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Identifying and managing risk in the Norwegian Barents Sea – A case study of enterprise risk management and strategic risk management in petroleum companies

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Abstract

Recently the Norwegian government decided to open even more blocks in the Barents Sea, and this enables more business activity. The last two years the level of major accidents in the petroleum industry has increased. With both national as well as international actors exploring, developing, and producing petroleum in Norwegian offshore area, more knowledge about risk is needed. The aim of this study is to explore how petroleum companies identifies and manages critical risks in the Norwegian Barents Sea. The research question is therefore as follows: How does petroleum companies identify and manage critical risks in the Norwegian Barents Sea? Two problem statements are addressed: 1) How does petroleum companies approach enterprise risk management and how are risk identified, and 2) What strategic risks are perceived to be critical and how are they managed. I will be using a comparative case study with two petroleum companies, one domestic and one international. The study includes four in-depth interviews, two from each company. The study shows that both companies seems to have a holistic approach to ERM and that risk identification occurs in two forms; deliberate and accidental. Two distinct strategic risks are identified as critical; reputational and political risks. The study also shows that critical risks are handled in a long-term and short-term manner. To help prevent major disasters in the Norwegian Arctic offshore sector this study is making emphasize on identifying strategic risk and managing them in accordance with company strategy.

Preface

This thesis is my final assignment within the specialization in International Business and Marketing and as a graduate of Master of Science in Business at Nord University Business School, Bodø.

When I first started my study for this Master thesis my perception and impression about the Barents Sea was in a high degree formed by the media. I was convinced that this thesis would focus on the Arctic climate and solely challenges related to it. During the study I found that the risks the petroleum companies faces shifted to other risks than what I first assumed. It has been an instructive and rewarding journey writing this thesis and it has provided me with a bigger sense of what strategic challenges and risks a company faces in what to me seem as a new environment and industry.

I would like to express gratitude to my supervisor June Borge Doornich for choice of theme, constructive feedback, creative thoughts and for being there for me all the way to the finishing line. A humble and appreciative thankfulness to all the respondents who contributed with their time, knowledge, and vision. You made it possible for me to carry out this thesis.

Finally, without the support from my family and friends I would probably be lost. Thank you!

Bodø, 12.06.2017

Victoria Desirée Olsen

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Chapter 1. Introduction

This chapter makes an introduction to the study of identifying and managing risks in the Barents Sea by illuminating how risks in the Arctic as a whole seems to be important and highly relevant. This chapter will illustrate why risks in petroleum activities in the Barents Sea are highly actual. Following is an illustration of the foundation for this thesis' research question and its two problem statements used to complete the main aim. Finally, a structure of this thesis is provided.

1.1 Risks in petroleum activities in the Barents Sea

The physical environment in the Arctic seems to raise high stakes for companies that explore and develop oil and gas resources in this demanding area. And as the area is little explored compared to other petroleum areas in the world and with little competence on how the harsh climate might affect equipment, technology, and people working this environment, raises the risk of accidents happening. The already existing standards and best practices might not be suitable nor for the Arctic. Worries have been expressed that even though standards and practices are adapted to reduce the level of risk "*accidents will happen and best practices will not always be followed.*" (Arctic Council, 2009). A recent study by the Norwegian Petroleum Safety Authority (PSA) shows that there has been an increase in unexpected accidents on the Norwegian continental shelf the past two years. The Norwegian authority have therefore initiated a larger project to "Reverse the trend". Focus areas which PSA has decided to emphasize is inter-party collaboration, standardization, and robustness (Ptil, 2017a).

The Barents Sea in the North of Norway provides a commercial ground for petroleum activities in the Arctic. To such challenges occurs, and particularly as the experience is minor. The Barents Sea area is undergoing its first steps in developing oil and gas in the Arctic, and challenges from this area might be used as an example for developing usage of resources in other areas of the Arctic. "*It has been a natural step for the Norwegian oil industry to expand into the Arctic offshore, as 30% of the undiscovered Norwegian petroleum resources are expected to be in the Barents Sea*" (Hasle, et al., 2009). Acknowledging that there is oil and gas activities in the Arctic on Russian, Canadian and US territory, the Barents Sea is still viewed as the key position in the Arctic. With valuable development in the Arctic, cooperation across borders is important and needed to increase knowledge and competence exchange in common and safely development of resources. To strengthen Norway's role as a responsible actor, the

Norwegian Government has put focus on development of knowledge and business, and international cooperation (Regjeringen.no, 2014). Norway has a successful petroleum history where the country has been a responsible actor through developing, using, and learning from experience. The petroleum industry has taken great pride in its role. National and international standards exist and the industry behave accordingly. As standards and norms change in the synergy of new knowledge and research and development the process is in such way dynamic, and the industry needs to respond accordingly. This poses challenges as it influences the industry on different levels. Increasing focus on cooperation across borders and internationalization is part of this development. Cooperation concerning the petroleum industry needs to stay at the same across boarders regardless of political climate as well. "*Nobody must be responsible for pursuing an activity unless they have an adequate grasp of the risk picture*" (Midttun, 2017).

Risk concerning climate change must be considered carefully especially in the Arctic areas as the consequences of actions are more sensitive and severe. The Norwegian Ministry of Petroleum and Energy has suggested announcement of 93 blocks in the Norwegian Barents Sea in what is going to be the 24th licensing round (NRK, NTB, 2017). This signalize commitment for development of the High North and sustainment of long-term activity (Ibid.). The announcement has gained reactions from some organizations amongst other the Norwegian Environment Agency. Environmental challenges, climate considerations and social economic profitability are some of the factors they consider when they proclaim the announcement to be too wide-ranging- related to new knowledge regarding climate and preparedness challenges in that area (Haugan & Sandvær, 2017)

1.2 Purpose and research question

The PSA initiated the project "Risk Level project in Norwegian Petroleum" (referred to as RNNP) to assess risk and to illustrate risk level through statistics, engineering, and social science and monitoring safety performance (Skogdalen, et al., 2011). Risk due to major hazards, emergency preparedness challenges, injury risk, occupational illness risk, and risk perceptions and cultural factors were applied in the project (Vinnem, 2010, p. 771). The RNNP was initiated because of a need to assess actual conditions and developments in offshore operations (Vinnem, 2010). The RNNP define a major accident "*as an acute incident, such as a major discharge/emission or a fire/explosion, which immediately or subsequently causes several serious injuries and/or loss of human life, serious harm to the environment and/ord loss of*

substantial assets" (PSA, u.d.). 80 percent of the total major risk accidents on the Norwegian shelf has happened in the timespan period 1996-2004 (PSA, u.d.) and the last two years the level of major accidents has increased (Petroleumstilsynet, 2017). The accident indicator is currently on an elevated level, and the increasing activity in the Norwegian Barents Sea may lead to even more accidents- accidents that can strike the whole petroleum industry. As this area is characterized by remoteness and lack of infrastructure, the demands for cooperation amongst the petroleum actors regarding logistics and preparedness is present. Operations in the Barents Sea requires high safety demands regarding technology and of the operations itself.

Having the petroleum industry's challenges in mind the overall aim of this thesis is to study how petroleum companies identify and manage risks in the Barents Sea. The following research question has been the foundation for this study:

"How does petroleum companies identify and manage critical risks in the Barents Sea?"

Many studies have been done on the matter of risk in the petroleum industry in the latter years. Most of these studies focus on financial risk, return and corporate performance in a financial- and economic perspective. There seems however, to be a lack of studies focusing on enterprise risk management (ERM) and strategic risk management (SRM) in petroleum companies. To pursue filling this gap in the research literature, this thesis seeks to investigate such. More concretely, how the companies identify and manage critical risks. The follow problem statements are therefore addressed:

How does companies approach enterprise risk management and how are risks identified?
What strategic risks are perceived to be critical and how are they managed?

The Barents Sea is an international petroleum's province, where not only Norwegian companies operates but also international companies. Norwegian offshore is very attractive for the petroleum industry worldwide, and the Norwegian economy depend on this industry. The Norwegian Barents Sea, among other Arctic areas, is in a high degree debated by many different stakeholders such as ordinary people, organizations, and political parties. The environment is perceived as very fragile, and industry in this area receives much skepticism and critique. As the Norwegian authorities has decided on opening even more blocks in the Norwegian Barents Sea an increase in business activity is a natural deduction. Increase in business activity may

increase petroleum related risks and uncertainty for accidents to happen. This thesis is therefore set to study two petroleum companies in the Norwegian Barents Sea. Because some of the companies operating in the given area has its origin worldwide, this study is comparative in the manner of one case study including both a national and an international company present in the Norwegian Barents Sea. In-depth interviews have been performed with respondents from both companies. To create a better understanding and balance of the regulatory environmental data provided by the Norwegian authorities, an interview with an expert in such has been included.

1.3. Structure of the thesis

The second chapter in this thesis presents a theoretical framework by describing the theories regarding enterprise risk management and strategic risk management and relevant concepts. As the study investigates both a national and international view on risk identification and management in the Arctic some risks associated with this internationalization such as country risk, regulatory risk and political risk is presented in this chapter as well. Explanation and presentation of my philosophical approach regarding my research, and the methods used for collecting and analyzing data is further explained in chapter three. To explain the context of petroleum activities in the Arctic chapter four presents a context background for the study. Chapter five presents findings from my interviews. Chapter six makes discussions of findings in the framework of theory and data, and finally chapter seven will build a conclusion of the research question. Further study's limitations, contribution, and suggestions to further research will be elaborated also.

Chapter 2. Theoretical framework

This chapter presents a theoretical framework by describing basic assumptions of enterprise risk management (ERM) and strategic risk management (SRM) and the main concepts of these theories. Initially, the concept of risk and management of risks will be presented. Followed by a description of ERM and SRM and its main concepts. The chapter is summarized with a theoretical framework model that the empirical analysis will been founded on.

