizes is shifting towards a more diverse asset management. Portfolio management is sought out to evaluate excising projects and new opportunities. Implementing portfolio management involves different stakeholders within the organization that can create the analytical support for the process (Skaf, 1999).

A portfolio can contain different assets that are either reserves or different stages of development projects. Historically opportunity-decisions relied on intuition and long experience from the industry. However, this became subjective and could vary from decision makers, and therefore did not provide stability. Newer portfolio management focuses more on judging projects using quantitative data that shows contribution to the long-term strategy and the correlation with excising projects within the portfolio (Tom Adams, 2000/2001).

There can be many ways to manage assets, and one fast and effective method is to improve the overall asset value by utilizing a good portfolio management (Tom Adams, 2000/2001). Portfolio management can be seen in correlation with strategy and corporate vision. However following a strategy or a corporate vision with metrics is not a trivial task. It is a very difficult task to predict production or net cash flows.

Another important way to mange assets is to optimize the portfolio in such a way that it will meet the company's strategic targets. This could be done through allocating access cash flow into new investments to bring reserves.

A set of projects such as exploration opportunities, current development and production assets might be a good way of optimizing a portfolio. Fulfilling such projects may result in bigger budgets and this would require more capital and better management of the assets. A more diversified portfolio will have more commitments that have to be met by the financial planners. A diversified portfolio may also give a more complex and difficult task for the management to choose the right prospect to achieve company objectives (Tom Adams, 2000/2001). An optimal portfolio is not possible, it is rather important to have it balance between risk and value. Value is describes as the net present value (NPV) of the whole portfolio and risk is defined as the semi-standard deviation of the portfolios possible value. Semi-standard risk is defined as the statistical distribution of the possible value of the portfolio given that the value is uncertain.

Capital is used both to build a balanced portfolio and to achieve strategic goals. Strategic goals could be one or more exploration wells within one year or start production on a prospect. These goals are often described in the annual report.

Profitability can be measured as a causality of greater portfolio growth and greater management, whereas the oil company's reserves are managed into revenue. An oil company's size can also influence the allocation of the license portfolio. A bigger company can have more differentiated portfolio, some exploration and some production. It is also important for the company have a commitment towards good portfolio management. This includes good administrative and organizational control so that they can deal with issues that could possibly endanger different development projects.

4.2.3 Risk Management – Imperative in the Petroleum Industry

Project risk can consist both from project specific risk and the projects' covariance with the market portfolio(Bøhren, 1987). These two authors argues that the idiosyncratic risk will be diversified if an oil company has an imperfectly portfolio of 10-15 project of the same size. Such portfolio is a normal size portfolio for small- and medium sized businesses on the NCS..

An investor does not invest in one or two licenses. This would have led to high idiosyncratic risk and would not be lucrative for the investor. This is why the investor mitigate the

idiosyncratic risk by investing in a diversified petroleum portfolios (Osmundsen, 1997). When it comes to the uncertainty regarding technology and the geological structure, it is reasonable to believe that output and costs are stochastic(Osmundsen, 1997). The oil industry is always trying to enclose the stochastic gap and change the relationship between output and costs. If the output becomes significantly more than the costs in the future, we can see more commercial field open up for exploration. To achieve this, the oil industry has to enhance technology and efficiency.

The NCS is recognized as a high-risk shelf for exploration and production opportunities and this might affect new entrance to the NCS. Norway has tried to minimize the risk by taking their share within the exploration phase. This is done through incentives for both, exploration and producing companies. Such incentives can be shares in a license and tax refunds. Constructing a system that provides oil companies with shares like this will *A) provide the operator and the other partners with refund of their true costs in their internal accounting, and B) the petroleum tax system is neutral (Osmundsen, 1997).* In Norway the operator are refunded more than the true cost, but this is not always the case for the partners in a license. They often don't get refunded all the costs they acquire by monitoring the operator and thus not obtain the wanted in-tax position as wanted.

In the beginning of the petroleum history, the private companies carried most of the risk / costs. This was due to the relatively low marginal tax, use of gliding scale, and regulation stating that the foreign company should carry Statoil's exploration costs. Experience in production, exploration and development on the NCS has reduced the idiosyncratic risk in the petroleum industry. By decreasing the idiosyncratic risk for the oil companies the Norwegian government takes a higher risk. This was due to the fact that Norway wanted to become more attractive for international oil companies. This shows that the NCS is maturing and that the government is taking more responsibility in the exploration phase (Osmundsen, 1997).

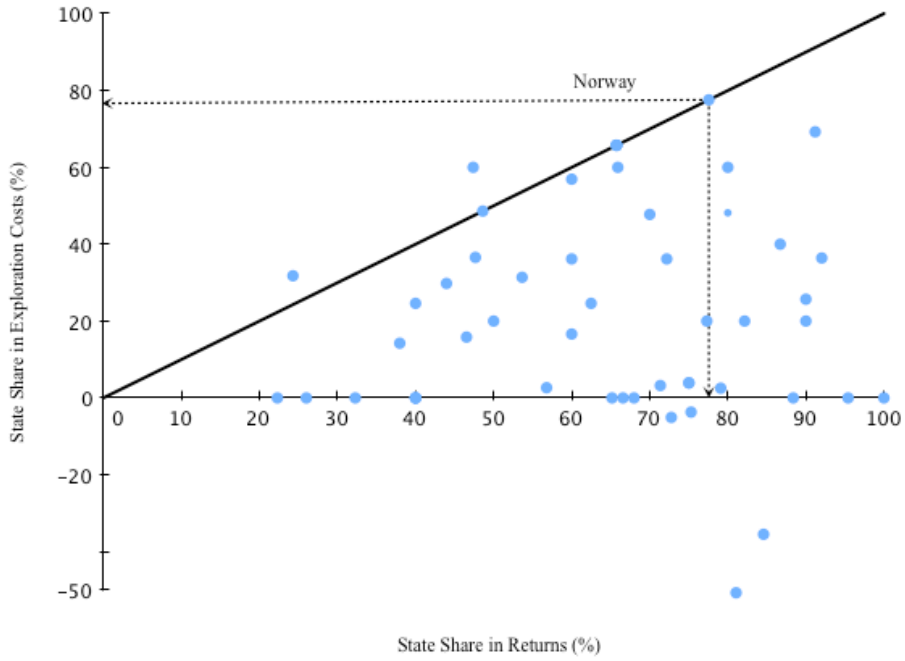


Figure 9: Illustration of the Balance Between State Risk and Returns (Source:Wood Mackenzie)

Figure 9 shows the balance between how big risks the Norwegian state takes in exploration activities versus the rate of return the state gets from it. The black line represents a totally balanced situation, which means that even though the state rate of return in Norway is high, it is balanced by high cost participation, creating a tough, but fair fiscal regime. In Osmundsens study he concludes that the Norwegian government bears too much of the risk concerning the exploration phase. The state risks 78 % of all the exploration costs vs. the company share of 22 %. Some political changes have been done to lower the risk, one of these measures is to give the operator and partners increased equity shares and therefore lower the costs for the state. But they still have to bear the costs in the exploration phase. Norway is still attractive for oil companies, but as time pass by, the Norwegian government has to think of new incentives to attract new oil companies. Some of these could be lowering the entrance barrier to becoming a production company. This means that the state and the banks need to take a bigger share of the risks. In every exploration or development project a company has to deal with risk in one way or another. Are risks unattended they may have devastating outcome and therefore it would be important to consider and manage the risks properly.

Miller and Lassard (Flyvbjerg et al., 2008) defines risks as *"The possibility that events, their resulting impacts and their dynamic interactions will turn out differently than anticipated"* Further, they have classified the risks in a project in the following way:

Market related risks – relates to issues with supply, demand, and price in the market. In an oil project where the output is oil or gas, two highly demanded commodities with well established demand and supply mechanisms, you may think that these risks are less important, as it is possible to make fairly realistic predictions about the market. Even though world economic growth has been strongly correlated to the consumption of petroleum resources, it turns out so as long as the world wants economic growth, there will be an increase in demand. And as long as supply becomes scarcer, there will be a long-term increase in price as well, even though short-term fluctuations can be large.

Completion risks – Or project specific risk, which consists of two separated groups, construction and operational risks. All projects within the oil and gas industry face these risks that are related to their technical complexity and the level of new technology applied. These risks refer to the challenges that all involved parties may encounter when the actual building and operation of the project takes place.

A study conducted by Walls and Dyer (1996) focused upon risk propensity within the exploration industry. The exploration industry is filled with risks and uncertainties, and this provides a good environment for research on risks connected with behavior and performance. What they found was correlation between what the managers thought was appropriate risk-taking behavior and the effect this behavior would have on the company's performance (Walls and Dyer, 1996). Drilling a wildcat is a typical a risky project that demands lots of capital and it is often used to analyze what kind of risks an exploration company is willing to take. Project risks are almost all the time measured against each other. What managers often do is to compare risks and relative attractiveness to one project that has a high probability of success and relatively low NPV payoff with a prospect that has low probability of success and higher NPV payoff (Walls and Dyer, 1996). Although the high expected profits that might come from a risky project, in other words a high exposure of Capital Expenditure (CAPEX), the mangers often assess the magnitude of capital being exposed to the chance of loss. To lower the huge CAPEX expenditure they often assess risk spreading by participating in projects with less participation levels and this might imply risk averse attitude towards such decisions (Walls and Dyer, 1996).

The oil industry is known as a capital-intensive industry and this might imply different risk-taking behavior. If a company grows and accumulates further wealth, it would be able to take more risky projects and endure bigger losses. A larger exploration budget would allow spreading of risks by diversifying their exploration portfolio. With a diversified portfolio it

would let them be less exposed to geological and political risks. But they would still be in the risk of oil price, however oil companies that are price sensitive would try to hedge this risk and this could lead to a conclusion that large oil companies would be less risk-averse towards risky explorations (Walls and Dyer, 1996). Walls and Dyer made a proposition that:

"Across firms, a positive relationship exists between firm size and ex ante corporate risk tolerance"

Taken in consideration firm size does matter when it comes to risk-taking behavior. This shows that a bigger company with strong financial ground is less risk-averse than a smaller company. Reducing available capital for a smaller exploration company may result in a more thorough review of potential exploration projects and this might imply a lower risk-tolerance or it can lead to a more risk-taking behavior and thus become nonperforming companies (Walls and Dyer, 1996). When an opposite trend is shown in the market, research shows that smaller exploration companies become less risk-averse and are willing to take a higher level of risk-tolerance. It is also important to note that "hazardous" investments cannot be a long-term strategy since it has to be correlated to the tradeoff concerning maximizing the shareholder value.

It is important to understand that expected value in a project is not the only number a company uses when deciding to do the investment that an exploration well requires (Walls and Dyer, 1996). The expected value is just a tool that will provide some guidance towards a final decision. It is rear that oil companies are able to keep buying or developing undervalued prospects.

The oil industry has always been knowledge intensive and as Walls and Dyer concludes they see that corporate risk behavior in correlation with the firms' performance.

4.2.4 Knowledge Management - Project Planning and Organizational Learning

The decision-making processes that start with the planning phase. It turns out that many faulted projects have underestimated the costs of the whole process, a decision that follows through the lifespan of the project. This will in turn create an increasingly harder management climate due to discontent with the funders, whether it is a company or taxpayers. Another explanation is related to the nature of the project. A classic case here is the development and implementation of cutting-edge instead of proven technology in a project, a strategy that may cause trouble regarding the manageability of that specific project, even though it may have

long-term advantages. An example of this from the Norwegian Continental Shelf is the Snøhvit Project where Statoil is the operator. Snøhvit is a highly advanced and complicated liquefied natural gas (LNG) project in terms of technology used and the arctic conditions surrounding it. Statoil opted for developing their own brand new technology to use in this project, a strategy that has caused cost overruns and many production setbacks due to the new technology being unreliable and unstable. It's clear that in the short term, this has led to serious managerial problems for the project owners and affects this specific project negatively in the short term.

Despite of this, Statoil (Statoil, 2009) claims that the technology developed and used in the Snøhvit-project will prove to give them a competitive advantage within similar projects in the future, knowing that the interest for petroleum resources in the high north is increasing.

A third explanation that Bruijn and Leijten give, springs out from the implementation of the project, and is associated with how much opposition or resistance a project meets. This opposition can be either internal within the company's different divisions, or external opposition through government or public voices and actions. In petroleum companies, the internal scenario is best exemplified by the constant conflict between geological and economical assertions. While a geologist may argument that a certain field is worth developing based on a technical evaluation, a manager may not feel the same due to economical or strategic assessments, and vice versa.

So to sum it up, one can say that explanations for faulted projects stems from uncertainties regarding either technical or social complexity, or a combination. There are however, ways to deal with and avoid these pitfalls in order to carry through a successful project.

Many projects fail to include parties and stakeholders that potentially could create social complexity, which at the time may seem like a good strategy to avoid noise and a faster project process. Such social complexity as noise in this case could for instance be environmental organizations that could disturb development of a field. A decision to ignore this noise rather than deal with it has a tendency to backfire at a later stage however, and these potential sources of social complexity could suddenly become very real, making the management of the project a lot more difficult.

In projects where technical complexity is the main reason of failure, the issue is often, despite the differences in nature of the problem, also related to the involvement of parties. If the right

kind of expertise that could solve potential technical problems had been involved at the planning stage of the project, it will probably prove to be a lot easier to manage throughout the process.

As we can see, the reasons behind both social and technical complexity as major explanations to faulted projects boils down to the lack of involvement in one way or another. The solution then becomes quite simple to state, but a lot harder to implement successfully.

The recent years, managers and companies seem to have become increasingly aware of this, and in Norway we have the case of whether or not to allow petroleum activity in the Lofoten area as the crown example. Ever since the geologists found out that the area outside Lofoten holds great promise the dispute have been going on between the environmental movement on one side, and the oil industry on the other. The area Lofoten/Vesterålen has been subject to a continuous stakeholder dialogue with a cost-benefit analysis as foundation.

Knowledge creation

A learning opportunity can be planned or emerge by chance and create valuable knowledge or understanding. Physical proximity could enhance emergent interaction between employees and hence encourage knowledge creation (Nilsen, 2010). All organizations have some kind of learning design that can either hinders or enhance learning and knowledge creation.

"All organizations will have a certain design, whether deliberate or not and whether fit for learning or knowledge creation or not, and in every organization there are no doubt various characteristics that facilitate and hinder learning" (Nilsen, 2010).

It is therefore important for the company to map different knowledge that they have within their company portfolio and find ways to preserve the knowledge if a key player quit the job. Creating a system that preserves the valuable information will save time and money through not having to build new or the same knowledge again.

"Interaction and collective reflection are seen as necessary conditions for sharing and creating knowledge"(Yoneyama, Oh, Hyuk and Kim, 2004).

Interaction or communities can be seen as vertical and horizontal. Vertical interaction is when the participants are heterogeneous in term of occupation, position in the hierarchy, department

affiliation etc. Knowledge base may differ within such structure and level of redundant knowledge can be low (Nilsen, 2010). Using such structure can form some difficulties with knowledge creating than in a horizontal community. The issue can be related to cultural or power allocations within the organization. But on the other hand, diversity can provide better environment for knowledge creation and knowledge creation can happened different than among peers (Nilsen, 2010).

"Knowledge diversity in a community is considered to be a strength, and diversity facilitates access to a broader technical and social information network, which means that the group has knowledge of a wider variety of potential approaches and solutions which can improve the quality of the task solution"(Owens, 2000).

Diversity in knowledge shows to be important for an organization and it may provide a competitive advantage. Such competitive advantages can be new product development and dynamic capabilities. In other words this can lead to higher profit generation and higher innovation degree. If such advantages are enhanced it may help the company become more dynamic and effective. An organization that creates knowledge on an ongoing basis has developed a capability that is dynamic and potentially underpins continuous organization learning (Tsoukas, 2004). For an oil company knowledge creation is important because the institution works in a high competitive industry and it is crucial to always have the newest information and technology. Most common knowledge creation in an organization happens with face-to-face interaction. This is the most common physical proximity that has the advantage to mitigate misunderstandings and hence avert mistakes (Nilsen, 2010). This kind of knowledge creation is understood as important within the organization theory (Tsoukas, 2009).

"*Dialogue becomes productive when the modality of interaction between participants is that of relational engagement*" (Tsoukas, 2009).

Tsoukas underpins that the most productive dialogue comes from the right incentives. Such incentives occur from a relationship created before or during the conversation. Dialogue involves mutual influence as far as both parts participates in the dialogue (Tsoukas, 2009). If the dialogue is productive, the outcome can be new knowledge. When thriving for a productive dialogue it is important that both participants are honest and open. Tsoukas

research shows that honest people can have the most productive dialogues. A conversation between two individuals with no relation to each other, is less productive than two individuals who has some relation to each other (Tsoukas, 2009). This illustrates the importance to establish some acknowledgement before the two individuals engage into a conversation.

As said before face-to-face interaction is one approach to knowledge creating. Another possibility and also frequently used is project groups. These groups are usually initiated top-down and are seldom an emerging activity. The activities that are supposed to be done within such constellations usually have a set time frame, specific task and problems that they are to solve. In other words project groups are short term and they are set to solve clearly defined problem tasks within a time frame (Nilsen, 2010). A project group often includes participants that can overlap between different communities within the organization and thus creates a forum for knowledge exchange and learning. What can be a problem with such constellations is that they are closed and further learning in the organization can be absent or not transferable. This is seen as learning boundaries in the organization and the knowledge is sticky within the project frame.

"Interestingly enough, co-location has been identified as an important factor on knowledge integration among project members" (Nilsen, 2010).

Location of the different group members is also an important part of the project work. Spreading the participants around in different places is hence not an advantage. In some cases, one could say that a face-to-face meeting would increase the learning. The actual work is often seen when the employees sees each other in practice and thereafter the collocation is seen as a forum for interaction. A project or a forum is often discussed as a place and the concept of place can be described as two forms; a place created with a purpose to serve as an enabler for learning or knowledge creation, secondly it is also seen as a place that has a purpose to brings people together in some kind of interaction (Nilsen, 2010).

4.3 Summary

This chapter has focused upon the theoretical framework of our thesis. First we have focused upon the strategy within an exploration company context. Secondly we looked at driving forces built in light of our strategy frame. In the next chapter we will present the empirical findings.

5 EMPIRICAL FINDINGS: THE COMPANIES

In this chapter, we describe four different oil companies and one consultant that have addressed our research question. The companies are Concedo, Det Norske Oljeselskap, Noreco and North Energy.

5.1 Concedo ASA

Concedo ASA was established in 2006 and had a main focus on exploration for petroleum resources on the Norwegian continental shelf. The company was established with funding by the end of 2006 and before the establishment it was a consulting company. The consulting company was divided in two; one part was to help oil companies to establish themselves on the NCS and the other part focused on heavy oil internationally. From late 2006 they worked towards a pre-qualification and during the spring 2007 they had accomplished this. After the pre-qualification they defined a clear strategy that Concedo is an exploration-driven oil company with focus on exploration for oil and gas on the NCS. The main focus was to concentrate the business on the exploration phase, and Concedo defined five elements for this focus.

1. Keep a small and focused organization

2. Avoid large development costs and risks connected to this

3. Great undiscovered resource base

4. Moderate capital needs

5. Combination of a well-organized NCS in form of information (data) and tax refund

Until now they have obtained licenses through licensing rounds and done a few swaps. The situation today is nine licenses with an emphasis on Mid-Norway. They also have one license in the North Sea and on in the Barents Sea. The employees are people who the managing director Geir Lunde have worked with previously in other oil companies, such as Hydro, Neste, Saga and Statoil. These people have special experience from the NCS. The experience is obtained through participated in many of the big discoveries made in Norway's history. The most famous and well known is Goliath. The business model is to be good in finding and mature the findings towards the development phase and sell the finding when it comes to the

development phase. This is the main strategy, but they are also open to modify some of the strategy. Geir Lunde also says, *"they are open for modifications and that they can't ignore the fact that it will happen someday"*. With a staff that has extensive experience and the various tools available for the oil industry the company hopes to grow in the future.

Strategy: Prudency first

When we asked why Concedo chose to be an exploration company Lunde said that it was a combination of things that makes it possible to be an exploration company in Norway.

1. Supposed great amount of undiscovered resources

2. Cheap access to the data we use initially

3. 78% tax-refund

4. Have a specialized focus upon exploration

5. Make early discoveries

The tax-refund in Norway provides a unique opportunity to conduct business in the exploration phase. This is unique for the NCS and it's not possible to obtain such advantages else were in the World. Also being able to keep a focused organization is important to sustain a healthy growth. Data is also well organized and the information is open for everyone who wants to access these. Lunde also says that it would be of strategy importance to gradually build a portfolio. This could be done through swaps between findings and production; this can eventually lead to participation in field production. Lunde also gave an example where Spring Energy has swapped findings with production and this led to Spring Energy's participation in production in the Brage field.

When we asked Lunde if the stock exchange could be a possible strategy to overcome the barrier between exploration and production he answered "*Yes it could be, I have talked to another oil company and they have done it and they got 1 billion NOK in additional capital. This helped them so that they could participate in the development phase"*. In the finance section of the empirical part, we will discuss more about the process connected to enlisting of the stock exchange. Concedo see some disadvantages if their company got listed on the stock exchange.

It is also important to make early discoveries. An early discovery creates value in the company and can make it easier to get loans or obtain capital from the investors, however this

depicts an ideal situation, something more of a wish than what is the most probable outcome in most cases.

Size can also be part of a strategy for an oil company. Lunde says that it is important for them to grow in a slow paste. Growing too fast can result in losing focus on their main strategy. Lunde explains that if a growth is a possibility for Concedo, they have to hire more staff to handle all the other business areas that are included when they enter in all phases in the value chain. If they increase the staff in one section it will be likely that some of the support functions should also be increased. The support staff is in addition to the staff that is needed to cover specialized business areas. Concedo focused intentional not to increase the staff, this is because they don't see it as necessary right now.

Finance: A Conservative Approach

Concedo obtained 115 million NOK from an issue in early 2006. Their main goal has always been to be careful with cash and not be a big spender. During the first year they used 2 million NOK and the year after that 10 million NOK. This was inclusive the tax-refund. Other companies spend a lot of money before they have drilled the first well and this can lead to financial crises in the company. When the financial crises came it became clear that it was beneficial to have a spares financial strategy. After the worst part of the financial crises a lot of company found them self in debt, but Lunde says that they still have most of the capital intact, and this means freedom of action. In-addition to the capital obtained Concedo has established a revolving loan scheme with DnB-Nord. It works in such way that Concedo can borrow within the boundaries of the tax-refund and these results in a cash flow that never has a dip down.

The loans are paid back to the bank at the end of each year when we receive reimbursement from the state. This is one way Concedo works to acquire capital. Another way is through Pareto where Concedo gained its capital in the beginning. Pareto is used to get in touch with potential new investors and other stakeholders. Lunde says that they are targeting those who have special interest in the company and they are not focusing on the public picture. It is also a possibility to obtain money through the stock exchange. Lunde gives two new example of this, North Energy and Bridge which has such plans (implemented by April 2010). They are planning to utilize the stock exchange to obtain more equity, while Concedo are not considering this because they are a private owned company. Lunde also says that it is not only advantages to be on the stock exchange. Concedo has mapped some of the disadvantages associated with being exposed to the stock market. One of them are the cost aspect, where

Concedo has mapped that it will take 30 and up to 50 million NOK just to be on the stock exchange and this is not within the tax refund. The stock exchange also demands quarterly reports and this is not very appropriate for an exploration company. The stock exchange is not suited to Concedo's type of business.

When exposed to the stock exchange the need for more employees are also noticeably. Concedo has suggested that they would need an extra 4-5 people in addition to the normal workforces just to meet the information requirements from the stock. It can also be quite difficult to conduct good deals because a stock company has to share much of their information with the stock market and this could be anti-competitive. Concedo does not give out information that could inhibit competition advantages in a prospect. Lunde also says that they do not show prospect information because this might inhibit too much of their competition advantages. As a private company they have a lot more freedom to choose what kind of information they want to share with the public. Lunde says that it is important to think of whom you share information with and that information can be a problematic area.

It is very costly to carry out an oil field development in Norway, to do so it is important that the company has a good financial structure and are able to carry the costs. Lunde says that he has been working and therefore has practical experience with such projects, and the main issue with development projects is to forecast the final project cost. It is generally a large risk for cost overruns. Such issues are often not predictable and it is therefore important to have a solid economy and management.

It is preferably to have a diversified portfolio with both production and exploration so that the company can handle the immediate costs instead of waiting for the income phase to come. *"It is most preferable for fully integrated companies to enter the development phase"* says Lunde. The oil industry is not a short-term commitment, it's a long term commitment and the focus should always be in the future.

Our next question was if Lunde sees financing as a barrier to become a producing company. He replied that it might have been that for a short time during the financial crisis, but it does not seem like that now. Concedo as a company does not see the financial as a barrier for them. Lunde says that they can gain cash through their shareholders and their close network. "*The shareholders are enthusiastic, and as long as they are, it may be easier to obtain capital when Concedo needs it*". Securing cash is crucial to the oil business because of its nature. Concedo secure shareholders interest through less money per time unit and return on invested capital. If

a medium or large field is discovered the return on capital invested can be enormous. Many of the other oil companies that invest large sums in production and development have to have big discoveries before it affects the value of the company say Lunde.

Key figures are also something that oil companies use to underpin company status and feedback to investors. Concedo has a goal to discover resources that costs less than 1, 5 dollar per barrel before tax to extract (This is 1,5*0,22 = 0,33 USD/bbl after tax in Norway). When they conduct drilling and have discovered resources, Concedo tries to mature the discovery until the market value becomes reasonable, and this is about 4 dollar per barrel. For every successful discovery there could then be a margin of about 4- 1, 5*0, 22 = 3, 7 USD/bbl. Lunde explains maturing as a process that leads up to a PDO. The figure under will show a possible maturing process.

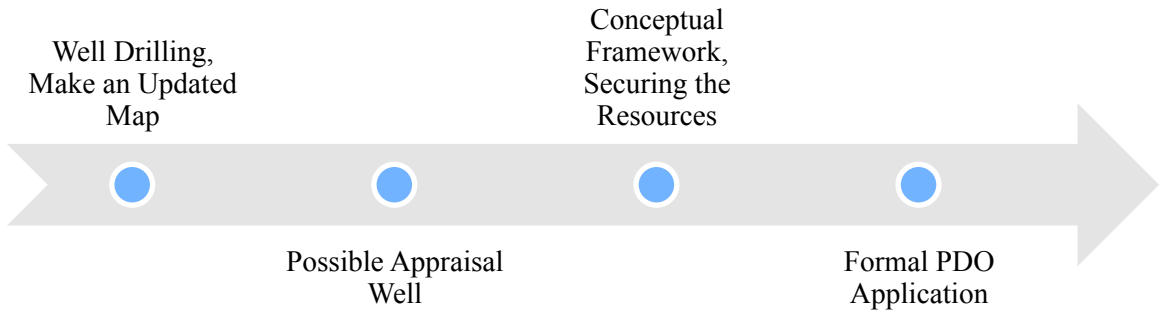


Figure 10: Possible Maturing Process of a License

Fields have a high point in value right before submitting the PDO to the government. The high point in value is determinate before all uncertainties related to the development are considered. *"All that leads up to a PDO is called maturing phase"* says Lunde.

Portfolio Management: Maturing Prospects in Frontier Areas

Concedo started building the portfolio with main focus on the Norwegian Sea. In addition to the opportunity they also had previous experience from the Norwegian Sea. The expertise came especially from Neste, another oil company, which had experience with the Heidrun and Åsgard fields. Concedo utilized this knowledge to develop and find blocks they liked best in the central Norway. This was an important move for Concedo, and they created their core business area in central Norway. When developing the Barents Sea they used their expertise from the western part of the Barents Sea. Lunde also adds that they have acquired licenses in the northern North-Sea, where they also have experience from.

Concedo has 9 exploration licenses where one called 348 is a discovery. The discovery was in 2008 and it contains gas condensate. They also made a discovery of oil in the same license. The field contained approximately 30 million barrels of recoverable oil. It was light oil in a great reservoir that lies next to Draugen field. The oil field has entered in a "Fast Track Development", and is expected to produce in 2012. Statoil is the operator and has classified the field as fast track project because it is easy to develop and has a short development time. Lunde also adds that this is probably a Mid-Norwegian record from the discovery to production.

We also asked the question of how Concedo sees portfolio management. Lunde says, "*Portfolio management for us is to carry our licenses up until the appraisal drilling phase, and then sell or continue into drilling if the discovery is promising"*. The value of the field reaches a point before appraisal drilling, let us say 4 dollar per barrel, and Concedo can sell

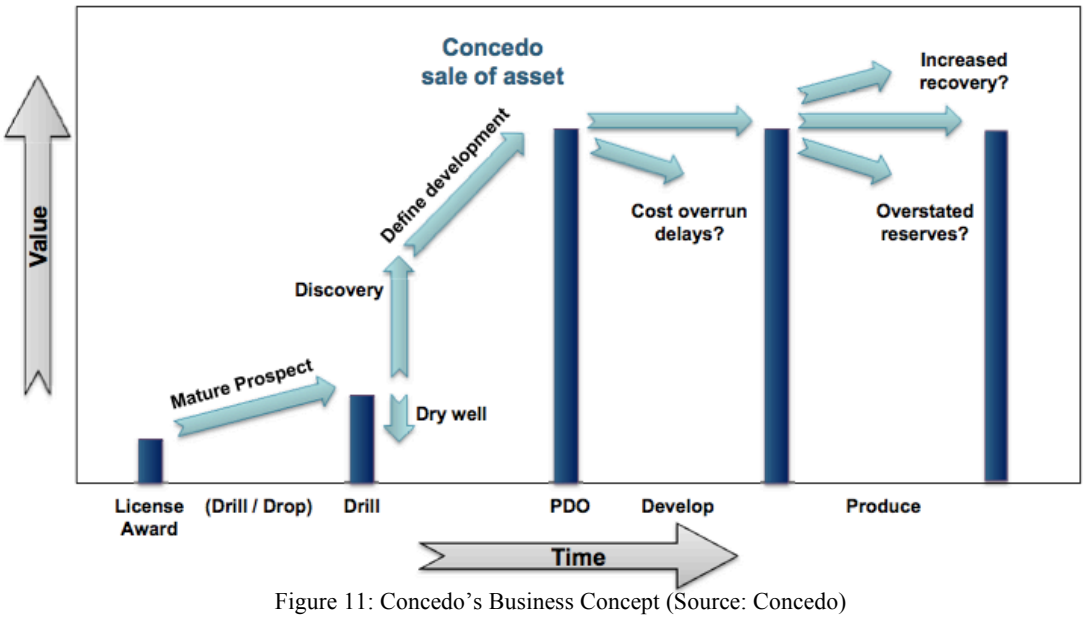


Figure 11: Concedo's Business Concept (Source: Concedo)

the field for this price, or choose to participate further in the development phase. In best case scenario the price per barrel can multiply many times after drilling the first hole. As you can see this is explained in figure 11.

If Concedo are to participate in a drilling they need the probability of success (POS) to be high. If the POS becomes low, Lunde says that they would try to sell or to swap the license. The portfolio was accomplished in accordance to experience and expertise on the selected areas. Deep-water areas are not part of Concedos portfolio because it is high cost and the

prospects contain mostly gas. Lunde also says that deep-water projects are consider long term prospects and therefore makes it hard for Concedo to participate in. When considering an oil or gas prospect, Concedo has a tendency to choose oil versus gas, this because of value-based assessments.

When we asked Lunde what he thought of reserve classification he said "*it means less than for the majors"*. The larger the company is, the more will reserve classification mean. Secure reserves are almost correlated to the stock price. At certain times you could almost take the secure reserves and times that with the dollar rate per barrel and say "that's the stock price", says Lunde. Concedo are more focused upon capital invested return and has therefore more circulation of resources. Classification does not have a big impact on an exploration company.

Risk Management: Minimizing Known Risks

Risk is a big area in the oil industry. It can be external or internal related, and it is important for an oil company to have a special focus on risk. Oil price is one of the most important factor in the whole oil industry says Lunde. Oil price to day and future expectation of oil price will be very important for any oil company. The oil price is very volatile to the market changes and has been fluctuating a lot.

Again Concedo sees that fluctuating oil price does not have a big effect on the commerce of oil fields, but one can say that if the oil price falls quickly the sales will stop in accordance with the oil price. There has to be a seller to meet a buyer and if the oil price is low, such participating can lack from one of those two. When a possible dip in the price is over and the price reaches an acceptable level the sales will begin from the original price before the price dip.

Concedo is an exploration company and we asked if this could be dangerous when the oil prices are low. Lunde says that "*it will be a phase where there is less field turnover, but it can also be a time for owners of the company to invest more money into the company as a long time investment"*. This expresses the long time view of the oil company and that long time investments can give good profits. Production companies can also be exposed to less profit during a price dip if they do not have long-term contracts. If price falls, production falls in accordance to price. This is an interrelated affects of the oil price.

Other companies that have loans based on booked reserves can enhance their problems when the value of what they produce falls. Loans that used to be favorable could turn out unfavorable. This is an unwanted situation for most companies. Concedo base their business

on the tax refund scheme and are therefore not depended upon the oil price. The tax refund will not bring the company in an unexpected predicament that oil price may do for other oil companies. The major oil companies that are robust such as EXXON or Statoil can withstand fluctuations in oil price much better than an oil company that has focus only on upstream or downstream business.

Risk is not only associated with oil price, but it also involves risks connected directly to business operation. Concedo has constructed a matrix that shows risks connected to well drilling and various elements that can influence the company. Recently the company has made a matrix that has helped to identify various risk factors that they have to focus upon. Such matrix not only helps them see what risks they are exposed too, but it also allows the company to do something with it. Concedo has identified a couple of risks they wanted to share with us.

1. Make enough discoveries

2. Prove resources to a low cost

This is the two of the overall six most important factors that they have identified. Lunde says that these risks must be supervised at all time and that the risks factors often come in pair. When solving one with great certainty they will incur greater risk in another factor. It will be important for Concedo to constantly be alert and balance between the various considerations. The matrix is designed to create a discussion around the various factors and to test the probability of the factors actually happening and what the consequence would be of the outcome. If some of the risk elements happens the matrix can predict how Concedo can influence the risk element or to prevent it of happening.

Knowledge Management: The Significance of Network and Technology Development

It is important for an oil company to have a large network. Network can provide information and be a discussion forum where companies discuss problems they face and how they handle these issues. Concedo use OLF (Norwegian Petroleum Society) as a network platform and their network building is done mainly through them. OLF is an interest and work organization for the oil companies and suppliers linked to exploration and production of oil and gas on the Norwegian Continental Shelf. Concedo believes that networking is a very important for an oil company. Lunde says that it gives them the opportunity to share experience and competence, something that becomes important for learning and development within the company. OLF also provides good contacts with other oil companies and an opportunity for input in terms of

legislation and opening of new areas. It is also important to know people in the Ministry and Directorate; this will give an opportunity to have an informal discussion about different issues that might come up.

It is important for Concedo to sustain an international network, so that they can share and discuss new technology. Lunde has also been involved in an organization called American Association of Petroleum Geologists (AAPG). AAPG arranges conferences for the oil and gas sector that focuses on the industry and its problem areas. Lunde has also been leader and a chairman for number if these conferences. This means that he has an extended network of significant professionals in Exxon, Shell and Chevron and others.

Lunde also says that network is important when it comes to organization learning. Concedo is working with the Norwegian Geological Society jointly with AAPG, where the focus is to gather the best professionals in the area around Oslo.

Knowledge is also an important to focus on. Lunde explains that experience shows that they learn through discussion forums and practical testing. Concedo has a profound eager to try new technology and their only barrier is cost, but even this is not considered as an important barrier. Geocap is an example of this. Concedo is one out of three companies that supports the development of an interpretation machine for seismic. Concedo and the three companies use the machine in licenses and open areas and provide Geocap with feedback after use. They are also involved in testing of new electromagnetic technology, and this could possible enhance their competitive advantage. On this development project they have appointed the primary responsibility to one of the younger employee. This is to diversify the learning in the organization. It is important to have learning in every part and process within the organization.

Concedo has focused on growing in a slow phase, by doing this they can provide longer time on each candidate they hire. Lunde says that slow growth is important and it will help them find the right candidates to fit Concedo's work ethics. Holding the human capital can often be hard in a competitive market. Key knowledge for Concedo is kept through interesting work tasks and an options program which runs every year.

Project management: A Practical Tool in the Daily Operations

Project management is also an important part of an oil company. Good project management can result in saving money and faster development phase. Concedo has in one of their licenses reach planning of development phase. In this project the license has designated a technology

committee that maps the project development and reports this to the management committee. Project planning like this is controlled through the partnership within the license. The whole Concedo organization is also involved with the technical aspect in each license and they have a weekly meeting where technical problems or aspects with the licenses are discussed. This is the first category; in the second category you will find the licensing round. This year is special; there are two parallel licensing rounds, 21 round and the APA2010 round. Concedo has a project manager on each of the license rounds, but all of the other employees work towards both licensing rounds. Lunde says that "*concrete plans do not give Concedo much help. It is more important with frequent meetings"*. Frequent meetings are the main managing tool. In terms of cooperation it is important to do a solid job and to provide the partners with good arguments.

The challenge is to do a good quality job and to be prepared before a partner meeting. Being a small or a big company does not determent a god job. The oil directorate gives feedback on how good the applications are and they also give feedback on what we as a company need to focus on for the next licensing round. By doing this we learn and this will enhance our change for success in a later licensing round says Lunde.

Calculation is often used to measure future project value. Concedo does not use specialized calculation but the employees are always aware of costs. It is important that the employee sees cost up against commercial possibility.