"*A smart man learns from his own mistakes and a wise man from the mistakes of others, but a fool never learns"* (Lam, 2003, p. 15)

2.1. Risk management

Risk can be measured by how much there is to lose or gain (Buckley, et al., 2016) and risk deals with an event (or occurrence) and the consequence of this that might occur (Aven, et al., 2008). "*Risk is part of every human endeavor*" (Damodaran, 2008, p. 3). Since one cannot know if the event will occur or not, uncertainty is linked to both event and consequence exists (Ibid.). Uncertainty in itself is for many diffuse. Once can say that uncertainty occurs when the outcome of a situation is not fully understood (Kardes, et al., 2013). Thus uncertainty provides to a more unpredictable character on corporate performance (Miller, 1992). Whether the event and/or the consequence will occur can be expressed through probability (Aven, et al., 2008). Risk, in such, is a consequence or result of an innate uncertainty connected with the actions carried out (Chapman & Cooper, referred in Verbano & Venturini, 2013). Uncertainties and risk is important as impact of the perceived uncertainty affects how an organization pushes for control, and how uncertainties are perceived and conceptualized into risk (Arena, et al., 2010). In this hotchpotch of terms and definitions Aven (2012) highlights that risk as a term often is given the same definition as uncertainty. The "*lack of ability to accurately predict the outcome of a performance measure*" (Aven, 2012, p. 29).

Risk comes in many different forms and terms; stake and uncertainty (Clarke & Varma, 1999), risk frequency and risk severity (Moody, 2001), and probability and impact (Walker, et al., 2002). Common for these terms is that risk is scaled into a potential gain and/or loss. As stakes increase the potential gain/loss increase (Clarke & Varma, 1999). To better understand the impact of risks, many companies rank risk. This can lead to the development of risk maps with a detailed action plan within the company (Walker, et al., 2002). Analyzing, evaluating, and

prioritizing the different risks in the organizations environment is all a part of the strategic business process. This way of gathering information regarding stakes and uncertainty might provide management to become aware of risks the organization faces (Clarke & Varma, 1999). This way of processing risk also provides management to decide on their risk tolerance levels. Because of potential huge impact on reputation, companies such as Shell and BP has close to zero tolerance for environmental risk (Ibid.). It is challenging for an organization to prevent and protect itself from dangers and threats if it is not capable of identifying these (Aven, et al., 2008); "*you cannot manage what you haven't identified*" (Aven, et al., 2008, p. 55). Identifying possible threats and dangers is something of the most important task an organization can do, but it is easy that this exercise gets unvaried. In many cases risk analyses are copied from a previous analysis. By doing so new risks might be overlooked. It is important that identification of the initiating events is conducted through in a structured and systematic way by people with necessary competencies (Ibid.).

Risk management is used when risks are identified (Aven & Renn, 2012). Reducing or altering consequences by appropriate actions risk management becomes a tool for risk handling, and is put in the hands of the decision-maker (Ibid.). To understand risk in the company a risk analysis can be conducted, where the goal is to describe risk and map out the different risks. Initiating events as danger, threat, and opportunity, should be identified (Aven, et al., 2008). By identifying risk the cause and consequence picture becomes clearer. A risk analysis can identify relations and circumstances that has great impact in relation to risk. Making changes "on paper" is easier in the beginning of for example a project than later making changes in existing operating systems. Aven et al. (2008) further highlights that for a company to have a successful implementation of risk management, the risk management must be rooted in an organizations management. Risk management contains making decisions with high risk and uncertainties (Ibid.).

Any business decision involves risk. Whether it is by making an investment, hiring and training new people, aligning performance measures with business objectives and balancing risk management and revenue growth in the business culture, risk is involved (Lam, 2003). The decision-making regarding risk is usually biased (Buckley, et al., 2016). Decision making is a process which should be continuously developed in the organizations strategy (Verbano & Venturini, 2013). The planning and understanding of an organization's objectives and monitor resources which all influence outcomes is a part of risk management (Ibid.). Identification of

risk and knowing how to tackle this information is what organizations want to gain from risk management systems as it enables the organization to respond to risks (Christiansen & Thrane, 2014). Having an effective risk management can reduce volatility in earning and it can maximize shareholder value and promote financial security. Knowing the nature of risk should be central for a risk manager when assessing risk (Lam, 2003). Transmission of information can be done through risk reporting and can enable the organization to identify and quantify risk. By evaluating risk through scenarios and likelihood for some to occur, its consequences and tangible as well as intangible costs, the organization determines how to manage risk (Nagumo, 2005). Risk control and deciding whether to act upon (potential) risks can be done in many different ways but in the end, risk management is to ensure a risk level in an acceptable range (Lam, 2003). After identifying consequences through risk assessment, risk management can be used as a tool to prevent, reduce, or alter these results (Aven & Renn, 2012). Power (2004: 11) writes: "*Risk management is much more than a technical analytical practice; it also embodies significant values and ideals, not least of accountability and responsibility*". Critical to success is according to Lam (2003) the involvement of the chief executive officer (CEO) and senior management, where the CEO have to make risk management a top priority and senior management is obliged to ask the right questions. Bhimani (2009) highlights a growing expectation for corporate boards overseeing the quality of internal management and strategic decisions relevant for the organization. Communication both vertically and horizontally in the organization will aid risk management as a responsibility to the people in the organization (Nagumo, 2005).

2.2. Enterprise risk management

Enterprise risk management (ERM) has gained attention the last decades in literature, industry, professions, and media (Soin & Collier, 2013). Enterprise risk management as a term appeared in academic paper in 2001 by Dickinson who defined it as "*a systematic and integrated approach of the management of the total risks a company faces*" (Dickinson, referred in Bromiley et al, 2015, p. 267). The key idea that binds strategy and risk management together (Nagumo, 2005) is the ERM system definition by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) who defines ERM as "(…) *a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risks to be within its risk appetite, to provide reasonable assurance regarding the*

achievement of the entity's objectives" (COSO, 2004). Kardes et al. (2013) identifies ERM as a new risk paradigm which has a company-wide approach of managing the organizations risk portfolio, and Walker et al. (2002) sees the implementation of ERM as a road to be traveled and not solely a destination to reach. ERM is attempted to be explained as a holistic approach for how it determines and evaluates risk (Arena, et al., 2010) and "*is being advocated as a strategic management control system*" (Mikes, 2009, p. 20).

Risk management is all the activities and measures made to control risk. Balancing the conflict between exploring opportunities on one side, and avoid loss, accidents, and catastrophes on the other side, is what risk management is about (Aven, 2007). Risk management include risks that aren't immediately quantifiable such as failing strategic objectives, environmental, reputational and operational risks (Mikes, 2009). Risk can appear in every part of an organization (Christiansen & Thrane, 2014). The Enterprise Risk Model (ERM) model from COSO suggests indicating that risk management is everyone's responsibility in different degrees in an organization (Nagumo, 2005).

Managing, assessing and identifying risk by a company-wide approach contrasts with the traditional silo approach (Kleffner, et al., 2003, p. 54). Risk assessment, evaluation, treatment and reporting are all elements in effective risk management and to achieve good risk management the organization needs to identify and handle risks in accordance with its appetite (Collier, et al., 2006). By viewing risk as a portfolio instead of a narrow perspective the organization view its risks in a total risk level instead of at an individual level (Kleffner, et al., 2003). "*The enterprise risk management approach is intended to align risk management with business strategy and embed a risk management culture into business operations*" (Collier, et al., 2006, p. 2). By identifying and assessing the organizations own risk, risk that is over- and/or undermanaged can be identified and may have significant implications for resource allocation within the organization (Walker, et al., 2002).

Walker et al. (2002) found in their studies that companies implementing ERM made an effort identifying the individual business risks. The risk identification process usually included gathering groups across the organization and getting together in workshops (Ibid.). Group representatives in assessing and managing risk can include risk managers, internal audit, safety and strategic planning are some of the roles that should be present in developing an ERM program (Moody, 2001). In the study of Walker et al. (2002) the groups spent time discussing

objectives and identified risks, developing top risk priorities and plans to manage them. One of the studied companies also, in addition to identify risk, spent time to find its root cause. To fully understand risk the right people needs to be involved (Ibid.). Another company included in the Walker et al.'s (2002) study included key executive and other qualified people with a better understanding of the risks. Risks identified also needs to be updated as risk are not necessarily static or stable. The studied companies did not assume risks to be stable, and therefore risks identified also needs to be understood on a frequent basis (Ibid.).

ERM is directly related to strategy and it is the board of directors and senior executives who drives ERM and sets the direction of the organization. Hence the response to create an effective risk management practice is this top-down, holistic-approach. ERM is used as a tool to manage risk and in that manner the organizations likelihood to achieve its objectives within the stakeholders' risk appetite (Beasley & Frigo, 2007). The various risk events that may occur is implemented in ERM and it tries to strategically balance these with the risk portfolio of the organization and the risk appetite of the stakeholders (Ibid.).

Finding a balance between the organizations performance goals and targets, and the related risks is one of the tasks of the management. Maximizing value by setting strategic goals based on this balance is something ERM may influence. Management can consider different strategic alternatives when deciding on the potential returns are in accordance with the associated risks, and if these are within the risk appetite of the stakeholder (Beasley & Frigo, 2007). In many cases strategic planning is set at a given time aspect as for example a five-year period where certain measures are made to monitor the implementation of the strategic plan (Paladino, et al., 2009). ERM is unlike the strategic plan as it is an ongoing process and open-ended, and in some organizations strategy planning has become more of a continuous process where the plans are reviewed more often than every three years (Ibid.). Strategic planning and performance assessment is an integral part of ERM as managers evaluate different strategic alternatives and its impact on the organizations total risk profile (Beasley, et al., 2006).

> "*Uncertainty requires that strategy is concerned less with specific actions and the more with establishing clarity of direction within which short-term flexibility can be reconciled with overall coordination of strategic decisions*" (Grant, 2003, p. 493)

Management control systems can be defined as routines and procedures that are formalized which use information to sustain or change patterns in organizational activity (Simons, 1987).

Simons (1991) separate management control systems in two: diagnostic control systems and interactively control systems (Simons, 1991; Mikes, 2009). Diagnostic systems appear when management approve strategies and is communicated downwards in the organization. If not everything goes according to plan (exception) formal systems are used to inform top management. Interactive control systems appear when managers use control systems in an active manner involving themselves personally and regularly in daily decision-making (Simons, 1991). Simons (1987; 1991, p. 50) present four typical conditions that are used interactively: the highest levels of management address the agenda of information from management control systems, the interactive process requires frequent attention from operating managers at all organizational levels, information from meeting are discussed and interpreted by superiors, subordinates and peers, and underlying data, its assumptions and actions, relies on being continually challenged. Interactive control systems were used by top managers to focus the attention of the organization on strategic uncertainties that could derail the future vision (Simons, 1991). Simons (1991, p. 60) found in his study that there are "*fundamental differences in the way that policy-making managers use control systems*" where the information from management control systems associated with strategic uncertainties regarding the organizations future was in the managers focus (Ibid.). "(…) *Top management vision is the essential ingredient for interactive management control systems*" (Simons, 1991, p. 61).

Mikes (2009) argues that the manageability of risks and the formulation of risk management is developed on the basis of the personal background (both institutional and professional) in relation with ERM practices. Mikes (2009) further emphasize that in addition to internal influence, the external institutional pressure must be taken into account in respect to ERM practices. In her analysis of ERM practices two corporate governance concerns are highlighted: the shareholder value drive (control system measured in relation to shareholder value) and the risk-based internal control imperative (broader focus on strategic objectives including non-financial aspects) (Mikes, 2009, p. 22). Mikes (2009) studied four different ideal models of risk management: risk silo management, integrated risk management, risk-based management and holistic risk management where the latter is of interest for this assignment. Holistic risk management focus on the risk-based internal control. COSO, as mentioned earlier, advocate ERM as a framework to capture risk relevant for an organizations strategic objectives and as Walker et al. (2002, p. 28) highlights; "*ERM implementation is more a road to be traveled than a destination to reach"*

Power (2004) highlights that the focus on, and talk about, risk itself has grown the last years and the balance between primary and secondary risk management seems to have shifted to the latter. Qualitative changes as risk aligned with good governance agendas has expanded the qualitative risk management (Power, 2004)

An emerging consensus including three aspects seems to have risen according to Bromiley et al. (2015): ERM is more efficient viewing risks of a portfolio instead of individual subsidiaries, ERM incorporates risks such as traditional and strategic risks, and ERM viewing risk not only as a problem but something to gain competitive advantage. By doing so enterprises can consider operational risks which arises "*from the actions of people, systems and processes* (…)" (Soin & Collier, 2013, p. 83). ERM has evolved since it was first defined but the most important change is its emphasis on aligning strategy and risk management (Nagumo, 2005). Risk may be classified in different frameworks and this thesis follows Walker et al.'s (2002) classification, namely: Strategic Risk, Operational Risk, Financial Risk and Hazard Risk. Operational risk is related to the processes and systems within an organization and its people and technology. Financial risk includes currency volatility, interest rates and commodities, and hazard risk is insurable risks such as natural disasters and terrorism. This thesis focuses on strategic risk which is according to Moody (2001, p. 123) "*by far the most difficult to address*". Strategic risk can relate to the entity's decision-making process and the ability to pursue strategic business goals and objectives (Moody, 2001). It can include an company's strategy, political, economic, regulatory, global market conditions, and reputation risk (Walker, et al., 2002). Historically strategic risk has been addressed separately and as a result risk management practices has had little formal development (Moody, 2001). Clarke & Varma (1999, p. 414) argues that "*an integrated strategic risk management approach allows companies to consistently deliver superior performance while proactively managing risks*".

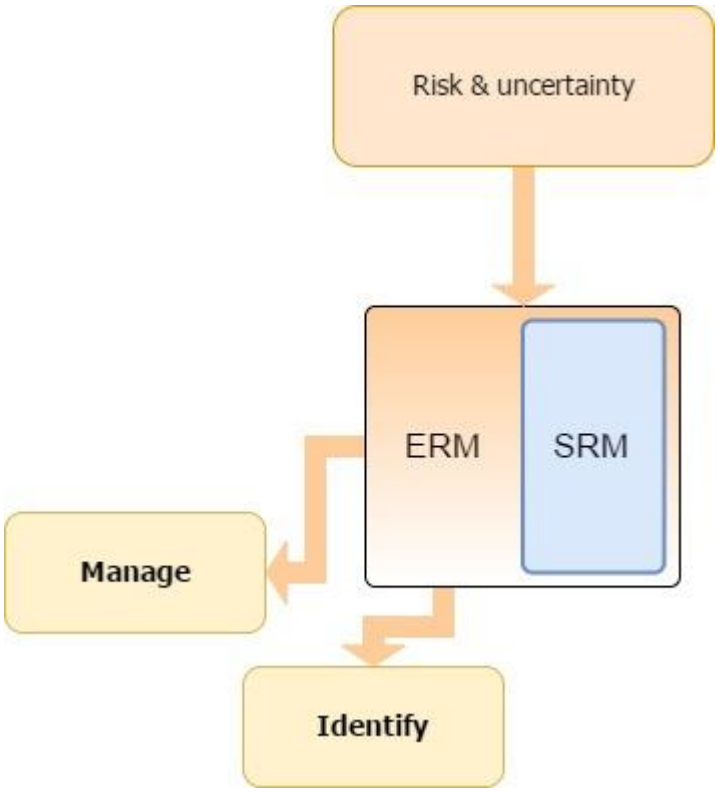

Figure 1: The concept of risk

2.2. Strategic risk management

As explained earlier in this thesis enterprise risk management enables the company to identify and assess risk in a holistic manner. There are many risk factors possible to affect a company I want to gain a broader knowledge about how petroleum companies operating in Arctic areas identify strategic risks and manage these. As Buckley et al. (2016, p. 133) puts it: "*Risk-taking is, after all, a matter of strategic choice, and it is the managers who make the choice*."

2.2.1. Strategic risk

Strategy is "*the long-term goal of an organization*" (Johnson, et al., 2011, p. 3) and "*a pattern in a stream of decisions*" (Mintzberg, 2007, p. 3). Having knowledge about the company's resources and capabilities is important, but also managing information about the external environment (Herring, 1992). The external environment, that consists of amongst other political, economic and environmental factors, are "*likely to have a high impact on the success or failure of strategy*" (Johnson et al, 2011, p. 50). The high-level goals of an organization- the strategic objectives- are the core in the strategy of an organization (Frigo & Anderson, 2011).

Strategic risk is risks that originate from an organizations strategic objectives or its business strategy (Deloitte, 2013). Failing to achieve the organizations business objectives, which is often a result of managers decision making, is strategic risk (Weller, 2008). Kallman (2007) writes that it is not the managers decision-making alone that influence strategic risk levels in an organization, but also how it is positioned to its environment. Managing strategic risk is a dynamic process where organizations identify and assess different obstacles that influence and/or prevent the financial and operational goals of the organization (Chatterjee et al., 2003 referred in Verbano & Venturini, 2013).

As strategic risk highlighted the long-term aspect, strategic risk management (SRM) is important in terms of monitoring and having a response for such risks (Mohammed & Sykes, u.d.). SRM should enable the company to be aware of which risks can make the company perform so poorly that it could "*potentially result in significant losses, destruction of shareholder value, or a damaged corporate reputation."* (Frigo referred in Paladino, et al., 2009, p. 44). Deloitte (2013) found in a survey that 81% of the companies surveyed has expanded their focus from traditional risk areas (operational, financial and compliance) to including strategic risk management as well including any major risk that could strike the organization. With business trends and technological innovations such as social media and big data, organizations experience strategic risks striking faster than before (Ibid.).

Having experience can provide an experience-based advantage (Damodaran, 2008). Responding to future harm and managing ambiguous threats is influenced by amongst other three factors; human cognition, group dynamics and organizational culture (Roberto, et al., 2006). Cognitive biases, our "*stubborn attachment to existing beliefs*" (Wohlstetter, referred in Roberto et al., 2006), is an obstacle to face ambiguous threats. People are more prone to emphasize information confirming the existing beliefs and views, and the commitment to already existing actions is likely to be followed- especially when there has been invested time and money in them (Ibid.). How (decision-making) groups are formed also plays a significant role. A group of capable individuals does not necessarily form a solid team. Focus on the atmosphere and design, and creating an environment for constructive conflicts, can foster effective communication and underpin competitive threats (Ibid.). Managers forms the culture and mind-set in an organization, which according to Roberto et al. (2006) consist of two view: an operational mind-set that is more set by routines and procedures, or an experimental mind-set which has a 'learning by doing' approach. Providing 'recovery windows' of learning and

improving where assessing early warning signs of ambiguous threats can prevent catastrophic failures. By practice responses, amplifying signals, and formal experiments as well through a more informal approach, facing ambiguous threats can be fostered (Ibid.). Strategic risk management can prevent unprepared events from occurring by identifying potential 'inflection points' (Calandro, 2015). Mitigating ambiguous threats through identification of potential enterprise threats as well as assessing and economically managing these is a central part of SRM (Ibid).