Copying best practice in the oil industry is a possibility to either do a better job or to develop the company the same way as it is done before. Concedo thought that Rebus did a good job in the startup phase and Concedo worked close to them during startup. A lot of Concedo's business model is copied from Revus. Revus chose to be an operator and Lunde has talked to Revus afterwards and found out that this was perhaps not a good idea. Revus learned that this made their organization more demanding to manage and possibly less efficient. Concedo has therefore decided that this was not a good idea, and therefore taken this as a lesson learned.

5.2 Det Norske Oljeselskap ASA

Det Norske Oljeselskap ASA (Det Norske) as we know it today is a result of a series of mergers and transactions between different companies with long histories and experience in the oil business. One of these companies was Det Norske Oljeselskap (the name was later changed to DNO), which was founded in 1971, as the first Norwegian oil company listed on the Oslo Stock Exchange. Up until 1984 when they acquired their first license on the NCS,

their focus was on the British part of the North Sea. However, due to government policy of not having more than three Norwegian oil companies on the NCS (Statoil, Norsk Hydro and Saga Petroleum), DNO was effectively prevented from participating in licenses in Norway. This lead to DNO being focused on foreign activity up until when the government changed its policy in 2005 with the new fiscal regime, which once again allowed DNO to take part in licenses on the NCS.

The second company involved was Pertra, which was founded in 2001 by Petroleum Geo-Services. When Pertra received its approval as a license holder and operator in 2002, it made them the first privately held Norwegian oil company on the NCS since 1992. In order to raise capital, Petroleum Geo-Services sold Pertra to the Canadian oil company Talisman Energy in 2005. After that, the management team of Pertra decided to break out. Following negotiations with Talisman Energy, they bought back some of the assets as well as recruiting many of the staff Talisman acquired from the purchase of Pertra, and established Pertra Management. The new company was financed by the management themselves and support of local investors.

In 2007, the boards of DNO and Pertra agreed on a merger between Pertra and the Norwegian part of DNO known as NOIL, effective from 01.01.2008. The new company got back the original name Det Norske Oljeselskap from 1971, and DNO changed its name to DNO International, with DNO International still holding a majority share of the new company. The time of mergers were not over yet, and the 23. Of December 2009, Det Norske Oljeselskap was merged with Aker Exploration, another Norwegian exploration company.

The merged company kept the name Det Norske Oljeselskap ASA, colloquially known as Det Norske, and continues to focus its main business on exploration and development of petroleum resources on the Norwegian continental shelf. Det Norske is present in every important city in Norway that has a relation to the oil business. The head quarter is in Trondheim, but they also have offices in Oslo, Harstad and Stavanger. There are currently over 180 employees in the company. Det Norske is listed on the Oslo Stock Exchange as «DETNOR». It was listed after the merger with Aker Exploration late December 2009.

Det Norske is the second largest oil company on NCS in terms of operatorship and exploration. After the last round of awards in predefined areas (APA) in 2009, the company was obtained 81 licenses, of which 36 they are operators in. In the 2009 APA, Det Norske was granted the most licenses and operatorship of all other companies on the NCS. It

confirms that the authorities have confidence in their way of conducting business, and ability to fulfill the requirements of the licenses.

Strategy: Closing the gap towards production and minimize time spent in valley of death

Det Norske Oljeselskap is an exploration company, and their main strategy is to conduct business on the Norwegian Continental Shelf, and focus its activity here. The primary reason for this is the Norwegian tax refund scheme, which is unparalleled throughout the world, and makes it possible for companies to be profitable in the oil industry without having production. As Breivik said it; *«without the changes in the petroleum tax legislation back in 2005, there would not be any Det Norske Oljeselskap, it is as simple as that».*

Many of the companies that are comparable to Det Norske also have activities in other countries and working under a multitude of fiscal regimes. This means that they have to deal with many different regimes at the same time, complicating an already difficult task of building an oil company. As Breivik says it *«you have to master your home market before moving abroad».*

Another aspect of why they have an NCS-focus only is the unique feature of the license system where the state without any fees awards licenses to companies against a commitment from the company to carry through a certain amount of work on the license. This works better for an exploration company like Det Norske where cash is constrained, as opposed to the rest of the world where licenses are auctioned to the highest bidder.

Another key strategy for Det Norske is that when they move to become a producing company, it has to happen relatively fast, as it does not make any sense to only have a little production. The reason for this is that under the Norwegian fiscal regime, companies' get a 78% refund for all exploration expenditures, which is paid out the following year.

If the company has any revenue from oil activities however, this income is deducted from the project cost before the 78% refund is applicable. In other words, if an exploration project cost 100, and the company has revenue of 10 that year, the tax refund is 78% of (100-10=90). The tax refund the next year will then be 70, 2 instead of 78, and as we can see, this difference almost eats up the revenue. On the other hand, as long as a company does not have any income, it will be reliant upon investors to cover their part of the costs, 22%. So for Det Norske, it is all about minimizing the time spent in this «valley of death», as Erik Haugane characterizes it.

In order to succeed in making this fast transition from exploration to production, Det Norske is thinking quite differently from traditional finance when it comes to project evaluation. Net Present Value (NPV) is traditionally the primary used method for evaluating projects, but Det Norske, with a relatively short perspective due to the reasons mentioned above, is focused mainly on low Capital Expenditure (CAPEX) projects. This means that they are sacrificing maximum NPV or internal rate of return to minimize capital expenditures in an early phase, as financial capital itself is a limiting factor.

In addition to targeting low CAPEX projects, Det Norske tries to locate projects and licenses that are close to existing infrastructure like pipelines and other platforms, a strategy that further decreases costs and time required to execute the project. When asked about Det Norske's preferred petroleum source, the answer is quick «oil». This is due to the huge infrastructure investment that gas developments often require, as well as the difficult market situation. Another strategy utilized by Det Norske, is if they discover a field that requires a long lead time, which means that it will take long time before there is any production on the field, they will attempt to swap this field with a field more close to production date. This is essentially a cash-flow swap, which means that they swap long-term cash flow with a short term, to boost liquidity instead of long-term value.

When participating in a license, it is usually a consortium of companies that are working together, and these are mutually responsible for all costs and obligations connected to the license. If these partners are considered weak by the investors or institutions financing the project, the project may face difficulties with financing. Because of this, a strategy Det Norske tries to follow is to target licenses where the other partners are considered strong like the oil super majors, where there is no question about their solvency. This however is a challenge, as the big companies tries to avoid smaller companies by the same reasoning; they effectively become cost carriers due to the joint liability established in the license award contract. This effect is to some extent however countered with a covenant in the license contract that if a company fails to pay its share of the costs, the other partners have the right to take over the faulting company's share of the license.

The strategic move of being publicly listed on the Oslo Stock Exchange was a move motivated primarily by financial reasons, as they saw that the initial investors did not have the financial muscles to develop the company further. Many professional investors and banks actually requires the company they invest in to be listed on a stock exchange, as this carries

both responsibility and a whole different level of control and information requirements to the market. Another side effect was that it provided the initial investors with the opportunity to realize some of their value in the company.

We already mentioned the merger with Aker Exploration, which was a move of high strategic importance for both companies. With it, Det Norske acquired many licenses complementary to their own portfolio.

Financial Management: Resolving the Challenging Task of Obtaining Financing

One of the main concerns of a company in a capital-intensive industry like the petroleum is how to get just that, capital. For a young company like Det Norske working in the exploration phase of the value chain, it is almost impossible to get financing for projects by reaching out to banks, of the simple reason that they usually do not have anything in the balance sheet for them to secure their loans against. Companies do have the opportunity to use licenses in this respect, but only as additional collateral complementing other sources. The reason for this is that banks cannot exercise their liens on a faulted loan and continue to be owner of a license over time.

Even though they are restricted from owning licenses, the rationale for the bank to use it as additional collateral is simply to secure that the license does not get sold off to other oil companies without the bank knowing it and where the money goes in the administration of assets following a bankruptcy. When cut off from using licenses as primary collateral, companies have to look at other sources of financing. One of these alternatives is the bond market, which according to Breivik until three years ago was «a piece of cake» to get financed in, if not 100% of the project cost, at least partially. In the mean time however, the world has suffered the worst financial downturn since the great depression of the 30's, so the market has turned completely around. Det Norske's opinion is that while it is not impossible to get financed through bonds today, it is under stricter and with higher margins than before. Prior to the financial crisis, investors were very interested in high-risk investments like in the petroleum industry. Now, the situation is almost opposite, investors hate risk and prefers safer investments. The result is that bonds accepted by investors typically have an interest of 10-15%, and are very short-term, rarely exceeding 3-5 years. Everyone that knows a minimum about the petroleum industry realizes that three years is a very short horizon.

A typical lead-time for an oil field is 10-15 years, so if this is financed through bonds with 3 years payback time and with 10-15% interest, *«it is a bit like financing your house purchase*

with a credit card» (Breivik, 2010). The future of the whole project would then be reliant on at least 2-3 rounds of refinancing before it is even starting production, a situation that hardly could be labeled as ideal. One of the key aspects when trying to finance projects is to match the length of financing with the length of the project, and if insecurity exists about the scope of the project, the length of financing should even go beyond it if possible. So if the project meets any technical or social opposition and is delayed, the financing is still in place. The bond market continues to be difficult, even though the light at the end of the tunnel may be approaching as lately we have seen a few refinancing with favorable conditions happen in the market.

After Det Norske's merger with Aker Exploration in December 2009, their credit facilities of 1,5 and 1,8 billion NOK respectively were combined, and extended from 3,3 to 4,5 billion NOK. The catch with the credit facility is completely restricted to exploration use, which the banks have established with pledge in tax receivable and all licenses. A syndicate of banks from different countries finances Det Norske's credit facility, and when asked about how organizational and turnover size of a company affects the ability to get funding, Breivik says: *"Of course, it looks better when you have an organization approaching 200 employees instead of 50, when presenting your case for investors in London"*.

Investors are traditionally characterized by emphasizing very specific key figures in the balance sheet and of the stock when deciding whether or not to invest. This behavior is also very predominant for investors in the oil industry. Det Norske however, does not keep much of its attention to either this or the oil price. "This marked is characterized with the investors being very attentive to production a day. Not in one or three years, but today! This is very short term, and may not reflect the real value of a company". As a consequence however, Det Norske has adapted to this thinking and is using this as their primary tool of communicating success to investors. Another general key figure used to evaluate companies in the oil industry, is how big reserves a company has and its reserve replacement rate.

Det Norske does not pay much attention to these figures however. *"You have to look at reserve measurements with a pinch of salt. Fair enough, it can be impressive for a company to say that it has several hundred million barrels of oil reserves, but that does not really say anything about what the costs of developing these are."* (Breivik, 2010)

To exemplify it: if this portfolio of 100 million barrels of oil has a break-even price above of $60 per barrel of oil, it is simply not any value in it. So for small companies like Det Norske

where capital is one of the main concerns, it does not make any sense focusing on this according to them. In other words this method of evaluating companies may be more applicable to larger companies with very sound financing.

When it comes to the price of oil, Det Norske has a relatively liberal relationship to it, and claims that it does not affect them much on day-to-day basis. The main reason for this is quite simple; they have a relatively modest production as of yet and not much income from petroleum production. In a long-term perspective however, Det Norske as an oil company of course have a reflected approach to the oil price, as scenarios with extensive periods of low oil prices around US $40 per barrel would cause most developments and investments to be unprofitable and not carried through. As Veie says it: *«If the oil price were to be at $40 a barrel for prolonged periods of time, there would not be any Det Norske Oljeselskap.»*

Another reason for their relaxed attitude towards the oil price, is that when it changes either up or down, the price of input factors such as rigs, boats, materials and staff also tend to change correspondingly, and to some degree offsets the effect of oil price changes.

Portfolio Management: Optimizing through focus on minimizing Capital Expenditure

Det Norske's portfolio is characterized by licenses being in relatively shallow waters, primarily because this results in lower drilling and eventually development costs than if it had been in deep water areas. They have a special focus on the North Sea and close to shore licenses in the Norwegian Sea, although the merger with Aker Exploration provided them with deepwater licenses as well. Their offensive drill program is secured by several long-term rig contracts, with the rigs Aker Barents and Songa Delta. Aker Barents is the most modern rig, and especially suitable for drilling in deep waters and in the Barents Sea, where Aker Exploration had most of its licenses before they merged with Det Norske. The deep waters of the Norwegian Sea are the area where the expected volume of each prospect is highest, but also the most expensive to develop. So when Det Norske do not have many licenses there, they «lose out on the opportunity to make bigger discoveries» as Breivik says.

Det Norske has applied for licenses in these areas as well, but because the larger companies have been very interested there, the results of the award rounds has tended to prefer them to the smaller companies, and consequently Det Norske's efforts has not been proven gainful.

In 2009 Det Norske was operator of nine wells, and was participating in 15 drillings. Several discoveries were made, but the results particularly in the Norwegian Sea, were disappointing with only dry wells. By the end of 2010, Det Norske plans to be operator of 10 drilling

prospects. In addition to this, they are also participating in other drilling prospects where they act as a partner. In 2009 Det Norske had 18 percent share of all the exploration wells on NCS, a share they are aiming to expand to 20-25 percent by the end of 2010.

Det Norske delivered in September 2008 plan for development and operation (PDO) for Frøy field. The other partners gave full support regarding the PDO. This was a milestone for Det Norske as a company, as it was the first PDO an independent Norwegian petroleum company had delivered since 1996. The financial crisis and consequently low oil prices led to a postponement of the Frøy field, and the goal now is to start on the prospect autumn of 2010. They have to submit a revised PDO for Frøy and the company has done a significant effort to bring down the project cost. During the first half of 2010, Det Norske and partner Premier Oil are evaluating various development solutions and the aim is that the first production from Frøy will come in 2013. Det Norske is also working with development solutions for the area around the Draupne and Hanz field, a license that proved to contain a lot more resources than expected. The goal is to increase production from the current level of just over 2,000 barrels per day to 15,000 barrels per day within three to five years, of which most of this increase will come from Frøy and Draupne / Hanz. Portfolio management and strategy is interconnected, and since there are relatively few remaining unexplored white spots on the North Sea, portfolio management and strategy will to some degree depend on and be subject to change according to where the company is awarded licenses. White spots in this case represent unexplored or returned licenses.

One important factor for Det Norske that remains an integral part of their portfolio management strategy is to sacrifice NPV maximization to the benefit of minimizing capital needs and spread risk. Further, they tend to prefer oil to gas discoveries in their portfolio, due to the simple reason that gas is much more complicated. Gas requires more complicated and expensive modes of transport infrastructure such as pipelines, or LNG plants if that is the preferred end product. The very nature of gas also results in that it has a much more restricted market than oil, and gas is usually sold by long-term contracts and not subject to the same forces of supply and demand by the same extent as the oil market.

Another aspect of their portfolio management strategy is to restrict how big a share of a license to own. If the degree of ownership in an exploration license is too high, it may result in much higher risk for the company, and a huge financial burden if and whenever the license is decided to carry through to the development phase. One of the biggest challenges when it

comes to portfolio management in Det Norske, is the contradictory nature between economists and the technical staff such as geologists, geophysics and petroleum chemists. Technical staff tends to favor licenses where they find it most challenging and interesting to search. This typically concerns the more unexplored parts of the shelf, which also happens to be where it typically is more expensive to do exploration and development of licenses, whereas economists generally have the opposite view, and favor well-known areas close to infrastructure and less costly projects.

Risk Management: A pragmatic approach

When we asked about which risk factors Det Norske acknowledges as the most important for their company, they answered that internally, they have ranked their risk factors like this:

Any oil company faces a number of risks that are specific to the industry, but for exploration companies like Det Norske, the number one risk is to make discovery. Especially if the company has little or no production, as selling discoveries then become the only source of income and without discoveries, there is no income. Second risk factor on the list is that of financing. Will the company get the funding needed if it makes a discovery, either for further maturing of the discovery or full development? The recent years this issue has really become relevant, as the financial crisis has strangled credit supply.

As Det Norske moves towards more field developments and production, they acknowledge that oil price will become an increasing risk factor for them as well, so at the time oil price fluctuation is ranked as number three. Oil price risks goes hand in hand with currency risks, as Det Norske is a Norwegian company operating in an industry dealing mainly with US dollar as their income. Last on their list come the political risks. It is not something that Det Norske spends much time worrying about, as there is very low risk of something dramatic happening. Even if the framework surrounding the industry were to change, the government would announce it very well beforehand so that companies had the time to adapt to the new situation. The fact that political risks is concluding a list like this is very characteristic for the Norwegian Continental shelf, as opposed to other regions of the world like Russia, Africa and the Middle East where this might be at the top.

Det Norske does not fear that conditions for exploration companies will deteriorate, but hoping and working for them to improve. One of Det Norske's ways of dealing with the political aspect is through its spirited CEO Erik Haugane, which continues to use media

actively in his attempt to improve fiscal and regulation terms on the Norwegian Continental Shelf for companies like his.

Regarding the other risk factors, Det Norske does not employ any specific risk management programs to deal with them, due to the reasons mentioned above. As they only have a modest production, they do not see the need for hedging strategies towards the oil price or currency, which are the two most uncontrollable risk factors they have identified. When it comes to the geological risk, all they really can do to minimize it is continuing to work hard and hire highly competent employees. Further, their above-mentioned credit facility tied to exploration activity is currently on a floating rate of interest, although they have plans to make this fixed when the economy turns around and interest rates begin to increase.

Knowledge Management: Exploiting opportunities to create a competence organization

According to Det Norske, is the key to success in every competence intensive industry to have the right kind of highly qualified people. In the complex oil industry this means both technical staff in terms of engineers and physics, but this also has to be managed and be run in a profitable way, so the need for managers with industry knowledge is also essential.

When Statoil merged with Hydro in 2007 and became StatoilHydro, one of the effects were that employees 58 years of age or older, were allowed to go from the company and still receive 70% of their salary until the retirement age of 67, without any reduction if they received new employment. This attempt to create synergy effects within the new StatoilHydro is what Det Norske characterizes as a huge bonus for all companies on the NCS, but especially for small companies like them. With it, they got access to highly qualified and experienced staff with a lot of expertise on the shelf, people that were *«practically unemployable»* a few years back according to Breivik. A very welcome side effect when they recruited these people was the extensive network that came along, as years of experience in the industry has provided them with many contacts throughout the value chain. They were also very motivated for working in a smaller environment, after being employed by large oil companies like Statoil their entire career. Here they were just one of several thousand employees, and maybe experiencing that their day-to-day work did not have that much of an impact.

In Det Norske, they were met with a more flat organization with short command chains, and the chance to really influence the future of the company. Breivik told us how the CEO Erik Haugane is talking about it: *«It is pretty short command chains here, sometimes so short that*

even the boss is not aware of it!» Det Norske's staff today is a very good mix between people who just graduated, «the juniors» and people with long experience in the oil industry, «the seniors» (Breivik, 2010.) The recent years they have been recruiting increasingly more juniors, who often get an offer even before they graduate, after spending time with the company during summer holidays and internships.