Frigo & Litman (2001) describes the thought and activity of management as two processes; one regarding business strategy, and the other business execution. The authors highlights the management's ability (or inability) to combine business strategy and execution in the organization that will influence the result of strategic risk management.

> "*Central elements of the strategic management process comprise risk management considerations in conjunction with planning discussions, environmental analyses, contingency plans, strategic controls, etc. The availability to respond to changing conditions is also influenced by the organization's decision structure and absorption of market intelligence, internal information exchange, and eventually the use of these insights to construe and execute suitable responsive actions*" (Andersen, 2006, p. 9).

2.2.2. Reputational risk

As pointed out in the previous subchapter the technological innovations result in information spread in a high speed through social media all around the world. As the influence of such, where communication has an instantaneous power of influence, companies should have a sound response to such (Mohammed & Sykes, u.d.). Reputational risk is now, as Deloitte (2013, p. 4) write "*the biggest risk concern*" as it is harder for organizations to control and if not managed in a proper manner reputation risk can escalate to a major strategic crisis (Ibid.). Therefore, reputational risk is included as a strategic risk.

The energy sector has reputational risk as number one risk- which is a change in trend as it wasn't in the top five three years ago (Ibid.). Cole (2012) found that an organizations market value is more than 25 percent directly attributed to its reputation. For example, in a study by Deloitte (2013) is the increasing focus on reputational risk resided at the highest level in an organization (Cole, 2012). In Deloitte's study the most important stakeholders for an organization regarding managing reputational risk were found to be customers. This because

critical to an organizations success is the customer's expectations and perception influence if value is created or destroyed. If the organization doesn't fulfill the expectations of the customer reputation is damaged. Other stakeholders of significant value were regulators, senior executives, employees, and investors. In the same study Deloitte (2013) found that 87 percent of the executives' rate reputational risk as more important than any other strategic risk, and 88 percent "*are explicitly focusing on managing reputation risk*" (Deloitte, 2013, p. 4). In the energy and resource sector 48 percent of the reputation risk driver is regarding ethics and integrity, 48 percent regarding product and services and 40 percent is regarding physical and/or cyber security (Deloitte, 2013). Power (2004) sets off risk communication as one of two areas where risk manager is apparent. Risk acceptance decisions are argued to be not only left to scientific experts but is also a matter of public interest. This leads to some involvement with the public and stakeholders since perceptions of risk may be varied. Management of strategies which influence perception gaps between the public expectations and performance of organizations can be done by risk communication. The second area is risk-based regulation where regulatory systems establish broad frameworks regarding organizational control practices. This to enable resources where they are most relevant for risk. Legal systems, media and social processes influence the outcome of reputational risk and is normally not controllable for an organization (Power, 2004).

2.2.3. Climate risk

It is important for this study to pull climate risk forward even though it is not highlighted by Walker et al. (2002) as a strategic risk. Environment, or climate, in respect to risk is usually seen as hazard risk related to natural disasters (Walker et al., 2002). As strategic risk management is to have a response to future risks occurring, climate is relevant. Seen in the introduction to this chapter, environment is related to the external environment and is exemplified as pollution and waste (Johnson, et al., 2011). In the same turn companies need to be able to identify such risks and be prepared with a response. Climate is not left alone as a risk only related to physical environment. Climate risk can be linked to national goals such as reducing pollution (Johnson, et al., 2011) or the public outrage in forms of major campaigns by NGOs (Roberts & Frantisak, 2015).

2.2.4. Economical risk

Typically referred to as characteristics in an economy "*that increase vulnerabilities to an external shock, or structural fundamentals and policy that can be the basis of home-grown payment crises*" (Toksöz, 2014, p. 55). Exchange-rate risks and macroeconomic volatility are also components that are part of economic risk (Ibid.). Petroleum prices might be viewed as a speculative risk. The same goes for the potential of a petroleum reservoir. Speculative risk refers to outcome from situations where performance measures can be both favorable or unfavorable (Aven, 2012). Speculative and pure risk was often made as a distinction in earlier literature. When the outcome from a situation is solely unfavorable the risk is referred to as pure risk (Ibid.). "*Another economic policy risk that can arise is the lack of fit between domestic policies and those of major trade partners. This is not a rogue policy like the ones above, but the failure of government policy to adjust to changing global conditions either through lack of understanding or because of political and institutional constraints.*" (Toksöz, 2014, p. 153).

2.2.5. Regulatory risk

Reguatory risk is composition, usually evolved over time, of many regulatory frameworks (Toksöz, 2014). Changes in the regulatory framework, especially the unexpected ones, is becoming a micro-level risk and it needs monitoring. These are amongst other very present in industries highly regulated (Ibid.). "*Taxation and regulatory fines have become common features of risk-facing multinational business.*" (Toksöz, 2014, p. 195)

2.2.6. Political risk

Political risk reflects the risk that may affect investment returns because of instability in a given country (host country) or due to political changes (Investopedia, u.å.a). Buckley et al. (2016) highlights the political institution literature that suggests that multinational enterprises have power to influence policy changes that are in favor of the enterprise. Investopedia (u.å) points out two types of political risk; the macro risk which implies governmental actions that affects all firms entering the host country, and micro risk which influence a certain sector or business. Meyer et al. (2009) points out that the institutions influence the strategy of the organization entering the host country as these again influence the market mechanism. Regulatory regimes, formal rules, information systems and property rights are some of the aspects institutions include and so will influence the risk of entering these markets. Gaining information about business partners and likely behavior may lead to more effective market mechanisms and reduce market failure (Meyer, et al., 2009). In countries with mature political institutions and

a developed economy, political risk is not especially emphasized with political risk (Toksöz, 2014). The effect of low political risk enables flexibility and effectiveness in political-, policy- and marketinstitutions to respond to both domestic and global pressure (Ibid.). "*Nationalization, expropriation and licence cancellation are ultimate political risks where physical assets are involved in cross-border transactions*" (Toksöz, 2017, p. 202).

The petroleum industry has some distinguishes that can relate to some of the strategic risks. As governments and state actors have authority over extraction and development of oil reserved, economic and political factors influence the investment decision of petroleum companies (Allsopp & Fattouh, 2013). As the duration of petroleum projects usually has long duration delays might occur. These delays may be caused by negotiation between international and national petroleum companies and the owner (in Norway's case the government), access to the reserves, the size of the project, and large capital expenses. The investors investment decision can also affect the market structure and in turn influence the development of the oil price (Ibid.).

Activities of national oil companies influence the macro-economic picture. With growing economic, social, and political importance, both domestically and internationally, the performance of the companies will have implications for the global energy industry (McPherson, 2013). The performance of national oil companies contributes to sustainable development and stability. By commitment to support institutional capacity, transparency, and accountability, systemic risks might be avoided (Ibid.). Competition, used by Konoplyanik (2013), refers to a number of participants in the market. The energy market has evolved going from one dominant fuel to a more competitive energy mix. Coexistence with multiple contractual structures and pricing mechanisms are also influencing the new landscape in the development of the energy market (Konoplyanik, 2013). Konoplyanik (2013) points out that the changes in the market is in addition to already existing structures- which leads to a new dynamic balance (Konoplyanik, 2013).

2.2.7. Risk from internationalizing

Since this is a comparative study of one domestic company and an international company, highlighting factors that can affect the international company is relevant for this thesis. In such manner the two next subchapters will point out some factors that an international company must consider when establishing operations in the host country- which in this case is Norway. These risks are articulated to the regulatory and political risk from a foreign perspective.

In general, one can say that internationalization is an (ongoing) process where an organization increase their international involvement. A part of the internationalization process is the organizations commitment and experience in the foreign market, and how it uses this in integrating in the market and gradual acquisition (Johanson & Vahlne, 1977). Ahmed et al. (2002) highlights that when organizations decide to expand internationally it faces risk. International risk is defined as "*the dangers firms faced in terms of limitations, restrictions or even losses when engaging in international business*" (Ahmed, et al., 2002, p. 805). Attributes the target country consist of comes in geographic, economic, demographic, and institutional forms (Kraus, et al., 2015). By controlling operations of the international business unit management believes that this will reduce risk associated with international expansion (Cyert & March, referred in Ahmed, et al., 2002). Entry modes might change as a result of the need for control and influence the strategic decision by for example sharing responsibility through joint venture or licensee (Ahmed, et al., 2002).

When conducting business in a foreign market costs are related to the entry decision. An entry barrier that occurs when internationalizing is the lack of knowledge and experience in that particular market. This says something about the foreignness. Many organizations make incremental decisions in this process as this enables it to extend its knowledge in the foreign market (Weaver, 2016). Not all organizations undergo an incremental internationalization process. Pedersen and Shaver (2010, referred in Weaver, 2016) found that this process can also be discontinuous depending on risks related to decisions. "*Internationalization resources may include financial, technical, information or human resource capability based*" (Weaver, 2016: 9). Weaver (2016: 9) points out that doing business in a specific geographical area the organizations have to "*tap into foreign embassy and national development aid institutions to consult and inform them*".

Johanson & Vahlne (1977) highlights institutional knowledge can include characteristics in the host country, business climate and cultural patterns (Hilmersson, 1997). Institutional isomorphism is where organizations compete for political power and institutional legitimacy as well as resources and customers, is useful for understanding modern organizational life (DiMaggio & Powell, 1983). Rodriguez et al. (2010) suggests a set of risk management tools for SMEs to create internationalization as a competitive advantage; classification of risks may identify risks that can influence the organizations projects, and enable organizations to control

and manage these risks. They also highlight coherence and homogeneity as a result of a general framework regarding internationalization. To predict and manage problems that can emerge in an internationalization process these risk management tools are necessary. Using a common perspective can provide policies and practices that gives homogeneity to the internationalization process (Ibid.).