As previously mentioned is the headquarters of Det Norske situated in Trondheim, which also is the city where Norway's top technical university, Norwegian University of Science and Technology (NTNU) is. This represents a considerably advantage for Det Norske when fighting for top employees, and then again especially for newly graduated students. Being situated in Norway's technology capital is not enough on its own though, so in addition to that, Det Norske are matching the salaries and bonuses that employees will receive if going to the oil capital of Norway, Stavanger.

5.3 Norwegian Energy Company ASA

Norwegian Energy Company ASA (Noreco) is a young oil and gas company that was founded in 2005 as a privately held company by experienced people from the petroleum industry, and funded by local investors in Stavanger where they have their headquarter. In October the same year, Noreco announced that a consortium of private equity investors consisting of Lyse Energi, HitecVision, 3i and a group of local investors were raising 550 million NOK to finance further growth.

By December 2005 they had received pre-qualification as a license holder status on the NCS, and were awarded their first 3 production licenses in the 2005 Awards in pre-defined areas (APA). In addition to these awarded licenses which continued with one license in the 19th licensing round in 2006, Noreco pursued an aggressive growth by acquisition strategy, purchasing both exploration and production licenses from other companies. In December 2006, Noreco reached the second milestone of gaining prequalification as an operator on the NCS. The biggest event of 2007 for Noreco was undoubtedly the acquisition of the oil company Altinex in August, which was quickly followed by getting listed on the Oslo Stock Exchange in October, raising another 550 million NOK in the process. Several analysts covering the petroleum industry considered this acquisition as a very good move of the company, as they to a large extent, had complementary assets and in addition were able to get a very good price. At the time, Noreco had a lot of acreage and exploration licenses, but little

production, with the situation in Altinex being just the opposite. Soon after they chose to divest some of the divisions of Altinex to make room for their core business activity.

The next acquisition was not far away, as Noreco continued its aggressive growth strategy. Next in line was the Danish part of Talisman Energy, which was acquired in June 2008, positioning them on the Danish part of the North Sea, and it was mainly a strategic purchase to secure production income. As of 2010, Noreco is operating on three different shelves; the Norwegian, Danish, and UK and is currently employing in excess of 90 people. Estimated annual production in 2010 equates to 13-14.000 barrels of oil equivalents per day on average, from 8 producing fields. Further, they are part of 3 field developments, 19 discoveries and approximately 57 exploration licenses.

Strategy: Rapid Growth by Looking Beyond the Norwegian Continental Shelf

Ever since the very start of Noreco back in 2005, they have been pursuing the same strategy, which essentially revolves around exploiting opportunities in the North Sea that the large international oil companies choose to not engage in due to various reasons. Their business model is applied throughout the company's different divisions and they have defined three sub-strategies that together lay the foundation of their business model.

The first and main part is to grow through exploration and acquisitions of licenses in the North Sea. What is important for Noreco during this stage is to focus on areas where they have most knowledge and prerequisites to do well, or developing this knowledge further by exploring areas that will complement the portfolio of the company. Acquisitions of licenses, be it exploration or production, is almost exclusively done in mature areas of the shelf, to minimize the risk. Another important aspect of this part of the strategy is that even though Noreco is a Norwegian company, they do not limit their activity just to the Norwegian part, but has chosen to regard the shelf under the North Sea as it is, one geological formation. Noreco has, unlike most of its comparable competitors, acknowledged that expertise about the Norwegian part of the shelf is valid also on other parts, and that country borders constitutes artificial barriers for companies within the oil and gas industry.

The second sub-strategy is to monetize on value created through developing resources in prospects into production or sale of prospects. This is done by firstly having a very selective attitude towards development of licenses; so only the most promising licenses or discoveries will be matured. Secondly, Noreco has a very aggressive drilling program, so in licenses that

hold much promise they will do what they can to determine whether or not it will be able to deliver the desired value for the company.

Last in line of their sub-strategies is that of optimizing value creation from producing fields, to increase the cash flow, and then in turn further strengthen the exploration and development capacity of the company. A practice proof of their determination to build the company is that all profits are directly reinvested into the company. No dividends have been paid out to investors in Noreco since its inception in 2005, and for the near future, they do not plan on it either, with the explanation that investors will get better returns in the long run this way.

The founding of Noreco was made possible by the 2005 petroleum tax reform, as with many other exploration companies that were founded in the same period. Without elaborating too much, the reform enabled companies to get 78% tax refund from of all of its exploration cost. Despite the boom of exploration companies in 2005 following the tax reform, Noreco remains the only company to date that has made the transition into being a producing company with substantial production. The fact that they have been able to do it so quickly while none of the others has, Gjelsvik feels can be attributed to what the company decided right after its founding back in 2005, and what eventually shaped their strategy:

«Despite the very beneficial Norwegian tax refund scheme, an exploration-only business model is not really sustainable, as you are in the hands of the asset sales market at all times».

Noreco's belief was that organic growth through exploration alone would require too long time to keep the investors interested. The rationale is simple: as the development phase of fields is where the oil and gas industry becomes very capital intensive, you need the support of investors, and in most cases they are not particularly interested in waiting 10-15 years for the typical oil field to be developed before they get any return on their investment. In other words, the only really viable option was to grow through mergers and acquisitions of companies and licenses.

Even though Noreco has made the transition to become a producing company, they still have their main focus on exploration activities, as *«it is in the exploration phase you can create value»* according to Gjelsvik. Noreco do not stop there like some of their competitors however, but says *«to maximize value in the exploration phase, you also have to be able to participate in field developments».* He continues with*: «it is still possible to create value, but you cannot create as much value as if you have production».*

Another aspect of having cash flow from producing fields is that it lowers average capital cost, adding value to investors compared to not having cash flow.

Financial Management: The Double-Edged Aspects of the Oil Price and Leverage

Noreco was one of the few companies that managed to secure financing during the financial crisis, and in 2009, they completed a rights issue in addition to several bond issues. They are determined in their claim that they have sufficient funding to secure the current growth plan for the company, which will see them become one of the leading actors in the North Sea. If it turns out that they discover more resources than they expect according to their growth plan during the next few years however, it may be necessary to extend the total access to capital. In addition to several regular or convertible bond loans, Noreco's exploration activity is currently financed with a credit facility of $350 million, which is organized as a so-called reserve based lending facility. The advantage of such producing reserve based lending is that it is very cheap compared to bonds in today's market, with floating interest rates as low as LIBOR+1,8%, currently totaling to 2,5%. This considerably lowers the weighted average cost of capital and is creating value for shareholders.

«When comparing to other exploration companies with no or little production income, they are typically funded with a cost of equity from 10 to 15%» (Gjelsvik, 2010)

This example given by Gjelsvik show how big an impact such reserve based lending may have. There are however potential downsides to this way of financing the company, as the producing reserve base must be continuously increased or at least sustained in order to fulfill the loan agreement with the banks.When Noreco was listed on the Oslo Stock Exchange in October 2007, it was as a result of a strategy that was implemented from the very start of the company. It had been a private equity company, and some of the investors were looking to capitalize from their initial investment. According to Gjelsvik you then typically have mainly two exit-strategies, where making an initial public offering on the stock exchange is one of them. The other main way of capitalizing on an investment in this phase is to sell the whole company to other oil companies. At the time a straightforward sell-off of the company would have provided less value for the stockholders, so the former method was preferred.

Gjelsvik and Noreco also believe that being listed on the stock exchange provides the company with lower cost of capital, as opposed to not being listed and having to attract investors through different channels. One of the reasons behind this, Gjelsvik argues is because when a company is listed, it brings with it a lot of requirements that needs to be

followed, such as IFRS-level accounting and proper handling of news and bulletins to the market. When a company complies with these requirements and is successfully communicating to the market, it means that they have a certain level of market awareness and that the management of the company is regarded solid, which in turn will boost the company's reputation and induce trust and willingness from investors. So to meet the challenge of raising capital, Noreco spends a lot of time in the market, telling their story and making sure that by the time the company needs financing, investors are comfortable with them and willing to step up.

«The biggest change with being listed on the stock exchange is that you have to inform the market about things that you wouldn't necessarily have to do when you are a private company»(Gjelsvik 2010)

One of the main things that Noreco is communicating out to the market is how its production portfolio is performing, as this is the key to such low cost capital funding as reserve based lending mentioned above. As Gjelsvik says it: *«Companies with one or two producing fields with a small production, won't get access to this type of financing»*

Besides focusing on production, another key figure for Noreco is net present value, which is pretty much the foundation for every major investment that the company does, and what they experience that investors keep track of.

«It's all about value creation. When we decide upon whether or not to invest in a project, we look at a number of key figures, but net present value is always the most important»

All the figures mentioned above is more or less internal figures and calculations that enable Noreco to do sound decisions when investing in a project. As an oil company however, there also exist an external factor that significantly affects Noreco financially, which is the oil price. When asked about just how important oil price is for Noreco, Gjelsvik answers:

«It is of tremendous importance. In addition to being geared to operational activities tied to the oil price such as production, we are also financially geared towards it through how we are financed».

He continues with *«If you look at listed oil companies on the Oslo Stock Exchange, most analysts will highlight Noreco as the most sensitive to the oil price, the company that will rise highest following an increase of the oil price.»*

The main reason for this according to Gjelsvik is that Noreco has a relatively large production compared to their size, in addition to the financial gearing which further enhances that effect.

Portfolio Management: Creating Value through Rigorous Asset Evaluation

Noreco's portfolio consists of mostly exploration licenses, as focus on value creation in this phase remains the pinnacle of their strategy even though they also have some production. They have approximately 57 exploration licenses, mainly spread across the North Sea on Norwegian, UK and Danish side, as well as increasing activity in the Norwegian and Barents Sea. So far 19 of these licenses have proven to contain resources, of which 8 are currently producing 13-14.000 barrels of oil equivalents per day, 3 of these are under development and 3 are about to start the development phase. In addition they are in the process of assessing the Greenlandic Continental Shelf as a potential area, as this is expected to open up in the coming years and contain considerable amounts of resources.

Excluding subcategories of mostly technical significance, Noreco utilizes roughly three categories when talking about their resource base: Risked resources, contingent resources and 2P reserves. Risked resources, which represent the most inaccurate number and of least importance when evaluating an oil company's resources, is calculated with the following formula: (The amount of resources thought to be in the license) x (The probability of success in that license) x (The company's share of the license). Repeat this for every license and summarize it, then you have the company's total risked resources.

In addition they have a little over 125 million contingent resources, which is estimated recoverable resources in discoveries, which due to different constraints of the finding is not being developed at the time. Examples of such constraining barriers may be technical difficulties, economic viability, and political or environmental issues with the project. Lastly, Noreco's portfolio consists of 37,2 million barrels of 2P reserves, which is what is considered as proved plus probable, with at least 50% certainty. This is also what the banks use as collateral when providing reserved based lending.

Noreco do not have a stated preference for any specific hydrocarbon resource, although about 90-95% of their current production is coming from oil. Further is this a situation that is expected to continue even though some of their prospects especially in the Norwegian Sea may have a larger degree of gas in it. Simply put: Noreco's business model is all about discovering large fields and creating value to shareholders from these, regardless of the source of petroleum. Having a deliberate and conscious portfolio management strategy is integral for

Noreco, and one of their main criteria is that any potential new additions to their portfolio, will have to contribute in the upper half in terms of value and size. This policy ensures that money is spent only on assets that have potential of improving the portfolio. Another important portfolio management policy of Noreco is that whenever applying for new licenses, they should be situated where the company feels it has the best expertise, allowing them to further increase value creation with less money spent.

To exemplify how thoroughly and selective Noreco is working with its portfolio, Gjelsvik gave us a quick review of how 2009 went for their exploration activity: They were reviewing 10 possible wells on different licenses, but after close examination, it was decided to drill just 5 of them, giving the rest to other companies. The reason for this was as Gjelsvik says: «we believe that you could create more value with being more selective regarding what you choose to develop». Even though it is always encouraging to make discoveries and by that showing the technical staff that they are doing a good job, it will ultimately always boil down to what kind of economy that exists in each discovery.

Gjelsvik told the story from 2009 of the production license 442 Gamma, which Noreco knew would have some resources, but chose to sell before the last appraisal stage. The rationale for this decision is when they did their own calculations, the value of it did not make the cut of Noreco's existing portfolio, and they were better off spending their resources elsewhere. When we asked Gjelsvik about how this struggle between technical staff and economists plays out with them, the short story was that «*within Noreco, that is actually rarely a problem»* Due to systematic work with implementing their business model throughout the company, everyone knows what the criteria are for further development. The way Noreco handles it is by first letting their technical staff work with potential prospects and figure out the technical quality of it. Afterwards, the economists will assess it with various calculations regarding value and sensitivity towards oil price, potential technical difficulties with development and others. This whole assessment process is done with assistance of reservoir engineers. If the prospect proves to be viable economically according to their portfolio after this stage, Noreco moves forward with it, and if not it is dropped.

Risk Management: The Backbone of Noreco's Petroleum Exploration
«Oil price is definitely one of the main drivers within risk and upside for us», Gjelsvik 2010.

As with every petroleum company, Noreco must deal with the volatile and hard-to-predict oil price, which Gjelsvik sees as the principal source for both upside and downside risk. The downside risk comes primarily from the fact that the North Sea is relatively mature, so discoveries are smaller than before, averaging at 31 million barrels of oil equivalents in the period from 2006-2010 according to consultant agency Wood Mackenzie (NPF Conference, 13.04.10). Smaller fields generally have a much higher break-even price because of the low volume of petroleum to spread the costs on. So even though Noreco utilizes a fairly conservative oil price in their project calculations, this means that potential field developments become even more vulnerable to lower oil price. Since Noreco has a fair amount of production relative to their size and by that a considerable degree of their income in US $, they have the need for hedging their income against the oil price.

Hedging in Noreco's case is in short done by purchasing put options, which effectively defines a minimum level for the oil price, so if the actual oil price sinks below that, the seller of the put option has to pay Noreco the difference. In exchange for the security this put option provides, a premium is paid to the seller of the put options, much like a regular insurance works. If the contrary scenario occurred, that the oil price rises higher, Noreco will benefit from that too. With Noreco still primarily focusing on creating value through exploration, geological risks are certainly one of their main areas of attention. Noreco have a very systematic way of managing their exploration risks, which is closely connected to portfolio management. First of all, Noreco employs approximately 50 geology and geophysics (G&G) staff, ranked by Noreco themselves as one of the top exploration teams in terms of expertise on the NCS and North Sea. These G&G staff is continuously working with examining the license and discovery portfolio of Noreco, which is subject to an ongoing ranking against each other, and those prospects of lowest quality are replaced with new.

The third most important risk factor for Noreco is just like number one on the list, concerning uncertainties, although a different kind. As mentioned above, a considerable part of Noreco's activities is financed through reserve based lending. Currently they have 8 producing fields, where each fields NPV provides the collateral to this credit facility. Noreco has hedged the price risk of oil, so the other main risk remaining is the effects of incidents interrupting production to the NPV. Noreco has 8 fields in production and if one of them suddenly went down, it would reduce the overall credit facility with the corresponding significance of that

field's NPV. What Noreco does to counter this risk, is by having extensive insurance policies against incidents like shutdown of fields due to technical or safety reasons. Just like when purchasing put options against the oil price, Noreco by paying a premium to the insurer maintains their cash flow even if for some reason there are any abruptions in production.

Knowledge Management: Proving Essential when Building Competitive Advantage

When closing in on the end of the interview with this topic, Gjelsvik started by saying that *«our approach the whole time has been that ok, we are a knowledge-based company, which means that given our strategy we should overinvest in competence».* From day one Noreco has acknowledged the fact that highly competent staff is one of the keys to their success, and every step they have taken since have been with this in mind. For the government to consider a company being prequalified as a license owner on the NCS there is a lower requirement of 10 people employed by the company. When Noreco started up however, its strategy was to grow fast. So they didn't settle for the bare minimum, but went far ahead the requirements and employed 25 highly skilled people from the beginning, which was a very thought through decision.

«We acquire data, process it, and make our decisions based upon the results» (Gjelsvik, 2010). In other words, it's crucial to have the best people available when processing the data to maximize value creation of shareholders.

«Because of our business model, where we manage our portfolio very actively with continuously selecting or scrapping projects, we are especially reliant on acquiring resources, both data and skilled people. »

Once the right people are acquired, another challenge shows up, namely the one of how to keep and manage the knowledge that is created in the organization. This is of particular importance to an organization like Noreco, which with offices in Stavanger, Oslo and Copenhagen is spread across multiple sites.

To achieve this, Noreco make extensive use of experience databases and its company internal web system. In every project Noreco is working with, all steps and knowledge created in the process is logged. If the project for some reason is scrapped, these reasons and the rationale behind them is stored in this database, so if Noreco at a later stage decides to reconsider that project, the lessons learned from the first time is available to use and consider if they still are valid. Whenever a license or project is discarded, Noreco continues to follow it and what the new owner does with it, either confirming or disconfirming their initial conclusion. With this

method of following up discarded projects, Noreco ensures that whatever the outcome of this process turns out to be, it has undoubtedly contributed further to Noreco's knowledge. Not necessarily only about that specific project, but also about themselves and their ability to do evaluate the available data correctly.

5.4 North Energy

Harald Karlstrøm from Origo Kapital had the first idea of a High North Norwegian oil company in Finnmark at the Alta conference in autumn 2004. KapNord Fund by Tore Andreassen gave the project more fundament when he and Harald during early 2006 worked on a concept that presented a North Norwegian oil company with a broad basis in the region. John P. Barlindhaug was early in 2007 involved with the project and lifted the concept to a national level, and discussed the idea within his own network. The feedback from the central government was positive.

Erik Karlstrøm facilitated the preparation sketches through SB Finance. The draft's were compiled into a document and discussed in cooperation between the two investment funds Origo Capital and KapNord Fund. The driving force behind the idea was that the North Norwegian communities should take a more active role and ownership of resources in the North Norwegian shelf, and ensure that more of the resource rent and industrial added value was left in the region.

The gathering at Langstilla by the Alta River in early August 2007 was an important milestone in the process of creating the North Norwegian oil company. This idea was further concretized through a binding action plan with the stakeholders involved. This gave new inspiration and strength in the work. Further work was now in a firmer form of financial guarantee from Origo Kapital, KapNord Fund, AS JPB, Salten Kraftsamband and Alta Kraftlag. Chief executive Leif Finsveen in Salten Kraftsamband became the fourth man in the constellated group and he contributed with the financial weight and geographical spread in the group of future ownership.

North Energy AS was formally established on 4 September 2007 with the board Harold Charles Power, Tore Andreassen, Johan Petter Barlindhaug and Erik F. Hansen. They completed a private placement of 150 million, which put the company in a position to hire the personnel needed to become a qualified oil company. The placement was met with enthusiasm and interest in the new North-Norwegian oil company, North Energy.

A new capital-intensive company was thus formed with venture capital from all around the region. The CEO Erik Karlstøm was employed as the first employee in the company.

Strategy and Financial Management: Regional Focus and Prudency through Organic Growth

North Energy's main strategy is to create value for shareholders and contribute to the effects of the country by participating in exploration, development and production activities outside Middle and Northern Norway with focus on organic growth. This means that the company plans to make discoveries, develop these and produce from the same. There are no plans to acquire producing fields. Exploration on the NCS is rather favorable in terms of both tax refund and the almost "free licensing application fee" says Guldbrandsøy. North Energy's strategy builds on the fundamentals of the governmental framework that facilitates exploration companies to explore for hydrocarbons. However, strong G&G and subsurface capabilities are required to be able to apply for and develop the best prospects. The company's core activity involves development of alternative solutions for profitable and sustainable petroleum operations in northern Norway, where facilitation of local business and spillover effects in the region are also central.

North Energy works dynamically with the value chain to develop the skills required to make decisions, including the long-term environmental perspective. Oil and gas activities in such prone areas where North Energy is involved need strong oil spill preparedness so that spills can be handled fast and reliable along the coast. This requires a close dialogue between the coastal communities and the companies. North Energy has in collaboration with a number of stakeholders contributed to the development of an alternative field development concept for these areas. This is an alternative that could be applicable in addition to the more conventional field development solutions used on the NCS.

North Energy has chosen to focus upon innovative solutions. The close contact with the supply industry and technological environment, has contributed with opportunities and plans for further research and development. An important milestone for North Energy was listing the Oslo stock exchange on February 5th 2010. This was part of their plan to achieve more capital to finance on upcoming drilling program of eight wells. Listing on the stock exchange also means that North Energy has to deal with higher requirements from the owners. *"This will sharpen an organization as there will be a pressure to deliver results efficiently*", says Guldbrandsøy.

Further, Guldbrandsøy notes that one of the most fundamental parts of being an oil company is to "*make good findings and mature them as early as possible"*. This is of course is a wish for any oil company and a strategically goal that, if reached, can provide the company with

substantial capital. However, more and more companies are now looking into taking positions in proven reserves such as heavy oil and shale gas to be able to replace the reserves they are producing.

The financial situation of North Energy is good, making them able to finance the drilling of 8 exploration wells. Gaining capital, was as mentioned above, achieved by listing the company and offering the investors a diversified portfolio of prospects. North has also secured exploration loans that are used in combination with the shareholders equity to finance the drilling program. As Guldbrandsøy says *"we are in good shape to handle all our exploration drilling plans and commitments"*.

When asked about possible future challenges to move discoveries into production, Guldbrandsøy says that one of the biggest barriers to become a producing company for smaller companies is to finance the costs for a field development. Such barriers can only be handled through good strategic planning and with proper financial means at hand. *"Further, if a prospect turns out to be difficult, North Energy will try to come up with innovative solutions together with partners in the license and the suppliers"* says Guldbrandsøy.

Bonds are often used as a financial tool in the field development phase. North Energy has not used this as a financing source yet, but would consider this when a discovery is made and being matured towards a sanction to develop a field. Guldbrandsøy says that *"North Energy would look at different types of loans, bonds, equity to finance the investments phase when a commercial oil or gas field is found"*.

A large amount of capital is needed in the investments phase, but Guldbrandsøy underlines that *"there should be enough time to handle the capital need for field development, because maturing a discovery to be commercial takes a certain amount of time"*. Another possible solution to finance the development phase is to partly sell parts of the portfolio.

An important element in the investment phase is to map the quality of the prospect and what resource rent to expect. North Energy's key focus is on low risk prospects in proven fairways, but North Energy could also engage in high-risk prospects if it is balanced with a high resource rent. When it comes to size of a company and financing hurdles, Guldbrandsøy says that the key is not company size but rather that the company presents itself as serious and prudent. Key financial numbers as cash flow and Return on Average Capital Employed (ROACE) are not focused upon since North Energy has no income yet. Still there are some

key numbers that are focused on such as NPV, risk of making commercial discoveries, resources and drilling and field development cost.

Oil and gas price assumption for the future is key to what kind of prospects they are looking for. The prices will not have an effect on drilling program over the next couple of years. However, if oil and gas prices decrease in the short term, the overall activity on the NCS is expected to reduce as history has shown that exploration decreases in accordance with oil price decrease. This could create opportunities for a company such as North Energy if the fundamental view on longer-term prices is unchanged.

Portfolio Management: Expertise in Frontier Areas Proving Vital

North Energy has made one discovery in the Norwegian Sea close to the Åsgard Field in March 2010. The rest of the portfolio consists of exploration licenses and most of these are found in the Barents Sea and the Norwegian Sea. They also have two licenses in the North Sea, as a result of the merger between 4seas and North Energy. The portfolio is built such that several of potential discoveries are located near existing infrastructure or in areas where oil is discovered before. This is done to lower the development cost and quicker field development.

Risk Management: A Systematic Approach is Key to Success

North energy is exploring for both oil and gas as long as the potential finding rate is acceptable. The portfolio should be differentiated and balanced so that the risk is seen in correlation with profit. To achieve this, North Energy has typical an interest in a prospect of 20-40% in a license. When a company has a high stake in a license, it becomes responsible for a larger share of the total costs and risk related to subsurface uncertainty. Working dynamically with the portfolio and spreading the risk is important so that North Energy can achieve an optimized portfolio.

Risk for North Energy is carefully watched and handled at all time. Under we have listed some of the key risk factors for North Energy.

1. Subsurface risk – Probability of making a discovery
2. Market risk - Oil and gas prices
3. Technological risk – cost of field developments and operational costs
4. Political risk – opening of new exploration areas and exploration refund tax system

Making a discovery as early as possible is important both economical and for the reputation for a start-up company, even though the risk quantified for each prospect is so high that several prospects could be drilled without making a discovery. Geological risk is evaluated thoroughly and independent teams do quality control. These teams systematically evaluate the

risk of the prospect and make an independent risk analysis that they put up against the original risk assessments. Market risk involves oil and gas prices. A decrease in oil price can make it harder to finance new investments. However, an increase in the oil price could lead to an extremely high return on the investment. A key political risk concerns the opening of Lofoten and Vesterålen areas for exploration drilling.

Knowledge Management: Positioning the Company for the New Frontier Areas

It is important that the employees are satisfied with their work environment and assignments. North Energy wants to give every individual colleague interesting and challenging work assignments. Guldbrandsøy says *"Learning by doing"* should be a clear practice in North Energy.

A key area in North energy so far has been license applications and following up the licenses North Energy is partner in. Further, as North Energy is an operator for an exploration license there are also several things that need to be put in place to be able to operate the drilling of an exploration well. When recruiting knowledgeable staff, it is important to have a plan for personnel development.

Training is typically done through special courses for the more inexperienced staff and the experienced staff typically attends conferences with special themes. Another important part in knowledge creation is to build systems and processes that allow North Energy to retain knowledge even if some people choose to leave the company. An important tool for developing a performance culture is using an incentive system that awards good and professional work.

A good network is important in all parts of the business; from talking to authorities to experts exchanging best practices. North Energy has strong ties and network within northern Norway and this will hopefully be useful when Lofoten and Vesterålen are to be opened. North Energy has a distinctive profile in the northern Norway. This is a clear strategy and the only other company that also is focusing on Northern Norway is Discover Petroleum (now renamed Front Exploration). "*North Energy does not try to copy the profile of other companies",* they have tried to establish an own profile based on North Norwegian exploration focus with main office in Alta. Guldbrandsøy says that it is also important to copy certain business areas that other companies have succeeded in. Further, North Energy is well positioned for the areas in the Barents Sea in the border area between Norway and Russia with good knowledge of the Barents Sea and Russian employees already hired in the Alta office.

5.5 A Consultants Perspective

"The most important thing for an oil company is to secure enough money" says Børve. It is important to define what business to conduct in and what not. This becomes essential when determining what place in the value chain the company decides to focus upon. It can either be in exploration, findings, and production or tail production. All these business areas need different strategies and competence. Going from an exploration company to a production company is not easy and involves hard work and good business understanding, and Børve lists some of the most general means of how a company can manage this:

- Mergers and Acquisitions of licenses and companies
- Swap licenses with proven resources with production licenses
- Build diversified portfolio of complementary assets
- Targeting low CAPEX and close to infrastructure assets
- Sell Findings providing extra capital
- Divide the company into different business units
- Get access to reserve based lending
- Divestment of non-core assets
- Participate in public debate to influence fiscal terms
- Stock exchange enlistment

An exploration company has enormous costs and little income. Income could be attained from selling licenses that are mature or believed to contain fossil resources. It is commonly that companies who wants to sell a license or prospect, wants to retain the best license them self. For an exploration company the situation is different because it has to finance their exploration through selling promising license.

Gaining money is done through selling mature findings and such findings are often found in the best licenses. This forces an exploration company to sell its best findings and retain the low-grade licenses. *"The low-grade licenses are then matured and as a result they may one day be sold to an acceptable price"* says Børve. The main task for an oil company is to makes sure that the portfolio is diversified and to find oil and gas. If discovery is done early in an oil company's lifecycle, it will provide capital to develop other prospect. Some companies use bonds to finance development costs. If bonds are used to finance the whole development phase it could "*only postpone an early liquidation"* says *Børve*.

All exploration costs are tax deductible and this gives room for the exploration companies on the NCS. The tax refund scheme can be seen as an opportunity and a barrier. On the left side one can say that it gives room for exploration business, but it can also represent a barrier for a company that wants to become a producer.

"Many oil companies has worked for a long time to make the tax refund a reality, and this has been important work, but on the other hand it has contributed with opening the NCS for several weak players"

Børve is afraid that if the same regulations were to apply in the production area, it will become a playing ground for unskilled companies. This will not be a fortunate situation for the production area. As Børve says *"an exploration company only needs 1 dollar to play with 5 dollars, whereas with a production company you need 5 dollar to play with 5 dollar"*. It will be crucial for an oil company to develop an understanding about the commercial aspect of the business before they move in to production. This is because the company needs to have a broad knowledge and capital base to conduct business within the production phase.

Risk is different when it comes to what kind of business the company is involved in. For an exploration company it is important to have a critical mass, i.e. a portfolio containing mature prospects. The portfolio should contain a certain numbers of licenses each year, preferably 4-5 good prospects a year. With many good licenses and prospects it is easier to do the proper selection on what kind of prospects that should be developed.

A production company conducts business in a different stage of the value chain and therefore has diverse risks factors to focus upon. Conducting in a good partnership is essential if the project is to develop, if the partnership is poor the project can stop and this might cost lots of money. It is therefore crucial to understand the system of partnership and operatorship. Børve says that many licenses are kept on hold because one or more of the license holder postpone things. In the development phase it is important with a healthy budget and cost management.

Business deals are also a part of the consortium and become essential to identify to understand the fundament within the licenses. Such deals can be costly especially when it comes to the development phase. Strategic competence is important both for project development and understanding.

Buying production is one method to become a producing company. The main problem with this is that the company needs to have financial strength to buy. When an exploration

company has acquired production, the oil company can use the revenue to develop mature prospects and hence gets hold of more production.

A company can also sell a license that has confirmed reserves, and the sales sum is correlated with the size of the finding. Swapping a mature finding against production can provide positive cash flow. Børve says that *"if you buy production it reduces the opportunity to conduct exploration"* and this correlates with the cost of doing production and exploration at the same time. It is therefore important to balance these two to sustain a healthy growth.

5.6 Summary

In the empirical chapter we have presented each of the company's position in the value chain, and tried to map all the central issues each of the companies' faces when they conduct business. As we move on to the analysis we will try to catch the most essential issues that the respective companies are faced with.

6 ANALYSIS

Due to the complex and risky nature of the petroleum industry, building an oil company is challenging and takes a lot of hard work to succeed in. All of which implies that before the company set out to search for the black gold, meticulous planning must be done. There are many exploration-based companies on the Norwegian Continental Shelf (NCS), so in order to stand out of the crowd; the company should develop a differentiated strategy that is reflected throughout the company. In the beginning of each company analysis we utilize the value chain developed together with Det Norske, and use blue color to indicate what phase they are in, and grey color represents not yet reached business areas. After the analysis we will make a comparison that will show the main characteristics which is found in all or some of the companies.

6.1 Concedo: Building Brick by Brick

Figure 12: Concedo Value Chain

From the beginning, the former petroleum industry consultants that founded Concedo decided that their main strategy was being an exploration company on the NCS. Within this strategy there is a clearly defined goal of discovering viable resources on a regular basis that can be matured into commercial value, and then sell it before the development phase. These characteristics meant that we could place Concedo within the frame of the value shop of value configuration theory (Stabell, 2001).

The value chain of the oil and gas industry both in Norway and internationally could be seen as fragmented; meaning that except from the largest vertically integrated oil companies, most conducts business within different parts of the value chain. We discussed the value chain of the petroleum industry (Stabell, 2001) in our frame of reference. Stabell (2001) argues that the transformation of input into physical goods-logic of value chain theory (Porter, 1980) does not fit particularly well for exploration companies, whose main input is knowledge in the form of geological data, and output is discoveries.

Figure 12 illustrates that Concedo's business activity is concentrated within the three first phases of the value chain. Although they actually are participating in the development of the Draugen field in addition to a few other appraisal wells, their main strategy is about selling assets before the development phase.

Acquisition of promising licenses that could contain assets on the NCS is a difficult task, so Concedo applies a slow growth strategy with no current ambition of becoming a producer. Slow growth is less demanding in terms of capital intensity and experience, and we believe this strategy is sensible / understandable when the company's only income is risky and tied to sale of potential discoveries. There are two reasons for this; for one they are operating in a highly risky business where there are no knowing whether or not a license contains resources before the license is drilled, which is very costly. Secondly, the slow market for license transactions on the NCS the recent years makes their income even less predictable, so to pursue an aggressive organizational growth would increase costs and potentially add financial stress to Concedo.

While our frame of reference is extensive regarding aspects of value creation in exploration companies, it does not provide us with any tools to analyze or discuss exactly how fast a company should grow. In our view the matter of growth rate is a dynamic aspect of the company that should be shining through its stated strategy and goals, and in this respect we will argue that given Concedo's foundation and position in the organizational field of NCS, the slow growth strategy could be justified. Concedo is one of the smallest oil companies on the NCS, but even though company size undeniably does provide leverage in negotiations such as license partner discussions (Davis, 2007),so do competence coupled with thorough work. Our empirical findings and evaluation of it thus makes us conclude that when the competence and ability use it exists, small sized companies are a force to be reckoned.

It seems that Concedo has successfully implemented a company strategy that the whole organization is familiar with. Having a vertical organizational structure might imply faster evaluations of projects (Nilsen, 2010), but in the complex oil and gas industry, decisions like these should not be taken in a hurry but carefully matured. We believe that Concedo due to the flat organizational structure, highly competent staff and project work practices have the best prerequisites to do so, and is managing their decision making processes in a sound way.

Petroleum exploration is a costly business and Concedo has chosen to be very conservative in their cash spending policy. Their exploration activity funded through private equity investors,

and boosted through credit facilities tied to the tax refund scheme of the NCS. Financing is not a problem for Concedo since they are not dependent upon fluctuation oil prices, which is something we see as an advantage because of the volatility of the oil price.

Scenarios of low oil prices may lead to some upstream companies being forced to sell good prospects since they cannot afford to hold these assets during declining market times due to lack of equity. Since the company is privately owned, Concedo is seen as a long-term investment, and all the shareholders had this in mind when they decided to invest in the company, which we see as a major advantage for them. This fortunate situation can make access to cash easier in times where the market is less interested in high-risk investments, making them less prone to market conditions where they will get less money for good prospects.

They have chosen to not be an operator as official requirements and the extra workload on behalf of the license partner's connected with it means that they would have to hire more staff, leading to a larger organization that needs to be controlled. That is why Concedo chose to maintain small and focus on their key area of competence: exploration activity. They want to use their knowledge and experience to discover resources at a cost of below US $1,5 per barrel of oil. This number is the goal used by most of the big companies, but Concedo do not see any reasons for them not achieving this as well. As we could see from the company's business model it is about maturing fields up until appraisal drilling. If the probability of success is high they will expect to get US $4 per barrel before reaching the appraisal well phase. Right before drilling is generally when project cost relative to potential value of the prospect is the most beneficial considering Concedo's conservative strategy, and that's why Concedo chooses to sell at this stage. Based on what we have discovered so far in the analysis, we can see why Concedo applies such a cautious strategy, but keeping a too strict focus on a single strategy within the company may limit its opportunities(Wharton., 2007). That is why we fully agree when Concedo says that they are considering participation if the prospect is exceptionally promising,

Concedo's portfolio management is linked with their company strategy and financial situation, which implies a prudent approach. It is focused upon frontier areas within the Norwegian and Barents Sea. The day-to-day portfolio management is handled by a vertically organized internal committee that evaluates opportunities within every prospect, a practice correlated with the research and theory we found on portfolio management. According to the

same theories Concedo does not have a differentiated portfolio as they do not have any producing assets yet, only exploration licenses. It can then be argued that Concedo does not have an optimized portfolio according to theory (Tom Adams, 2000/2001), but as real world often is more complex than simplified theories, we want to stress our opinion that Concedo's portfolio connects well with Concedo's strategy and visions.

Their portfolio is also focused upon shallow water prospects since deep water prospects is costly and typically contains gas in the areas where Concedo has most competence and experience. This can lead to unnecessary exclusions of potentially good prospects. Concedo also has a portfolio that has a high turnover rate. Theory (Tom Adams, 2000/2001) says that a company should have a diversified portfolio that would result in a more balance between both risks and profits. Concedo has so far chosen not to have any production, which contradicts the assumptions made in the theory. In our view the portfolio management is managed in a way that they always see risks and profit as interrelated factors and therefore feel they can overcome these uncertainties.

Risk management is something that Concedo focuses upon all the time. We have analyzed a couple of main risk and uncertainties that the company focuses upon.

1. Oil price is important, but it does not influence the company on a day to day basis
2. Make discoveries
3. Prove resources at low cost
4. Low oil price effects liquidity in license markets

It was important to make a structure that was not too influenced by the fluctuating oil prices. The primary step they took towards not being so dependent on the oil price were by participating in more than one or two licenses. Participating in a respectable amount of licenses like Concedo does (9-11 licenses) is expensive, but with a good financial structure and management this was made possible. Spreading the risk over more licenses also pleases the investors, in a way that might trigger their will to invest more in the future. Despite the careful approach in practically every area, we will argue that Concedo is in the middle-risk category since they choose to only do business within the exploration phase.

Concedo also secures the risk taking by participating in a network that collaborates on new technology development. This also helps when it comes to geological uncertainties and risks related to this question. To make persistent sizeable and profitable prospects that they can

mature and make reasonable profits on becomes of vital importance for a company that is only focused upon exploration. As we understand this, it could possibly be a difficult long term strategy since the NCS becomes more mature it is harder to find good fields that could be commercial viable. For Concedo this means bigger challenges of finding such fields.

Experience is important when it comes to selecting right licenses to apply for, and this is something that the company recognizes and do agree with. Creating a good network that the company can use to enhance their ability to find oil and gas is something of importance for Concedo. Finding a professional network is done through staff and by participating in technological communities. This is an important step to enhance both the organization and the technologies.