2.2.7.1. Country risk

Country risk can in such be generalized to "*the losses that could arise as a result of the interruption of repayments or the operations of entities engaged in cross-border investments caused by country events as opposed to commercial, technical, or management problems specific to the transaction*" (Toksöz, 2014, p. 48). One of the components in the broad view of country risk is operational or jurisdiction risks. These refers to country-specific business environment risks. Country specific business environment risks includes for example regulatory risk, infrastructure availability, transparency and red tape, and governance risk. Partly overlapping in the section of jurisdiction risk is political risk. If there is events of political change in the host country or if the international environment changes in a geostrategic way, disruption of operations might be a consequence of this (Ibid.). Different actors other than government such as political minority groups may cause events that can be viewed as political risks. These risks can be difficult to predict as they can evolve slowly and/or suddenly. Risk management structures has been expanded the past decades to deal with different risks such as credit, market, operations and liquidity risks. Recently country risk became a part of this expansion (Ibid.). As Toköz (2012, p. 59) highlights regarding country risk only referring to cross border risks: "*investing in another jurisdiction requires the gathering of extra information and knowledge. There are risks in geographical, institutional and cultural distance, as well as in dealing with local politicians*." At the same time organizations face macroeconomic and political risks such as regulatory risks, taxation changes and monetary policy adjustments in their home countries (Ibid.).

Three interrelated critical components for internationalization is knowledge about internationalization (company-specific knowledge), foreign business knowledge (market specific knowledge) and institutional knowledge (governmental and institutional framework in a particular foreign market) are three interrelated critical components in the process of internationalization (Rodriguez, et al., 2010). Not having sustainable tools to manage knowledge acquired in the process of internationalization may lead to not being able to predict

risks and therefore not creating a competitive advantage (Ibid.). Rodriguez et al. (2010) propose a model which include parts such as policies and guidelines which create a culture for continuous learning, a system on how the organizations evolve in the process of internationalization, and mechanisms devoted to monitor the industrial environment the organization operates in (Ibid.).

Miller & Waller's (2003) developed an uncertainty framework where they found different environmental uncertainties that managers should consider. "*Integrated risk management emphasises the full spectrum of a firm's exposures to environmental contingencies*" (Miller & Waller, 2003, p. 105). Relevant for this thesis is the general environmental uncertainties and the firm-specific uncertainties. The general environment uncertainties include government policies, economic conditions and social trends that can influence companies in specific locations. Within the firm specific uncertainties are firm operations, research and development, financing and behaviors of managers and employees. Forecasting the future and deciding what the key uncertainties are in the light of how the consequences of such uncertainty will have on business performance (Ibid.). Miller & Waller (2003) recommends starting at a business unit level and then expanding its analysis to a corporate level since understanding how the environmental uncertainties affect the organization as a whole has a higher priority

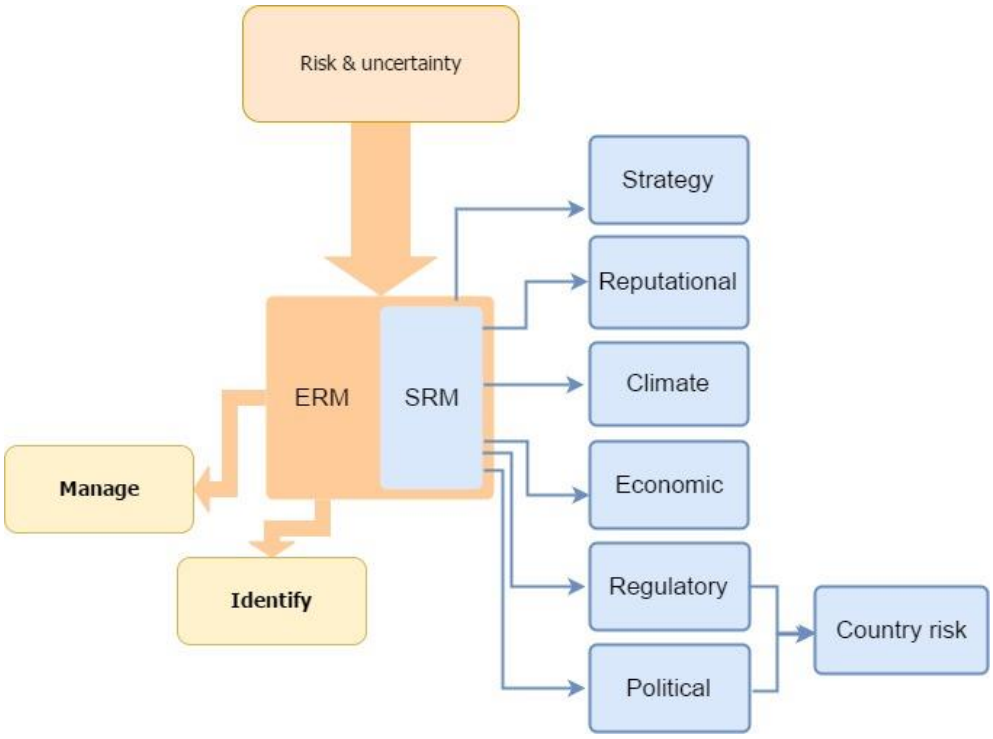

Figure 2: Theoretical framework model of ERM and SRM

Chapter 3. Method

This chapter will illuminate what kind of considerations I have made in this comparative case study. Views on ontology, epistemology and methodology will be presented, and further insight in choice of research design and judgements will be presented.

3.1 The research philosophy

There are different paradigms within the philosophy of science that have different assumptions about the nature of reality, also referred to as ontology (Easterby-Smith, et al., 2013). To enquire into the world, the nature of our knowledge and assumptions of it, concerns the epistemology (Ibid.). The progress of scientific discoveries in practice are the description of a 'paradigm' (Easterby-Smith, et al., 2013), and *"is what the members of a scientific community share* (…)" (Kuhn, 1996). How the research is conducted through methods and techniques depends on assumptions made by the researcher through choice of ontology, epistemology and methodology (Easterby-Smith, et al., 2013).

3.1.1. Ontology

Ontology consist of different views on reality where 'truth' and 'facts' will vary accordingly to the philosophy. Within social science the positions of internal realism, relativism and nominalism varies as it depends on what kind of topic is being enquired and the researcher's preferences (Ibid.). An internal realist sees a single reality, but the researcher cannot access facts directly. Relativism sees many truths, and facts are created by the people where the 'truth' is reached through discussions with the main advocator. As different observers may have different point of views many perspectives of a reality can be discovered. Nominalism positions to no single truth, but has its focus on how different versions of 'truth' is being established by people, and therefore that facts are made by humans (Ibid.). As I am deep diving into a subject related to human decision making and considerations are central, I would like to initiate and increase a general understanding of the phenomenon I am studying. Therefore, the relativist ontology approach, where truths are multiple and the viewpoint of the observer influence how facts are accessed and addressed, the relativist way of inquiring into the world is used (Easterby-Smith, et al., 2013). This as I seek the practitioners view in order to build local knowledge.

3.1.2 Epistemology

The epistemological debate in social science has been a contrasting view between positivism and social constructionism, where at one stance the positivist view on the social world is that it exists externally. On the other side, the social constructionism, believes that the world is subjective and given its meaning by the people (Easterby-Smith, et al., 2013). To enquire into the nature of the social world I as a researcher influence my thesis by my epistemological position. As strategic risk management is a broad subject and entails no final solution, my purpose with this study is not to uncover one single truth. Rather to increase a general understanding of risk assessments in a dynamic world based on different perceptions and considerations. Therefore, I position my research through a social constructionism approach where reality is determined by the people working in the petroleum industry, and their experiences create constructs and meanings to my research. My approach may be viewed as a normal constructionism where knowledge is subjectively constructed but in consideration and acceptance of objective and independent knowledge (Easterby-Smith, et al., 2013).

This study had a deductive reasoning approach. For me to gain knowledge about my research it was necessary for me to create synthesis as my first step. I had some preconceptions about the phenomenon, and started with a minimum of information beforehand. Starting of with following the Straussian view where new local theory arises from an interaction between theory and data interaction (Easterby-Smith, et al., 2013) I as a researcher got familiar with previous research conducted in the field of interest and this being a master thesis, usage of previous academic theory has been necessary.

3.1.3. Methodology

A paradigm also denotes the appropriate methodologies to pursue knowledge (methodology; i.e. research design and methods). The ontological and epistemological philosophy has implications for my methodological approach. In the next subchapters the choice of design, collecting data and analyzing it and in general how this study is conducted to provide knowledge on the phenomenon is explained.

3.2. Research design

Deciding on a qualitative or quantitative method both to collect and analyze data is dependent on the philosophy that underpins my research. Quantitative approach is most often used by positivistic researcher and is suitable when the intention of the research is to investigate the

impact, frequency or extent of a phenomenon (Jacobsen, 2015). A qualitative approach is most often used by relativistic researchers as it let one explore different shades of data collected, and is sensitive to unexpected circumstances (Ibid.). This research is qualitative and as explained in the previous paragraphs concerning method, my basis for this study is that there is no absolute truth in social life (Easterby-Smith, et al., 2013). Different methods approaching and acquiring 'truths' in the constructionistic design exists. Gaining a holistic perspective at and within the company and its behavior is one of the benefits by using this approach. Case method, is where the study goes in-depth in one or a small number of organizations looking to answer present circumstances (Yin, 2014) generally over time. It aims (in the constructionist epistemology) to provide a rich picture of the organizational behavior and life (Easterby-Smith, et al., 2013). As I am conducting a case study within two petroleum companies with different countries of origin, it enables me to do a comparative analysis. This means I as a researcher are looking for "*the same event or process in different settings or situations*" (Easterby-Smith, et al., 2013, p. 58). Since I am taking a constructionist point of view my research is not as concerned with issues of external validity, but rather to provide a rich picture of how my respondents assess strategic risk in the Norwegian offshore industry. Studies which are constructionist in their epistemology are usually conducted through interviews where it is based on direct personal contact and observations (Ibid.).