Creating knowledge on a consistent basis is hard, discussion forums and project groups are used by Concedo to maintain this knowledge creation. This is also in accordance to what (Owens, 2000) explains as a crucial step towards knowledge creation and interaction. Keeping knowledge is also hard within a competitive industry. It is normal that employees go to the competitor if they can provide better conditions. Because of this situation it becomes important to preserve the knowledge. Concedo recognize this and they developed an incentive system that provides interesting work tasks and option program for the employees. The organization is small and the oil company has a thorough recruitment program. As we see it this gives an opportunity for Concedo to find the right staff that could fit their corporate strategy and goal. This leads us to believe they have created a diversified staff that can contribute with a competitive advantage. In Concedo's case we see the competitive advantage as size and knowledge intensity also they are concrete about their innovation capability as of the involvement in the new seismic technology. They are organized as a flat organizational structure with strong environment for learning and this will let them handle multiple licenses with not much staff, this could be more cost beneficial than a larger organization structure.

As of project managing they have project groups that take care of different projects and give feedback to the managing committee. They also prefer continuous meetings rather than concrete plans. They have a long-term strategy of been an exploration company but as suggested here, they participate in license meetings in a continuous way that let them make decisions regularly rather than having to follow a concrete one year plan. Having a good structure for cost evaluations is important according to Concedo. They have a distinct cost management that they apply for all their projects. We do agree that this is important since

failing with this can mean risking huge financial capital that may also lead to bankruptcy. Size can have an effect on performance (Walls and Dyer, 1996), but as we learned from Concedo they don't have any issues concerning performance due to their small size. This we do agree with, since they have obtained quite a number of licenses. They are also learning from best practice in the market and this has helped them to run the company in the right direction.

What we can say as a fact is that they have no plans of moving in the direction of a fully integrated company, they want to stay in the exploration phase as of now. Over a long term perspective 5-10 years, Concedo has to acquire some production that could be used to support other development costs. We see Concedo as a company with big ambitions and candid performance. It is important for us to say that Concedo might focus too much upon slow growth and therefore they can fall behind. Our impression of their business strategy is if they never have a diversified portfolio with both production and exploration if they don't move forward in the value shop. With this we feel that their strategy does not meet their ambitions.

6.2 Det Norske Oljeselskap: Building a Stable and Balanced Company

Figure 13: Det Norske Oljeselskap Value Chain

Det Norske is in some sense larger than the other companies. They are the second largest oil company on the Norwegian Continental Shelf (NCS) in terms of operatorship and license holder after the last APA round. It is important for us to keep this in mind when we start analyzing this company since it is bigger and has other focuses as we will see. Still we are dealing with a company that has its main focus on exploration.

Det Norske has a main strategy to focus upon exploration only within the NCS. This focus means that they have no business outside the NCS. The strategy has its fundament since they departed from the old DNO. Such strategy could be seen as somehow conservative for potential investors since the focus becomes only on the NCS and the fact that the NCS is rather mature, but Det Norske says that they need to know one continental shelf before moving to explore others. This in our mind is a good reflection that supports their main strategy and does not force them in to unknown territory.

Further we see that Det Norske focuses upon low CAPEX development and licenses that are near already established infrastructure. This strategy can provide prospects that are less costly to develop and possibilities to gain production within their portfolio, but such strategy will scarifies long term value as Det Norske elaborates. The portfolio management within the frame of reference says clearly that a diversified portfolio will spread risk and give opportunities for the company to grow (Tom Adams, 2000/2001; Davis, 2007). Growing as a company is something that Det Norske really focuses upon accomplishing. A step towards growth can also be through merger or acquisitions and Det Norske has just merged with Aker exploration as a step towards further expansions, however the company says clearly that if they are to grow and move into production it has to happen fast. This is because of the refund scheme that does not favor little production as we explained in the empirical chapter.

Developing fields is something that Det Norske looks to explore more in the future. Bigger projects normally has a lead time of 10-15 years (Davis, 2007) something Det Norske sees as too long of an investment projects since the cash flow will be negative until the projects comes on-stream. However, Det Norske has chosen a strategy of swapping fields that has less lead time and can become on-stream within a time frame of 5 years. This gives them an opportunity to participate in a development prospect that can provide a positive cash flow that would allow them to further participate in new development projects.

Larger companies might have more advanced technology and financial establishment than a smaller oil company. They can also attend bigger projects without been exposed to great risk as a smaller company that might face big investment cost or other uncertainties. Also bigger oil company tend to spread their risks more than smaller ones because they have the right financial means that is needed to be in such situation (Davis, 2007). Det Norske has chosen a strategy that has its purpose of selecting licenses that has larger and well known oil companies as license partners, such as Statoil or Shell. This is deliberate from their side because this provides more security both with financing and knowledge.

In our analysis of Det Norske we can in accordance to the strategy see that the main focus is located within the first 5 phases of the value chain figure 13. They do not conduct considerable business in the development phase, but they have some development and this gives us some indication that they want to further develop and conduct business in this phase.

Developing the portfolio in accordance to their strategy is important as a success factor. Det Norske relies on finding commercial fields that they can benefit from. This is of course a wish

for all companies that have their main focus upon exploration. Minimizing the idiosyncratic risk a oil company has to have at least 10 – 15 projects of same size (Bøhren, 1987). To ensure this Det Norske has chosen several measures to ensure healthy portfolio growth. They have secured long term financing through bonds and the refund scheme to secure further financing and minimizing the risk connected with a volatile oil price and the fact that they have little production. Today they have an expected production of 2000 barrels a day, but in the future they would have 15,000 barrels a day when the Frøy field becomes on-stream. The change in production will make the oil company more dependent upon future oil price and thus have to deal with new risk factors.

The management in Det Norske has a strong focused on project selection and what project that should be developed and which project to scrap. The selection correlates with what Walls and Dyer (1996) call risk management. Good project risk for Det Norske means a carefully selection of prospects that they want to develop. In Walls and Dyer's study they found that managers considered the relationship between high CAPEX and risks as interrelated. As we mentioned before Det Norske has made it clear that they don't want to conduct prospect that has considerably high CAPEX exposure. What the company has done is to diversify their portfolio that allows them to spread the risk. In our mind this is in accordance to what Walls and Dyer call risk averse behavior, further this might imply that their managers spread risks to mitigate between high CAPEX and possibility of profits. Spreading risk can alleviate high exposure to CAPEX and provide risk averse attitude (Walls and Dyer, 1996) and this is exactly what Det Norske has used to minimize project risks. Another consideration that the company has made in accordance with risk is that they always choose their license share with carefulness. A rule of thumb is that they should not buy a larger share in the license if the probability of success is low. We believe that this is a healthy way of formally consider risks and that they see risk as a serious factor that could damage the company fatal if they miss-measure the risk relationship.

Their main focus is in the North Sea and close to shore since it would imply lower development costs. They have built this portfolio strategy, which relies upon the knowledge base they have in the company. Knowledge is created through interaction in different forums. Such forums could be project groups or casual interaction between employees within a vertical integrated organizational structure (Nilsen, 2010). Det Norske has fulfilled this to some extent. Their company consists of around 200 employees with different experience and competence. This could insinuate that the company has built a strong knowledge base that

could be applied to the different projects that the company has in their portfolio. Our understanding is that they utilized the diversified knowledge base to become both a big operator and license holder on the NCS.

Keeping a knowledgeable organization is hard because of the competition intensity in the oil industry is high. It will be important to have some kind of incentive system or knowledge database to keep the knowledge within the business. All organization must therefore have a good knowledge design that could preserve the knowledge (Nilsen, 2010). Securing this Det Norske has taken advantage of the early retirement plan that StatoilHydro launched when they merged and hired experienced people. Doing this Det Norske has secured knowledge that they see as important to continue a healthy growth. In our mind this was both helping the company with new knowledge and made room for taking a closer step towards becoming a producing company. Det Norske has headquartered in Trondheim near NTNU (Norges Teknisk - Naturvitenskaplige Universitet) which they are collaborating close with. Creating a knowledge base forum between the technological university and Det Norske could possibly generate dynamical capabilities that could prove to enhance their innovation degree (Tsoukas, 2004). In our mind this is a great strategically move for Det Norske. Collaboration with the technical university will give the company access to both top students as well as frontier technology.

Det Norske have a representative and healthy mix between seniors and juniors in their work force. The energy industry is highly competitive and it requires staff that is experienced within the field. It might be hard to maintain the same workforce because other companies could offer better conditions. Det Norske has considered this and made salaries competitive with those in Stavanger (the capital of oil industry in Norway) and created work tasks that challenges the workers on a daily basis. In knowledge management theory this could be seen as a clearly defined design on how to manage or crate knowledge.

Getting access to rigs can be challenging at times when the market has lot of activity. A strategically measure preformed by Det Norske is the strategically merger with Aker Exploration. The merger made it possible to get a hold of high technologically rigs and extended rig capacity that the company needed to maintain the exploration program.

All the above is the sum of how Det Norske considers strategy in correlation with their portfolio. This is a young company with big ambitions that has had a healthy growth through carefully selecting partners and licenses. Building this company to what is today could not

have been done without knowledgeable and skilled staff. We see this as a key strategy to becoming successful. Handling risks is something that Det Norske has comprehended but they have to have more focus is needed when they enclose the gap between exploration and production company. Steady and intermediate growth was also something that the company saw as a necessity to become a production company.

6.3 Noreco: See and Seize Opportunities

Figure 14: Noreco Value Chain

«I think that, from day one, we have regarded ourselves as a knowledge-based company. We acquire data, process it, and make our decisions based on the results» (Gjelsvik, 2010)

This is exactly how value configuration theory (Stabell, 2001) argues how an exploration company should focus in its attempt to create competitive advantage. So when Einar Gjelsvik gave us this statement during the interview of Noreco, it became clear for us that this company had a very thought-through foundation right from its inception, and that this awareness of the value creating process has helped getting Noreco to the position where they are today.

Noreco's strategic foundation today remains the same as when it was founded; the key aspect of Noreco's general strategy is to exploit the possibilities in the North Sea left open by the oil majors. Inherent in their business model is to not be limited by the national borders existing in the North Sea, which is evident by them having 8 producing fields spread across the UK, Danish and Norwegian Continental Shelf. Although these geographic areas are separated through man-made constructions as national borders and subsequent are subject to different fiscal regimes, they share a set of common geological features made by nature(HOVLAND, JUDD and KING, 1984), and this realization is the basis for Noreco's approach to the area. Further, Noreco was and still is very focused on growing fast through mergers and acquisition activity with fields as well as whole companies, claiming that organic growth is too time-consuming and not feasible when dealing with the demanding and short-term focus of investors in the stock market.

It is our opinion that Noreco's strategy of expanding their operational area makes a lot of sense in respect to making the transition from exploration to production fast, especially if we do a quick review of how the mergers and acquisitions market of the North Sea have been the latest years. A full overview of this can be reviewed closer in the attachments, but in short, it shows that the Norwegian shelf traditionally has been characterized by a low level of liquidity and low number of transactions in the license/field market, in stark contrast to that of the UK Continental shelf for instance. Noreco was involved in 1 of the 2 deals the previous years, and if we continue with comparing how the total value of the remaining assets is distributed among different actors in the North Sea, another interesting aspect of Noreco's strategy surfaces:

A figure showing the distribution can be examined in the attachments. To summarize it, companies not regarded as either oil majors or controlled by the government through SDFI/Statoil, control only 12% of the remaining assets' total value on the NCS. Even though the total remaining value is lower on the UK, the 50% share held by small companies there equates to roughly three times that of the NCS.

According to Wood Mackenzie (NPF Conference), history shows that oil majors are less inclined to sell profitable assets than smaller companies, and governmental controlled companies even less so. Now it becomes even clearer that Noreco's strategy of pursuing acreage acquisitions outside the NCS is probably very suited for creating competitive advantage, given that the right kind of competence exists in the company.

The right kind of competence Gjelsvik stated; is imperative for any exploration company to achieve success. Its very nature with high entrance barriers and huge costs associated with it makes the petroleum industry very risky, especially in sub-sea areas like the North Sea. The North Sea is an area with a high degree of competition between the companies, so to be able to acquire and keep the best people; value configuration theory claims that the main differentiation driver of the company is the reputation. In other words, management should keep its main focus and emphasize its effort in areas that drives the reputation of the company. While the term reputation may have different meanings and reputation may stem from many different sources, Stabell(Stabell, 2001) argues further that the main driver of reputation, and the critical measurement of success in an exploration company is the discovery rate and reserves per well drilled.

A successful company in respect to these two figures will tend to signal to the market that they have highly competent staff capable of discovering resources at a low cost. This will then in turn attract the attention of additional skilled people, and in time allow the company access to the best acreages. It becomes a spiral of success, as shown below:

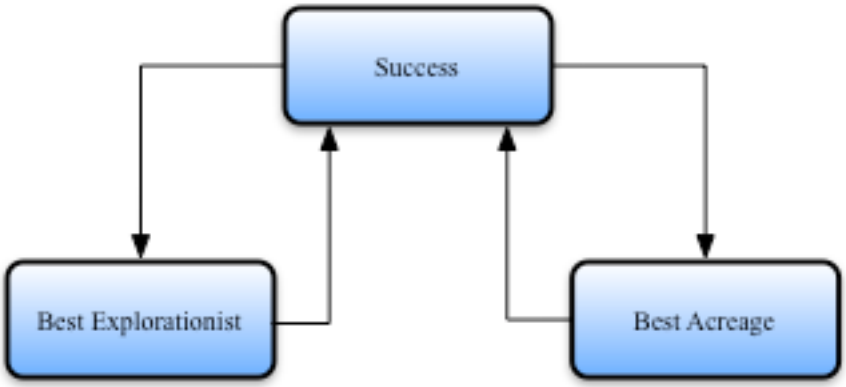


Figure 15: The Success Feedback of Exploration

One of the most interesting findings we made during our research of Noreco is that knowledge management and competence development is as highly prioritized as it is. Because of the recognition of an exploration being a knowledge-based company, Noreco has had the strategy to overinvest in knowledge and competence from the start. Their approach have kept the number of staff well above requirements from the regulators, and signaled strength to the market. One downside of Noreco strategy in this area is that it demands much capital and competence to manage, so it may be seen as a bold move from a newly founded company without steady revenues besides tax reimbursements from the state. In our view it has clearly paid off, with Noreco being in a more advanced position than many of the comparable start-up companies created by the tax alteration in 2005.

Noreco's business units are spread across three different locations, making managerial and organizational necessities like communication, knowledge and project management more complicated than otherwise. Noreco has made many efforts to counter these effects of being scattered. One of their primary initiatives to increase knowledge creation within the company is the establishment of internal networks of different professions, so called horizontal networks. As opposed to vertical networks which consists of a broadly assembled group of people with differentiated areas of expertise, horizontal ones consists of similar people regarding their education and everyday job (Nilsen, 2010).An example of this within Noreco could be their geologist network. They are spread across their three offices, but meet

regularly to exchange knowledge and experience, and such horizontal networks are useful for creating very specialized knowledge. Physical proximity is seen as one of the most important factor in knowledge creation (Nilsen, 2010), so within each office location, Noreco also utilizes vertical work groups that are assigned to the specific projects to further enhance knowledge creation. Vertical organization of groups or networks has its issues like power inequalities, social and professional differences. However, on the positive side it tends to create a diverse environment for knowledge creation, where every aspect of a challenge will be discussed. A mix of these two ways of organizing groups as Noreco does, seems like a good way to counter whatever problems both physical separation and proximity may produce.

Another effort in this area made by Noreco, is by having a common company database. Here, every step made in every project they are participating in is logged and archived. If Noreco for any reason decides to discontinue the participation of a project, they will keep following the project closely, to learn further from the new owners evaluation and results from the project. This process is closely related to the work Noreco do in their portfolio management.

Despite having a relatively large production compared to their size, Noreco still, maintain that their business focus is on exploration activities, and consequently their portfolio is dominated by exploration licenses. Even though about 95% of their assets today are based on oil, Noreco claims that they do not apply an institutionalized preference towards it.

What matters is making as big discoveries as possible regardless of which source of petroleum, a strategy that is portrayed through their continuous evaluation process and very selective approach towards which assets are to be included in their portfolio. This feature of Noreco places them in line with what strategic portfolio management theory applied to oil companies states; that its main method is to evaluate existing projects and new opportunities, and where the goal is to obtain a more diversified portfolio, minimizing risk in the process (Stabell, 2001).

Portfolio and risk management for exploration companies are by its very nature closely related, as is Noreco's strategy in these areas. Due to Noreco being highly geared towards the oil price both in operational and financial aspects of the company, it becomes the primary driver of both up- and downside risk for them. Furthermore, when we know that the value of potential discoveries on the Norwegian Continental Shelf and in the North Sea has become increasingly marginal as the areas have become more mature, risk management in a highly geared company as Noreco is essential.

Noreco handles the primary risk of the oil price with financial instruments like put options to offset the effect of changing oil prices and secure some stability for the company. Another way of handling risks are as mentioned their very thorough portfolio management and, which limits the risks of unnecessary spending on assets with marginal value. Together, we see these two aspects of their risk management as crucial for them and their business model to be viable.

Walls and Dyer (1996) argues that smaller oil companies tend to have a risk-averse attitude, a statement we do not agree completely with regarding Noreco. Although they apply extensive measures to mitigate risk, the company is highly geared through bonds and reserve based lending, which consequently makes them vulnerable to changes in the oil price in the long term. This feature may affect their long-term competitiveness.

However, with Noreco's very thorough approach to portfolio management that we described in the empirical findings and, our opinion is that Noreco has a very solid strategic foundation for pursuing their goals and visions for the company. The obvious recognition of the value configuration theory's arguments towards how to create competitive advantage within an exploration company is adding weight to our belief that Noreco should be in good shape for further growth.

Along with Noreco's very thorough approach to portfolio management that we described in the empirical findings, and obvious recognition of the value configuration theory's arguments towards how to create competitive advantage within an exploration company, our opinion is that Noreco has a very solid strategic foundation for pursuing their goals and visions for the company future.

6.4 North Energy: A Regional Focus

Figure 16: North Energy Value Chain

The foundation of North Energy was the acknowledgement among key industrial players in northern Norway that the region should also benefit as the focus of the petroleum industry shifts north towards the new frontier areas. Within this lies a considerable amount of ideology and political drive, which we see as a key aspect of the company's motivation that makes North Energy stand out from the rest of the primarily financial-driven companies. These new

frontier areas pose different and even more diverse challenges than the industry knows from the North Sea, and these areas is exactly where North Energy aims to develop competitive advantage by pursuing a differentiation strategy in terms of value creation. Further, the main aspect of North Energy's strategy is to create value through organic growth and exploitation of the potentially vast amount of petroleum resources in the high north, meaning the NCS from the Norwegian Sea and further north through to the Barents Sea.