Being explicit on the unit of analysis is important as this will be the data collection. Since my approach is based on a constructionist view clarity on unit of analysis is not essential, but can provide guidance for analysis (Easterby-Smith, et al., 2013). In my research people with central positions regarding decision-making when it comes to risk and strategy in petroleum companies is my unit of analysis. Robert Yin, a well-known case study researcher, highlights that case study is appropriate in studies when questions like "how" and "why" are the main focus, the researcher do not know how different events will turn out, and when contemporary (the "case") phenomenon are the focus of the study (Yin, 2014). Yin (2014) also discusses the epistemology behind a case study- the philosophy of research- where the two distinct approaches are a realist view which assumes that the reality is independent of the observer, and the relativist view, which I mentioned in the previous paragraph, where the reality can be multiple and have multiple meanings depending on the observer.

3.3. Collecting data

All the data I collect is qualitative. As strategic risk management is conducted through an organizations strategic objectives and decision making, my assumption is amongst other that acquiring information through narrative methods would provide valuable point of views. Yin (2014) mentions six sources of evidence where interviews are one source. Interviews gives me as a researcher the ability to focus directly on the topics of my case study, and can provide me insight in form of explanations and personal views (Ibid.). Thus, there area some pitfalls in using interviews as a source which I have to be aware of. Biases may occur both in how I choose to formulate my questions but also in the responses I get. Since I am conducting shorter case study interviews the questions I ask must be carefully worded and specific. Conducting in-depth interviews gives me as I researcher the opportunity to collect information regarding strategic risk. The response I get from the respondents is probably seen from the worldview of the respondents and I as interviewer should assist the respondent in exploring their beliefs on the topics (Easterby-Smith, et al., 2013). I have gotten familiar with previous research and as a researcher I already have some preconceptions about how the petroleum companies identify risk in Arctic areas. A semi-structured interview, which is more of a guided open interview, can provide answers which is more personal in nature and thus give a higher degree of confidentiality (Ibid.). Easterby-Smith et al. (2013) highlights semi-structured interviews as an appropriate method when it is necessary for me as interviewer to understand the construct the respondents use. I am not familiar with how strategic risk management is formed in petroleum companies nor the linguistics of this environment. This leads to the second point of Easterby-Smith et al. (2013); semi-structured interviews may help me understand the respondent's 'world'. How companies identify different risk aspects can be, but not necessarily, a subject that is highly confidential or commercially sensitive, and lastly thereby a semi-structured interview might be a powerful tool in gaining a more personal sphere (Ibid.). Based on theories and by concepts developed in previous research and the normative literature, I made an interview guide where the key topics in the literature were addressed (see Appendix 1).

3.3.1 Participants of the Study

In selecting respondents to my research, I decided the main criteria: they have to be present in the Norwegian offshore. As the context is the Norwegian offshore Arctic area, because this research is conducted in a short period of time (January-June), and because of current discussions and interests regarding the Norwegian Barents Sea, I limited the geographical area to the before mentioned Norwegian offshore Arctic sea. To choose my respondents I used the

Norwegian Petroleum Directorate's offshore map which includes all companies that have license or are operators per June 20th 2016. Since my thesis researches an area with both presence of national actors as well as international the petroleum companies in my research are kept in accordance. Since the selection was also chosen on the basis of gaining a better understanding and knowledge of how the petroleum companies identifies risk it allowed me to look at it from a foreign perspective as well as domestic. In total two companies participated in the study; one domestic and one international. The choice of one domestic and one international company also provided me with the possibility to conduct a comparative analysis. A total of four respondents gave me their insight, reflections, and time; two employees from each of the companies. I have chosen to keep the respondents anonymous. From the domestic company the two respondents have central positions in handling Arctic challenges. In the international company the two respondents are managers each to their own area. And further, to give a broader view on certain risks in the Arctic area an expert from the Norwegian Petroleum Safety Authority (Ptil), that is an independent government regulator, provided me with an interview on challenges related to the regulatory system.

3.4. Conducting the interviews

All interviews have been conducted through Skype with a duration of 45 to 65 minutes. I used a sound recorder to be sure no information would be lost. The sound recorder provides me with all sound effects from the interview which I afterwards transcribed. Transcription is a specific transformation of oral conversation to written text (Kvale & Brinkmann, 2015). To create an even higher degree of verification, what I transcribed from the interview I sent to the given respondents and provided them with the possibility to adjust the statements. All interviews were done in Norwegian, and were translated to English by me. The transcription is a set of important data collection. By having the interviews transcribed the data material is more suitable for analysis. When transcribing the interviews myself I get closely familiar with the material, I use the same written style (regarding punctuation, choice of word in cases such as "uhm", "eh" and similar, pause and expressions of feelings) and I am at this point ready to start analyzing it (Kvale & Brinkmann, 2015). After finishing the transcription, I listened to the whole interview continuous while reading the transcript. This to secure the reliability of the transcription (Ibid.).

3.5. Analysis of data material

I was well familiar with the content after transcribing it, and by reading the detailed transcripts I started envisaging what findings would be proper regarding the different features of strategic

risk management. Because of the subject my thesis concerns, identifying risk in an Arctic context, one may assume there is a clear pathway of how companies identify risk. I as a researcher am trying to comprehend and make sense of this phenomenon, and my reasoning is formed by the philosophy of science as described in chapter 3.1. "*The research philosophy*".

There are also some differences in analyzing and interpreting data, and I use a deductive approach in my way of analyzing it. In analyzing the transcriptions I look for a pattern in the data material and when interpreting I view the material in a bigger context and I look for consequences my analysis and conclusion will have for my research (Johannessen, et al., 2011). First, I started by sorting and systematizing the data collected. As seen in chapter 5 the findings are a result of this process where I have reduced the original data material to the most important information relevant for my research. After this my analysis and interpretation of findings started. Here I identified themes and patterns relevant for risk identification in strategic risk management where interview guide's main issues were my point of departure. Because of the preparations in beforehand I was able to use these in the analysis. It was organized in two ways: by cross section- and categorizing based data, and contextual data organizing (Ibid.). By looking for sentences or paragraphs where it is possible to identify particular themes relevant for strategic risk management and in its context the Arctic, cross-sectional classification of data was made. By looking for common features this also may be seen as category-based classification. The contextual approach let me as a researcher look at certain parts of the data material where I look for characteristics in a specific context while having a wholesome approach (Ibid.). Since I used a semi-structured interview guide I had different keywords relevant in addition to the main issues and these enabled me to approach the analysis in such way as before mentioned.

3.6. Quality and credibility of the research

By illuminating which epistemological and methodological research is grounded in the quality of my research the results aim for a higher justification than observations done merely from ordinary life (Easterby-Smith, et al., 2013). Validity and reliability is usually associated with positivist methodology, and Easterby-Smith, et al. (2013) points out that 'validity' as a term seldom are used in constructionist designs which is my position in this research. In any case I see it expedient to highlight the quality of this research. As an alternative proposal more illuminating for this qualitative study I'll be using the criteria of Guba & Lincoln (1985): credibility, transferability and dependability.

Credibility is the question regarding how believable my findings from this study are in terms of gathering of data, and how this data is cultivated. As this is a comparative case study conducted by me through in-depth interviews with respondents from the case companies the data gathering is in turn formed by the dialogue in the interviews rather than by structured techniques usually found in quantitative methods. By conducting thorough theoretical research previously of the case study an increased understanding for me as a researcher on the phenomenon became apparent. It was relevant for me to understand the world of the studied companies and the Barents Sea as an area for me to create credible findings. Through this chapter, a descriptive explanation has been provided to the reader, and in terms of this hopefully it will further increase the credibility of the research.

Transferability is a question of whether the results from this study may be generalized or applicable in other settings. With this in mind I find it responsible by me to emphasize that the results from this study is more about building local knowledge that can inform general theory through a thick context description. The analysis is coded from the wholeness the study enters, and I as a researcher have constructed new knowledge in this specific area to illuminate the phenomenon.

Dependability relates to "*the extent to which measures and research findings provide accurate representation of the things they are supposed to describe*" (Easterby-Smith, et al., 2013, p. 347). Said in another way: am I measuring what I believe I am measuring? This is a qualitative study and I am not able to measure the data in the same manner I would have done in a quantitative study. If you conduct interviews over and over again you seldom get equal results. Therefore is it more challenging to use such in a qualitative design, but is something I as a researcher need to consider. I therefore prepared an interview guide where all questions were relevant for all respondents. In the same time is it important to highlight that the respondents have participated in the study voluntarily. Their motives for participating is not explicitly familiar to me, but as all are anonymous, the willingness to provide new knowledge to a relevant and highly actual problem at hand, can be one motive and to my knowledge whether their statements are true is considered from such motive.

3.6.1. Ethics

It is important to consider the ethical aspects when conducting research. I as a researcher and my integrity is important for the quality of the scholarly information I provide. Decisions regarding ethical guidelines is decisive for this research (Kvale & Brinkmann, 2015). I claim that ethics will demonstrate itself within my discussions about reliability and validity of the study.

3.6.2. Confidentiality

The participants were given the option they could choose whether they would like to be anonymous or not. By choosing to be anonymous my responsibility as a researcher towards the respondents is that none of the information the respondents have provided me can be traced back to them. The information given through the interviews can only be used to the purpose of this thesis (Johannessen, et al., 2011). To ensure anonymity a fictive name has been used regarding the company name of the two case companies which in turn has resulted in the acronyms; DomOil and InterOil.