Stabell (Stabell, 2001) argues that exploration companies are to be considered as value shops within the frame of value configuration theory, where focus on differentiation drivers and understanding the value creation processes within the industry is the best approach to succeed in creating competitive advantage for exploration companies. Further, Stabell explains that exploration companies can be regarded as problem-solvers on behalf of the state or the community, where the problem is discovering viable petroleum resources. If we develop this theory a bit further into a regional context, and view the northern Norwegian region as the community that expects to benefit, North Energy becomes the problem-solver. In this respect, we believe that North Energy is in line with theory when it comes to their general strategy as an exploration company.

As we briefly mentioned initially, the new frontier areas of the NCS are representing unprecedented challenges to the industry, even in an international perspective. The extremely vulnerable environment with one of the richest fishing areas in the world, coupled with the cold and unpredictable climate with considerable risk of icebergs in the Barents Sea, could create a substantial obstacle to overcome. As a result, petroleum activity in these fragile areas requires enhancements to the level of technology and safety measures. Development of new concepts and principles in this area is one of North Energy's priorities.

They are working with the development of new technologies within oil spill preparedness, as well as new ways to more efficiently exploit resources and involving stakeholders in the high north. Together these aspects represent North Energy's focus on developing new solutions and the degree of regional anchoring, and are one of the differentiation factors of their strategy.

Even though the ideological thought of having a northern Norwegian oil company was the trigger for its foundation, North Energy has now moved on and was listed on the Oslo Stock exchange in February 2010. The reason for this was that the original owners, a consortium of regional industry companies and venture capital funds, did not have the financial muscles to support further growth of the company. It was necessary as a mean to provide much needed

capital, and a move we agree with. This is especially because North Energy themselves defined the financial barrier of developing fields as the biggest obstacle when moving towards production.

A positive side-effect North Energy experienced by being listed on the stock exchange is that the organization was sharpened and even more focused on conducting business in a professional way. In the further work with financing their activities, North Energy applies a pragmatic and in our opinion very reasonable approach. Their strategy of exclusively organic growth means that they are looking for a slow and stable growth. Within this strategy lies quick maturing of fields through focusing on license close to infrastructure prospects or in mature areas, which is also contributing to reduce CAPEX as much as possible.

While it makes sense to keep costs at a minimum when having no income, we are of the opinion that it may prove to be a challenge for the company. Investors on the stock market are generally characterized by short-term focus on profit and returns (Davis 2007), so such a slow organic growth strategy may test their long-term patience considerably.

According to theory (Davis 2008) size may be an important factor when it comes to securing financing, so one could expect that a small company like North Energy could experience more problems within this field than larger companies. This is however, not the case, as North Energy argues that a well-executed strategy of communicating prudency and seriousness to the market is superior in this respect. As of today they have no production, so the only other method of financing besides equity is by the exploration loans against the tax refund scheme.

When North Energy moves towards more field developments however, they will look at other opportunities to finance the activity, hence our description of their approach to financial management as pragmatic.

North Energy with their northern Norwegian anchored strategy has most of their portfolio in the frontier areas in the Norwegian and Barents Sea. This is also where they possess the strongest competence in terms of technical staff. Since North Energy only has made one discovery, and the rest of the portfolio consists of exploration licenses, we would argue that they do not have a fully diversified portfolio yet. A diversified portfolio should according to Adams (Adams, 2000) include all aspects of the value chain, with exploration, discoveries and production assets. However, the strong correlation between North Energy's strategy, competence and portfolio management is an important part of achieving a diversified portfolio according to Adams (2000). We are by this reasoning of the opinion that their

approach to portfolio management is good, and that it will lead to a more diversified portfolio in the future.

A systematic approach to risk management in every aspect of the company is very important, especially for petroleum exploration companies (walls and dyer 1996). However, when North Energy does not have any production, risk factors like market- and technological risk becomes of less importance than if the opposite were true. Walls et al. (walls and dyer 1996) describes that risk management in smaller exploration companies like North Energy tends to be about choosing which wildcat wells to drill, as this is the most costly part of exploration activity. In other words is risk management of exploration activities closely connected to portfolio management. North Energy has acknowledged this, and views geological risks as the most critical for them.

The geological risks are managed by balancing the portfolio between low probability prospects with low expected value and prospects with higher expected value, but also higher risks (Walls and Dyer, 1996). North Energy generally owns a share of between 20-40% in the licenses they are involved in, which could be very rewarding if the license has a high probability of success. The main part of their portfolio consists of licenses situated in frontier plays however. These are areas generally characterized by a low level of maturity and consequently higher risk and higher CAPEX prospects than of the North Sea for instance. When we know that most of North Energy's relatively small portfolio is situated in these areas, we believe that if the licenses are not exceptionally promising, a 20-40% share may represent a considerable risk for the company. As mentioned above, North Energy applies as systematic way of managing these risks with dedicated work groups evaluating every project after the technical staff has developed their assessment of it. This is part of a continuous learning process creating knowledge that enhances the quality of decision making in the long run.

Knowledge is seen as a key to achieve competitive advantage in North Energy, and as a result, they have a very committed strategy to manage it. Tsoukas says that *«An organization that creates knowledge on an ongoing basis has developed a capability that is dynamic and potentially underpins continuous organization learning (Tsoukas, 2004)».*

This is exactly what North Energy strives for, and to achieve this they have an extensive personnel development program. Through special courses for the inexperienced staff and by sending experienced staff to conferences on a regular basis, they are creating both knowledge and establishing networks to the benefit of the company.

North Energy's headquarter is situated in Alta, the biggest city in the Finnmark county which is also the most northern county of Norway. It borders to Russia, and is the closest neighbor to the Barents Sea, where there is expected to be vast amounts of petroleum. The 40-year old dispute of where to set the border between Russia and Norway seems to be resolved, and it is expected that petroleum activity in that area of the Barents Sea will increase going forward. Some of the fields with biggest potential are situated precisely on the border that has been agreed on, which implies that cooperation between Russia and Norway will be necessary to develop these. North Energy has been professional network and influence in northern Norway is extensive, and something that they will look to utilize when these plays are to be explored.

6.5 Metaphor Creation: A New Understanding of the Companies

As we were analyzing our empirical findings in relation to the frame of reference, we started to develop general ideas of how to characterize the companies, as we found it more interesting when comparing and discussing differences between them. As we could see from the empirical findings and analysis the companies was different and we had to find a way to illustrate these differences understandable. We then saw that it could be a possibility to describe the companies with images. After reviewing some of the literature we found a book by Gareth Morgan (1997) where he tries to explain organizations like metaphors. This seemed like an interesting approach to understand the companies we have studied and although we did not have time to study all his work, we found some parts of his study very interesting, and we think that it will be interesting to include some of his study in the final part of the thesis.

It is hard to distinguish and explain exactly what organizations are. One can try to put them within a theory that could find some answers, but it is not always the easiest way to explain how the company is and how it functions. Gareth Morgan has tried to explain an organization as metaphoric images. This is done through metaphors like machines, brains, political system and organism etc. (Morgan, 1997). It is important to note that the use of metaphors can both limit and strengthen the organizational insight. Hence, one can say that there is no image or theory that can describe the organization as a whole.

Before we developed the metaphors for each company we gave them a chance to make their understanding of how their company compared against the others. After receiving each company's feedback we compared it with our own understanding of them, and identified four categories which characterizes and group the respective companies and others operating on

the NCS. Since the four groups are general for the whole NCS, it does not imply that our respective companies are represented within all these four areas.

1) Exploration Company with a small portfolio, no operator and no production
2) Exploration Company with portfolio in several areas in the Norwegian continental shelf, several discoveries and operator of several of the findings (implies that they can take control of their own development)
3) Exploration-/Production company with several discoveries under development and some production that allows them to finance in the bond market
4) Mature company that has been on the Norwegian shelf for 10-20 years

Concedo with their small portfolio compared to the others, and no production is best suited within group 1. The company has no plans of moving towards group 2 as of today.

Det Norske Oljeselskap is still in group 2, but is on the way over in group 3 hopefully within the next year. This is in accordance with their exploration portfolio and strategy.

North Energy is in between group 1 and 2 with an exploration portfolio that is concentrated in the Barents Sea and Norwegian Sea and some in the North Sea. Combined with their organic growth strategy and long lead time on prospects, it will take some time before they move completely over into group 2.

Noreco is in group 3, with production in Norway, United Kingdom, and Denmark. They conduct an extensive exploration activity which implies that they wish to continue growth and become a well established company on the NCS, moving towards group 4.

In our quest to describing the four companies we have tried to develop metaphors that describe the companies in a manner that provides the reader with a simpler picture. The metaphoric image for each company is linked with the empirical findings and our frame of reference. However, we understand that there might be elements that we haven't managed to catch when we created the metaphors. It is therefore important to say that these metaphors are a concentrate of our understanding combined with the above.

After conducting this study we tried to fit a good descriptive metaphor to each of our companies. This gave us the possibility to explain our readers in one sentence what we saw each company representing. The images are not to be seen as negative rather an assumption on how one can see the company within an image context, and is based on the respective companies' strategy.

Concedo – The Conservative

Det Norske Oljeselskap – The Family Father

Noreco – The Young and Ambitious

North Energy – The Ideological Newcomer

Concedo is seen as conservative because of their cautiousness towards capital expenditure, general risk averse attitude and very selective drilling program. They want to grow gradually without having to involve too many new partners. Det Norske is characterized by their pragmatic focus on steady growth through a balanced view on risk vs. reward in every aspect of its strategy. Noreco on the other hand, has experienced a leveraged fast growth with ambitious goals that we associate with a higher appetite for risk. Their main goal is to seize business opportunities that create value for the company and shareholders. North Energy was founded on the idea that northern Norway should also participate and get their share of the Norwegian oil venture as the attention moves towards northern Norway. Their strategy of achieving this revolves around exploiting industry networks and recruiting knowledgeable staff and focus on expansion through organic growth that leads to spillover (ripple) effects in the region.

6.6 Company Comparison

Now that we have lined out the different images, we will start looking at the final part of our thesis. Before we can conduct any conclusion, we had to see similarities and differences between the respective companies. When we conducted the comparison, we used all the gathered empirical information on each company and put the company up against each other. This would help us make some sense of how a company should approach the transition from exploration to production.

Similarities

What we found is that some features are common for all the companies we studied. They all have a strong focus upon exploration. The companies also have chosen to have strong focus on creation and safeguarding knowledge through incentive systems and processes. This understanding is seen through their knowledge management, company strategy and licensing program.

North Energy has focused on close to infrastructure assets and we can also see that Concedo and Det Norske share the same strategy in this area. Noreco evaluate assets in a different way and this has led them to focus upon asset that do not necessarily position close to excising infrastructure. They choose business opportunities that can be more expensive to develop because of this and they are the only company that is represented abroad. However, all the companies are focusing upon effective exploration through programs that are worked upon by professionals within the respective companies.

Differences

All the respective companies have chosen different strategy when focusing upon exploration areas. Noreco has chosen the NCS and northwest European continental shelves, while North Energy has its main focus in frontier areas within the Norwegian and Barents Sea. Det Norske has focused upon North Sea in mature areas with low exposure to high CAPEX, and some in the Norwegian Sea with expected higher CAPEX. Concedo has also chosen the Norwegian Sea and some in the Barents Sea like Det Norske and North Energy. This shows that the companies focus upon different areas and continental shelves. As we have seen from the empirical chapter the knowledge base is a crucial part when it comes to where the respective companies conduct exploration.

When it comes to the portfolio, we see a correlation with risk and capital each of the company is willing to expose. Det Norske has an extensive drillings program and it is the biggest program among the other companies. Hence, one could say that Det Norske is the most risk loving company, but one can see when we start studying Det Norske that they are not interested in taking on prospects that expose high CAPEX. They also want to have a diversified portfolio that could provide a positive cash flow during a development phase. Noreco is more focused on areas that could provide extensive profits, but these areas are more exposed to high CAPEX. They are the company with most production and still working towards enhancing their portfolio adding new reserves. North Energy has a different approach; they do not want to acquire production they want to develop their own production through development and maturing prospects. Concedo does not see the company in the production phase in the near future. They have a strong focus on doing good findings on a regular basis, mature findings and sell them when they feel that the market price is right. Concedo also have the most focused drilling program among all the other companies, which means that they do not have as many expected drilling wells as the other companies. As one

can see from the differences, we can say that the companies have chosen to build their portfolio upon different strategy. The main difference as we see it is how one chooses to be exposed to high or low CAPEX. The common feature among three of the companies is the focus upon a diversified portfolio that will provide them with positive cash flow that can be used in further development or other investments.

Noreco, Det Norske and North Energy are all operators on licenses, which is a responsibility that demands more of the organization. Concedo has chosen not to become an operator since it requires a bigger organizational structure and commit the company to do more work on behalf of the license partners. Of the same reason, Noreco aims to limit the extent of which they are operators on licenses. The three companies that have chosen to become operators are also listed on the stock exchange to gain easier access to capital, but this makes them more vulnerable towards volatile oil price. When a company is listed on the stock exchange it has to share much more detailed information about new prospects and this can force companies to share sensible information. However, we see this as a step towards building a strong and competent organization that can handle the whole aspect of the value chain.

In the conclusion chapter, we will try to explain the most important factors that a oil company needs obtain to endure in the oil and gas industry. After explaining the essential factors we will try to line out some options that can be used when a company wants to become a producing company.

7 CONCLUSION

In our research project, we have studied both barriers and opportunities that exploration companies must deal with to move further in the value chain. The following conclusion consists of two sections; in the first, we will account for what we argue as the most important fundaments of strategy towards becoming a production company; and in the second part we outline different approaches a company may take on the way to become a producer. Together, these two conclusion sections illustrate the essence of the findings and reflections we have made through our research process.

7.1 Establishing a Solid Fundament

Our research has led us to conclude that making discoveries of hydrocarbons becomes essential for an exploration company that wants to move into the production phase. This presents the companies with huge challenges, which requires great insight in strategy, knowledge and technology, and of which factors that drives the development of these. Further, since the oil and gas industry is a very dynamic industry it is of significant importance to pursue frontier knowledge and technology. We have found that strategic work with the value creation drivers of an organization is an ongoing process that is affecting each of the drivers continuously, rather than a static phenomenon. To illustrate this important finding, we have developed a model we call “the wheel of creating and maintaining competitive advantage in an exploration company”.

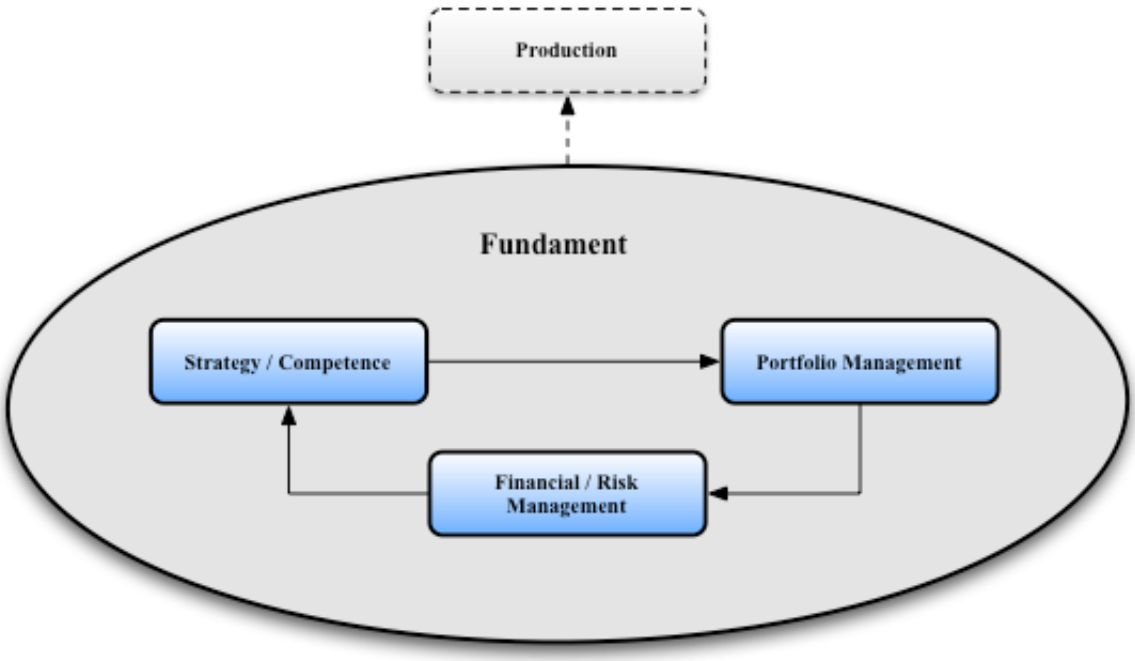


Figure 17: The Wheel of Creating and Maintaing Competitive Advantage in an Exploration Company

Strategy is the pillar of the exploration company, and throughout our research process, we have learned that it is vital to have a solid strategy that permeates the entire organization. Creating a differentiating strategy suitable for building competitive advantage requires extensive competence and knowledge about the contextual environment within the company is operating. Further, a combination of a solid strategy and competence becomes essential to succeed in the building and management of a portfolio of complementary assets. We therefore conclude with seeing portfolio management as an interrelated product of proper strategy and competence development.

After developing the portfolio, the company should consider what risk it can bear in relation to the financial situation and thus consider which prospects to develop. All of the companies we studied apply different approaches to both financial and risk management, meaning that they choose to proceed with prospects based on differing prerequisites, which relies on their strategy, knowledge and portfolio. Although the companies in our study approach these three aspects of building their company with great variety, our analysis of them lead us to conclude that a thorough focus on them nonetheless is a crucial aspect when moving into production. The diversified approach displayed by the companies' shows us that there are no "absolutely right" ways of achieving this.

Our consultant Børve confirmed the opinion of the companies we studied by saying that the most important thing to become a producing company is to secure the financial situation, as the main barrier is that of acquiring sufficient capital to manage this transition. One way to explain the financial barrier is by showing how capital expenditure typically occurs in a petroleum development project on the NCS as illustrated in figure 18 below.