Chapter 4. Contextual risks: Arctic Petroleum

In this chapter the Arctic as a petroleum province and the characteristic features in this province is presented to build contextual understanding behind the aim of this thesis. Even though the focus of this study is the Norwegian Barents Sea, defining the Arctic is relevant understanding that the Arctic is a complex environment in terms of physical factors and geographical discussions.

4.1. Arctic

The Arctic is a geographical area located at the northernmost part of the Earth (Arctic Council, 2009). Emmerson & Glada, (2012) points out that the Arctic is not just one region, but it consists of varying areas with different conditions, geologically, environmentally and politically. Some areas, such as, the Barents Sea are considered to contain relatively more oil than gas. There exist different geographical definitions of the Arctic area. The territory above 60 degrees' north latitude is often referred to as the "Arctic" by Arctic countries, and organizations often refers to Arctic projects based on typical characteristics of the area such as containing sea ice and/or ice bergs (Emmerson & Glada, 2012). The Arctic is also in some cases referred to as the territory and ocean sea north of the Arctic Circle which is 66 degrees north latitude (Ibid.). Some organizations such as the Arctic Council and the Protection of the Arctic Marine Environment (PAME) has decided to not establish one single definition of the Arctic because they view the territory as something "(…) *left for Arctic states to determine*" (Arctic Council, 2009, p. 1). My thesis follows the definition of the Arctic from GeoPolitics which highlights that it is "*the totality of the areas north of the polar circle*" (Skagestad, u.d.). and is referred to as the "Arctic", but the consensus in general literature is that there is not *one* Arctic but many (Emmerson & Glada, 2012).

4.1.1. Arctic environment and manageability

The Arctic area is a complex environment where petroleum industry must adapt to a challenging climate. Snow storms, sea ice, icebergs, freezing temperature, fog, remoteness, and darkness are all factors that impact the development of the industry in the Arctic (The Pew Charitable Trusts, 2013). Following some distinct factors will be emphasized.

4.1.1.1 Harsh weather

The harsh weather influence transportation and logistics as it is hard to foresee and might cause delay of resupply. Extremely cold temperatures can harm both the equipment and people

working there (The Pew Charitable Trusts, 2013). Polar low pressure might lead to rapid change in wind force and direction and could therefore influence activities in the Barents Sea negatively (BaSEC, 2015a).

4.1.1.2 Wind and snow

Wind measurements indicate that it will reduce the amount of snow on equipment. How icing/ice-bound will develop will depend on local conditions. Freezing rain and snow will increase the dangers of falling ice. Ice covering equipment may occur depending on wind strength, water- and air temperature (BaSEC, 2015a).

4.1.1.3 Sea ice and icebergs

Sea ice can limit transportation to Arctic areas and it can damage offshore structure and vessels (The Pew Charitable Trusts, 2013). According to report by the BaSEC (2015a) the Arctic may be ice free during the summer months. In the south-east of the Barents Sea ice is not expected to be formed, but might occur drifting from north-east areas. Icebergs is influenced by wind, waves and streams. The likelihood of an iceberg collision in the Barents Sea is limited, but present, and can be a threat to (floating) offshore installations and navigation (BaSEC, 2015a).

4.1.1.4 Air temperature

Extremely low temperatures may occur in extreme conditions depending on the area in the Barents Sea. During operations in the winter temperatures at -30 to -34 Celsius degrees must be manageable. Polar lows can occur in open Arctic oceans and can lead to heavy snow, thunderstorms, icing and waves. It has its highest probability from November to March (BaSEC, 2015a). A combination of extremely low temperatures, wind and waves can cover offshore equipment with ice and impair their function. It influences operations as well as emergency responses as these conditions may hinder transportation options and possibilities (The Pew Charitable Trusts, 2013).

4.1.1.5. Fog and seasonal daylight

During both summer and winter months fog and seasonal daylight is common challenges. Fog increases during the summer as "*warmer air interacts with cold water*" (The Pew Charitable Trusts, 2013, p. 8). From mid-May to mid-August the Arctic has 24-hour daylight, but this changes fast during the autumn moths where the Arctic experiences complete darkness from mid-November to mid-January (Ibid.).

4.1.1.6. Remoteness

The Arctic remoteness also poses a challenge for emergencies and clean ups as it is difficult and expensive (IMO, u.d.). Because of the remoteness emergency response resource are of importance such as transportation, public resources (such as hospitals, Sea King helicopters) and emergency preparedness and response systems and the Coast Guard (BaSEC, 2015b). It can also pose real challenges for response if an oil spill were to occur (RU-NO Barents Project, 2014).

4.2. Arctic business opportunities

Norway's region of the Arctic is considered 90% of Norway's sea area (Emmerson & Glada, 2012). Revenue generated from petroleum related industry on Norwegian offshore is taxed and brings income to Norway (KPMG, 2017). The Norwegian marine industry's reputation is considered stable and internationalized and according to the Norwegian government strategy is to strengthen Norway's profile as a leading marine nation (Nærings- og fiskeridepartementet, 2017). The first Norwegian offshore oil search was conducted in 1966. The Norwegian offshore success has its foundation in gaining knowledge from activities, regulatory development, and responsibility (Ptil, 2017b). For Norway to retain its role as a secure exporter of hydrocarbons the Arctic has emerged as an important role in its strategy (Emmerson & Glada, 2012). By the end of year 2015 34 companies was operators in the Norwegian offshore (Norwegianpetroleum, u.d.). The Norwegian government long-term strategic plan aims amongst other to cooperate and reinforce the international relationships Norway has. In this lies exchange of experience and to capture trends of development (Ibid.). In their report it is highlighted that increasing internationalization of Norwegian companies that delivers commodity in oil and gas industry is a good business and industry policy. The global energy arena is complex and is expected to become more integrated in the future. To further strengthen its position the Norwegian Energy Partners was established to promote internationalization of a joint Norwegian based energy industry (Ibid.). As the Arctic is a challenging area and with different challenges gaining and developing knowledge and competency is important. Organizations such as the European Union (EU) and the United Nations (UN) has taken interest and responsibility for Arctic policy. Other intergovernmental bodies that has done the same is for example Arctic Council, which was established in 1996 by Canadian initiative (Regjeringen.no, 2006). With more existing organizations than what has been mentioned here different interests and multilateral obligations makes "*the near-term prospects for a consistent and practicable Arctic policy*" (Tozzi, 2014, p. 2) unclear (Tozzi, 2014). Control and regulations through organizations mentioned is

important for effective risk management (Emmerson & Glada, 2012). It is also highlighted in Emmerson & Glada (2012, p. 7) that companies operating in Arctic areas must have "*robust risk management frameworks and processes that adopts best practice* (…)" which can be made through "(…) *implementing best-in-class operational and safety standards* (…)" (Ibid.).

By environmental changes such as diminishment of ice and snow it is expected that logistics and infrastructure will give easier/enable access, and by this increasing the Arctic's role in, amongst other, energy and mineral supply (Goverse, 2013). It will also contribute to physical, ecological, social and economic changes in the different Arctic areas (Regjeringen.no, 2006). The Arctic as an economic source has increased its attention. The Arctic is of great interest for various reasons: the environmental conditions, extraction of natural resources such as oil, gas, hydro-power, wind, fishing, whaling and sealing. Because this is a fragile environment where an environmental disaster could lead to global consequence actions regarding the Arctic must be handled with care (Emmerson & Glada, 2012). "*Economic development and environmental sustainability in the Arctic are co-dependent*" (Emmerson & Glada, 2012, p. 9). Business development in the Arctic is of great interest for many operators and is amongst other dependent on extraction of non-renewable natural resources. This gives way to complex political dilemmas (Ibid.).

Norwegian production started in 1971, while the first findings on the Norwegian Continental shelf started in the 1960s (NorwegianPetroleum, u.d.). At the end of year 2016 80 fields were in production whereas two fields in the Barents Sea (PetroleumNorwegian, u.d.) in a diversity of about 50 Norwegian and foreign companies are active on the Norwegian shelf (NorwegianPetroleum, u.d.).

4.3. Expert from the Norwegian authorities

An interview with an expert from the Norwegian authorities provided some further insight in the process from the authorities point of view.

Risk is defined by Ptil as the consequences of the activities, with associated uncertainty. A change in their guidance text has shifted to focusing in a higher degree on uncertainties rather than the probability and consequence of something to occur. The expert highlights that if petroleum companies only focus on probability, the consequence of something with a low probability occurs can result in a very serious accident. This is not acceptable in the point of

view of the authorities. If an event in the Barents Sea, with very low probability strikes, can result in the area being closed- at least for a period. It does not have to be a major accident, but because of high political pressure the area might end up being closed. By changing focus to uncertainty rather than probability major accidents might be avoided according to the expert. That is why the authorities has changes the way they talk to the industry about risk management.

When the southern/eastern part of the Barents Sea was opened the report to the Storting specified that Ptil would take initiative regarding developing knowledge related to risk and uncertainty elements related to activities in that area. Cooperation with the Norwegian Oil and Gas Association, Ptil, and the industry resulted in a report on HSE[1]-challenges in the High North. With a lot of knowledge-based projects, Ptil examines and provides information and data for the industry and in cooperation with the industry.

The regulatory framework in Norway is said by Ptil that "*it is not specific, but it describes the functions that needs to be fulfilled*" (Expert, Norwegian Authorities, 2017) and is equal for all of the Norwegian offshore. The respondents emphasize that one of the most important framework condition is the requirements for prudent operations. There are requirements for risk analysis, emergency preparedness analysis, environmental risk analysis and it is expected that to counteract risks one need to establish barriers. The framework also emphasize that location specific conditions shall be considered, but is not explicitly specified in a detailed level in the regulation. Norwegian offshore regulations stand out in that sense as it is built in a way where operators have the responsibility. They have functional requirements they need to follow and they need to prove that what they are doing is justifiable. Other countries might require more detailed regulatory framework with less of a free scope.