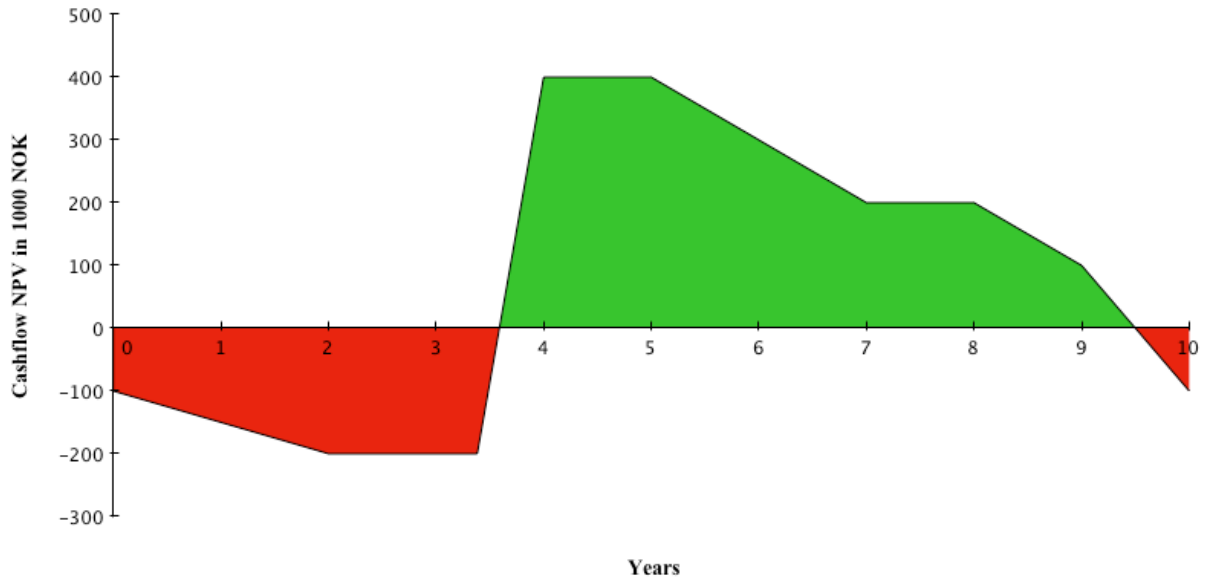


Figure 18: Cashflow of a Prospect Development

The Y-axis depicts expected cash flow in net present value (NPV) terms, and the X-axis shows the time until end of production expressed in years.

As one can see of the graph, it takes a minimum of three years to develop a producing prospect, a period of time when an exploration company does not have any income. Another aspect important to note is that the Norwegian fiscal system of unconditionally refunding 78% of exploration costs does not apply to development costs. This makes it necessary to utilize other means to acquire the capital needed in the phase characterized as the "valley of death" by Erik Haugane, CEO of Det Norske. Through our dissertation, we have identified several methods that the oil companies apply to deal with this barrier, which we will outline in the next section.

7.2 Overcoming the Financial Barrier

The suggested methods of overcoming the financial barrier illustrated in this section are based on the empirical findings we have made throughout our research process. However, it is important to keep in mind that the usage of these methods is conditional to whatever circumstances applicable to the company in given situations, and as such does not provide the

full picture of how an exploration company can become a production company, rather possible methods of achieving this transition.

In table we have listed the main strategies that Sjur Børve provided, and linked them to our findings regarding how an exploration company can become a producer. We have utilized the fundaments of our model described in table 2 to categorize the possibilities. Further, we have mapped each company according to what they have done in this process.

		Concedo	Det Norske Oljeselskap	Noreco	North Energy
Strategy/ Competence	Divide the Company into Different Business Units				
	Mergers and Acquisitions				
	Targeting Low CAPEX and Close to Infrastructure Assets				
	Participate in Public Debate to Influence Fiscal Terms				
Portfolio Management	Build Diversified Portfolio				
	Swap				
	Divestment of Non-core Assets				
Financial / Risk Management	Stock Exchange Enlistment				
	Sell Findings				
	Reserve Based Lending				

Table 2: Ways to Overcome the Barrier

One way that a company can overcome the financial barrier in the development phase is to do a swap. This means to swap a license with proven reserves to a production license. A swap is a pre-tax transaction, and it provides access to gross cash flow and ability to use company losses carried forward.

As shown in figure 19 you will get a constant cash flow instead of the long and costly development phase like the example above.

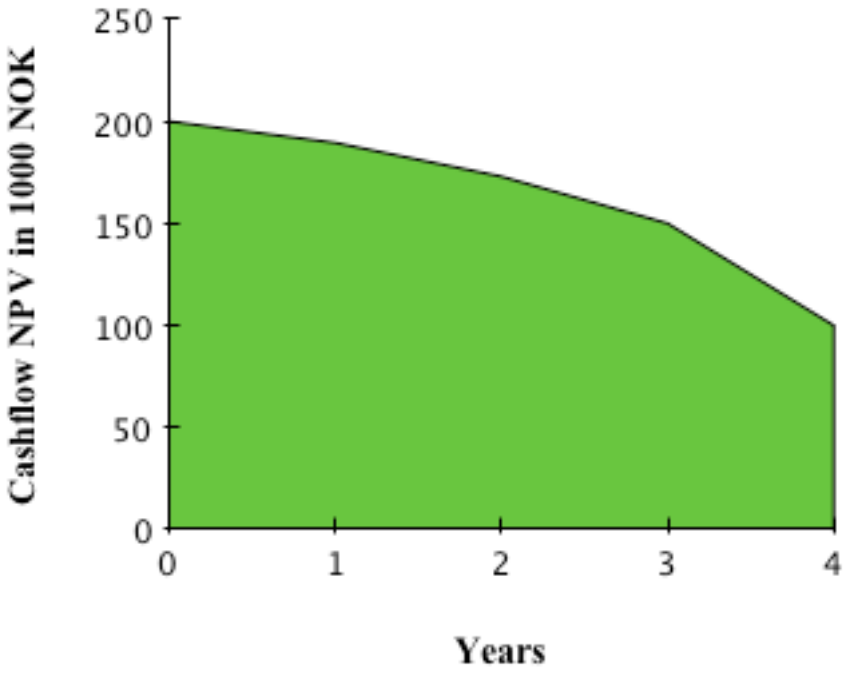


Figure 19: Cashflow In a Swap

Another aspect of this is to sell a mature license with proven reserves to get fresh capital to finance another exploration or development prospect. This is difficult because most of the companies that manage to prove big reserves want to keep these themselves as Børve says.

Another opportunity is reserve based lending. This is funding gained through special deals with the bank and it is a loan based on the company has proven reserves. An oil company can also divide their company into different departments, and such can either be exploration or production departments. This is to take advantage of the tax position that one get from been only an exploration company. Mergers and questions can provide more capital, production, or add reserves to the portfolio. Some of our respective companies have used this as a strategy. A company can also choose to enlist on the stock exchange to gain easier access to capital and further finance either development or an exploration portfolio.

As you can see, there are many different ways to become a producer. Our finishing word is that strategy, knowledge, and business understanding becomes crucial for an exploration company to handle the transition towards production.

8 FURTHER RESEARCH

In our thesis, we have examined exploration companies conducting business within the context of the Norwegian Continental Shelf. We feel that our thesis provides a fundament for further research into new contextual perspectives in the petroleum industry. During our research process, we identified three specific perspectives that evoked our interest as researchers, which we due to limiting factors like time and scope of our master thesis were not able to pursue. The topics we found especially interesting include; how companies evolve and occur; changes and transitions in an organization; and the surroundings of the energy industry. In the following chapter, we will make an effort to suggest how further research of these perspectives could be done to provide new knowledge into other business areas.

8.1. Changes within Different Sectors

We have now been working close with companies to understand how a transition could evolve and what options a company have to make this transition. We feel it could be interesting is to dig deeper into a contextual understanding of a company and try to understand why the company wants to implement the organizational change. It would also be interesting to look into other sectors and compare these organizational changes from different perspectives and try to understand what incentives companies in other sectors look for when they want to go from one business area to another.

8.2 How to Understand the Company Change

Another aspect of this is to look upon how an organizational change evolves in a long-term perspective. In this perspective, it could be interesting to use institutional theory, which is concerned with how phenomena occur and how institutions shape to become increasingly similar. Using this theory provides different mechanisms to look upon changes within an organization. These mechanisms are:

1. *Coercive isomorphism,* pressure from other organizations / institutions that they are dependent on to do their business
2. *Mimetic processes* or modeling of other organizations. Copying the best practice in a market
3. *Normative pressures*, a concept mainly associated with professionalization. It involves the pressures that comes from the different educational and network related processes.

Applying this to a research project could give an organization an understanding of how the organization changes. This will include both an internal and external understanding of an organization.

8.3 Surroundings of the Energy Sector

It could be very interesting to research the different contexts that an oil company has to work within. We suggest looking at this in three different contexts:

1. Local context: how does the company understand this and how to incorporate the local context in an energy company?
2. National Context: Tax systems and governmental involvement and how this processes work? How energy companies and industry organization work with this? Can this have influence on the company over time? These are some interesting questions that could be interesting to answer
3. International Context: How can a Norwegian Oil company work within the international sphere, and how does this work? One can ask the questions of how the big international oil companies look upon smaller oil companies that wants to conduct business on other shelves when it comes to cooperation.

9 REFERENCES

Bøhren, Ø. a. S. E. (1987). "Usikkerhet i Oljeprosjekter. Relevante og irrelevante risikohensyn." Beta **1**: 23-30.

Davis, J. (2007). The Changing World of Oil: An Analysis of Corporate Change and Adaptation, Ashgate Publishing Limited.

DiMaggio, P. J. and W. W. Powell (1991). The New institutionalism in organizational analysis. Chicago, University of Chicago Press.

Easterby-Smith, M. T., Richard Jackson, Paul R. (2008). Management research. Los Angeles, Sage.

Eivind Galta, E. B., Cecilie Rasmussen, Klaus Klausen (2009). Global Oil and Gas Tax Guide C. R. Einar Brask, Klaus Klausen

Flyvbjerg, B., B. v. Wee, et al. (2008). Decision-making on mega-projects: cost-benefit analysis, planning and innovation. Cheltenham, Edward Elgar.

Hammer, U. (2009). Petroleumsloven. Oslo, Universitetsforl.

HOVLAND, M., A. G. JUDD, et al. (1984). "Characteristic features of pockmarks on the North Sea Floor and Scotian Shelf." Sedimentology **31**(4): 471-480.

Morgan, G. (1997). Images of organization. Thousand Oaks, Calif., Sage.

Nilsen, E. R. (2010). Opportunities for learning and knowledge creation in practice. Oslo,

Norge (1996). Petroleumsloven (1985). [Stavanger], Oljedirektoratet.
Parallell norsk og engelsk tekst
Innhold: Lov nr 11 av 22. mars 1985 om petroleumsvirksomhet. Sist endret ved lov nr 61 av 15. juli 1995

Handelshøyskolen BI. **1/2010:** .
Omfang: 235 s.

Osmundsen, P. (1997). "Risk Sharing and Incentives in Norwegian Petroleum Extraction."

Owens, D. A. (2000). The dubious benefit of group heterogeneity in highly uncertain situations: Too much of a good thing. Tennessee, Vanderbilt University.

Porter, M. E. (1980). Competitive strategy: techniques for analyzing industries and competitors. New York, Free Press.

Quinlan (2004). "North Sea: Pushing out to the frontiers." The Petroleum economist / Englische Ausgabe **71**: 14.

Saunders, M. N. K., P. Lewis, et al. (2009). Research methods for business students. Essex, Pearson Education.

Skaf, M. A. (1999). "Portfolio Management in an Upstream Oil and Gas Organization." Interfaces **29**(6): 84-104.

Stabell, C. B. (2001). New models for value creation and competitive advantage in the petroleum industry. Oslo, Handelshøyskolen BI.

Statoil (2009, 10.12.2009). "Snøhvit - Unlocking resources in the frozen North." from http://www.statoil.com/en/OurOperations/ExplorationProd/ncs/Pages/SnohvitNewEnergyHistoryInTheNorth.aspx.

Tom Adams, J. L., Jack A. Albers, Michael Back, Jason McVean, John I. Howell III (2000/2001). "Portfolio Management for Strategic Growth." Oilfield Review.

Tsoukas, H., Mylonopoulos, N (2004). ""Introduction: Knowledge construction and creation in organizations"." British Journal of Management **15**(1): 1-8.

Tsoukas, H. (2009). "Organization science, A Dialogical Approach to the Creation of New Knowledge in Organizations " **20**(6): 941-957.

Undertittel varierer

Walls, M. R. and J. S. Dyer (1996). "Risk Propensity and Firm Performance: A Study of the Petroleum Exploration Industry." Management Science **42**(7): 1004-1021.

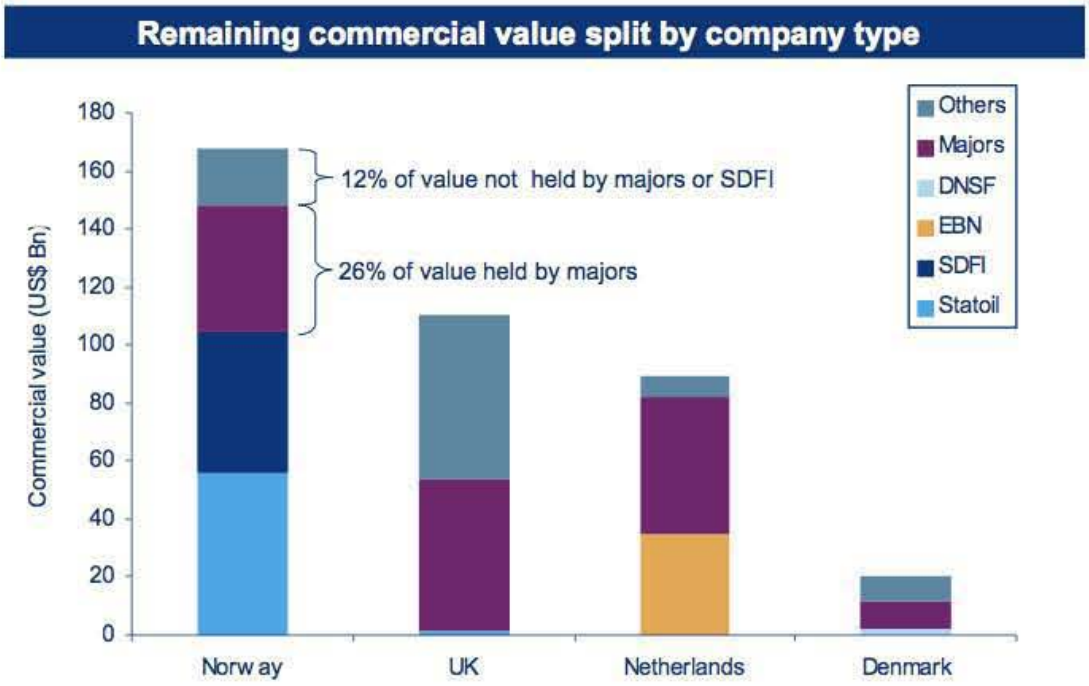
Wharton., K. (2007). "To diversify, or not to diversify: what's at stake for online giants in growth mode." from http://www.whartonsp.com/articles/article.aspx?p=684792.

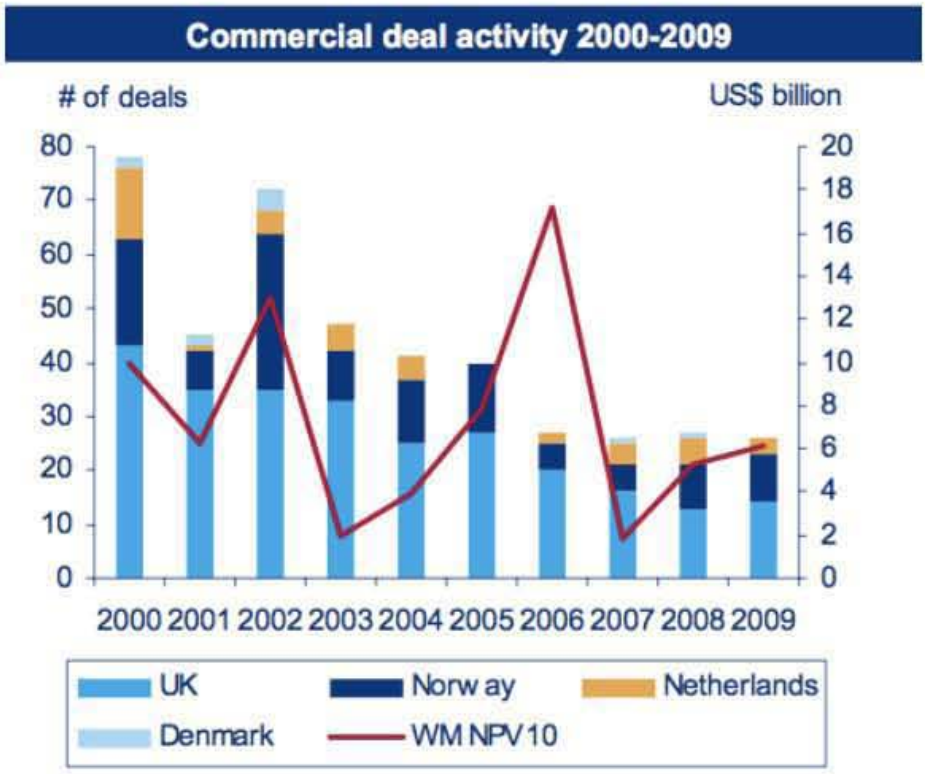
Tom Adams, J. L., Jack A. Albers, Michael Back, Jason McVean, John I. Howell III (2000/2001). "Portfolio Management for Strategic Growth." Oilfield Review.

Tsoukas, H., Mylonopoulos, N (2004). ""Introduction: Knowledge construction and creation in organizations"." British Journal of Management **15**(1): 1-8.

Yoneyama, S., I. Oh, et al. (2004). "Knowledge integration capabilities of Japanese companies\&\#58; reconstructing intra\&\#45;firm networks for technology commercialisation." Int. J. Inf. Technol. Manage. **3**(1): 59-71.

10 ATTACHMENTS





Intervju guide

Strategi

1. Kan du fortelle litt om hvilke hovedstrategier til selskapet?

    - Vil dere holde dere i letefasen eller vil dere inn i produksjon?

    - Kan dere si litt om hvorfor dere har valgt disse strategiene?

2. Kan dere se noen mulige barrierer i det å gå fra leting til produksjon?

    - Ser du mulige strategier for å overgå disse evt barrierene?

3. Hvorfor valgte dere å gå på børs?

    - Var dette en del av deres løsning på å bli et produksjonsselskap?

Portefølje

1. Fortell om deres lisensporteføljesammensetning? Hvordan er denne fordelt?

    - (Letelisenser eller Produksjon)

3. Hvilken sammenheng har porteføljen med strategien deres?

4. Hva betyr porteføljestyring for dere?

Finansielt

1. Fortell om deres finansielle posisjon?

2. Hvordan jobber dere for å skaffe kapital?

3. har størrelse noe å si i spørsmålet om å vokse? I så fall hvilken betydning har dette?

4. Har størrelse noe å si når dere skaffer kapital?

5. Har finansielle nøkkeltall betydning for dere? (EBITA, P/E ratios, NPV)

6. Hva betyr reserver for dere?

    - Benytter dere reservene i finansieringsspørsmål?

6. Har oljeprisen noe betydning for deres selskap?

Risiko

1. Hvilke risikofaktorer har mest betydning for dere? (teknologiske, politiske, marked, geologiske)

2. Hvordan håndterer dere risiko?

Prosjektstyring

1. Fortell om deres prosjektstyring?

- Hvilke utfordringer møter dere?

- Hvilke metoder benytter dere for å håndtere disse? (Kostnadskontroll, benefits, teknologisk)

Management strategi og kunnskaps utvikling

1. Hvordan skapes kunnskap i deres bedrift?

2. Hvordan beholder dere den?

3. Har nettverk noe og si for dere?

4. Kopierer dere andre aktører i markedet?