> "*It is clear that the regulations we have make very strict demands, but you have a high degree of a free scope for the solution you choose.*" (Expert, Norwegian Authorities, 2017).

The development of new standards is done by organizations, e.g. International Organization for Standardization (ISO). It is an incremental process where new solutions can influence already existing standards or creates new standards. Implicitly in the framework and

[1] Health, Safety and Environment

establishment of barriers is the dedication of new knowledge, and from this one should do necessary changes.

> "*There is nothing surprising by not changing the regulations when entering the High North, but it is evident that there are different discussions, new challenges, and there are demands to the regulations that these challenges are met and find compensating measures where you identify risk or shortcomings or threats that you need to take care of*." (Expert, Norwegian Authorities, 2017).

Regarding foreign petroleum companies entering Norwegian offshore the expert from the Norwegian authorities informs that it is seldom market operators without experience in the Norwegian offshore gets approved as operator right away. The respondent explains that a foreign company can be awarded licenses after a rigorous qualification process. In this process the foreign company becomes acquainted with the Norwegian regulations and requirements. At the same time the expert does not perceive a foreign company's perception of risk and uncertainty as different from a Norwegian.

Because of features as lower oil price, downsizing and such in the industry the last couple of years the subject of "changing the trend" is to turn the focus. Doing this kind of a priority focus the industry's attention on becoming more aware and creating discussions.

> "*It does no harm that people do not agree with us. What is very important is that people start discussions and take it into consideration."* (Expert, Norwegian Authorities, 2017).

4.4. Summary

This chapter has illuminated aspects of the Arctic and the physical environment. Factors such as low temperature, icing, remoteness, darkness, polar lows, Arctic storms, and visibility influence the operations in this area. The physical environment appears to be the biggest risk for petroleum companies. The expert from the Norwegian authorities has illustrated that the requirements for petroleum companies demands a high level of knowledge and experience of the petroleum companies wanting to operate in the Barents Sea. The Norwegian regulatory framework is not specified in a detail level, and even though it is not directly subject to change, the development in the industry leads to a change in new standards and regulations.

Chapter 5. Empirical data – Findings

In this chapter, the empirical data from the interviews conducted will be presented as risk stories. The domestic and international company is presented separately to make a comparative understanding easier. The companies are hereafter name respectively as DomOil and InterOil. The stories told will first address how companies approach enterprise risk management and how risks are identified. Second, to address what strategic risks are perceived to be critical and how the risks are managed.

5.1. DomOil- the domestic company

DomOil is a Norwegian petroleum company with long experience working in different offshore regions as well as in the Arctic.

5.1.1. Defining risk

DomOil sees risk as the product of the probability for an event to have a consequence, multiplied with the consequence of the event. They view risk as a two-parted picture: it may be an opportunity, or it can be a threat. If the risk is perceived as a threat DomOil work to mitigate the threat as effectively as possible. One of the respondents explains that this is done either by reducing the probability for the event to happen or how to reduce the consequence if the event were to happen. If the risk is perceived as an opportunity DomOil's work is to realize the opportunity. They do this by increasing the probability for the event to happen, or even increase the consequence of the event. When DomOil is looking at risk in a risk-benefit context it includes considering uncertainty for different outcomes and how acceptable it will be.

Uncertainty is also seen by DomOil as a dynamic element in the risk aspect. "*Uncertainty is a much broader term*" (Manager, Unit one, DomOil, 2017). The respondent identifies uncertainty as a possible risk, but also points out that it does not have to be so. "*The whole petroleum industry is built up about handling uncertainty*" (Manager, Unit one, DomOil, 2017). As the respondent highlights; uncertainty is a part of all aspects of the industry and it can be related to such as costs, schedule, resource estimate and productivity. The respondent uses an existing oil platform as an example and the uncertainty of ice drifting towards it. To get a hold of the uncertainty regarding this, DomOil conducts statistical calculations regarding how likely it is that ice actually becomes a problem, and this statistical analysis becomes an input in their risk

evaluation. "*So what I am saying is that uncertainty can be an integrated part of risk, but it does not have to be*" (Manager, Unit one, DomOil, 2017).

5.1.2. Approach to ERM

The respondent explains that in the process of risk identification DomOil conducts many brainstorming sessions "*where we define what is going to happen*" (Manager, Unit one, DomOil, 2017). Here the participant are the experts on the problem at hand. The goal is emphasized by one of the respondents as to be sure of DomOil having the knowledge about what is going to happen and what the risks associated with this are. Afterwards a classification of identified risks based on consequences and probability is conducted. The respondent explains that the important thing during these kinds of workshops is to identify all the possible outcomes that might happen independent of the probability or consequence. To illuminate this the respondent describes a typical workshop that can include writing stuff on post-its. After every risk is laid on the table (Norwegian expression for making "something" visible) DomOil's job is to evaluate the probability and consequence of the different risks that are identified in such workshops. From here on a "top 10" risk list can be a result of such a process. The respondent explains that the risk list is dependent on the complexity of the problem of discussion. One of the respondents finds it challenging to generalize how DomOil is working with risk in each of the different business units. The respondent points out that the risk list should be on the agenda in every leader meeting. In the same turn the respondent also points out- to its knowledge- that risk as a topic is an integrated part of every leader meeting. The norm is that those kinds of meetings is what puts the risk list on the agenda.

Every decision DomOil makes requires an evaluation of risks related to the decision. The respondent also points out that the risk list should be dynamic because when conducting such workshops over hundreds of different risks can be identified and the ones appearing on the risk list will change accordingly.

> "(…) *then it is top 10 and you work with it, and then you manage to reduce the probability, or you manage to reduce the consequence, and after a while the risk might fall out of "top 10" and instead another risk turns up* (…) *and a fair share of the risks is risks that might hit you later on, and you would want to be sure that you manage to pick them up when they become real*" (Manager, Unit one, DomOil, 2017).

5.1.3. Identifying risks

One of the respondents explains that DomOil uses internal resources regarding strategy and risks related to the Arctic. These internal resources make sure that different business areas within DomOil have identified the risks, explore how the risks are identified, and further pursuing the risks seen as the biggest- both from the assessments of the respective business areas and from advisors on Arctic as an area. The respondent explains that some of these risks are forwarded to the corporate level. The actual execution of doing the operations, the respondent explains any bigger risks are to be flagged, and try to make sure that these risks are taken seriously and get attention. The respondent state they split risk in two aspects; short-term and long-term. Both aspects are covered by DomOil, but puts focus on the long-term risks regarding the Arctic. Long-term risks are exemplified by the respondent as not getting access to certain areas, or not having right the technologies for certain areas, or some public opposition to what the company is doing in the future. To identify long-term risks a risk radar is used. In order to use this risk-radar the respondent emphasize that it requires understanding of DomOil's strategy and in all of their business areas. By having dialogue with each of the business areas continuously and questions regarding what, how and why different risks are identified are subjects of high importance, and the unit include the work that has already been done and use their expertise on top. This process enables them to build up a view of key-risks that can affect the ambitions for DomOil in the long-term, and plot these into the radar. The radar is an illumination of how big of an issue these risks may be, and the respondent explains that it enables DomOil to prioritize what to tackle first.

Risk management from corporate level and to the people actually doing the job is highlighted by one of the respondent as to entail a million things that have to be identified. The respondent views it as a kind of a top-down bottom-up approach. Seen from a corporate strategy point of view one of the respondents explains that the strategy, which looks at where the company wants to be, is spread down to the different business areas where they execute through their different operations to deliver on that strategy. Further the same respondent emphasizes that risks appearing at that end will be sent back up to the corporate level, and at the corporate level they frequently as a routine have a follow-up on all risks that could affect the company. The respondent comments that it is only the very serious risks that make it to the corporate level, but the responsibility and expectations of identifying and managing risk is present at the whole escalator (top-down, bottom-up) course. The DomOil top-level management also picks up risks that they deep dive into and spend a lot of time understanding these risks.

5.1.4. Critical risks

In the next subchapters are findings regarding the strategic risks referred to in the theory chapter. Some contains more data than others. This will be discussed in chapter 6.

5.1.4.1 Strategic risk

Developing a corporate strategy is high level development, and one of the respondents from DomOil explains that the Arctic is one of the focus areas. Therefore, that strategy will support the corporate strategy. As this is of DomOil's focus area the company has put down important resources in assessing and evaluating the Arctic. Some aspects covered is the strategy, and that risks identified are followed through. The unit can influence in what areas in the Arctic DomOil should develop in, and advise on the relevance of Arctic areas. As it is a huge sphere from corporate level down to field operations the respondent found it hard to have a single answer for any of the questions I asked, but in general DomOil try to make sure risks are identified from any angle, and that risks are sufficiently assessed and mitigated.

DomOil is very conscious about having a strong scientific-based approach to show that what they are doing is acceptable. The respondent points out that it is important for the company to have the right science and facts. Therefore, since they have all the right technologies in place, the respondent illuminates that their biggest risks by operating in the Arctic is the social license to operate, climate and to make it commercial.

5.1.4.2. Reputational risk

One of the respondents explains that overall a petroleum company must be willing to take risks since "*in everything we do risk is involved*" (Manager, Unit one, DomOil, 2017). This is not limited to either the Arctic environment nor other environmental aspects, but risk in general. DomOil's risk willingness is dependent on the consequences. For example, DomOil is very aware of a great political interest in the areas in the High North and explains that there exist strict requirements for companies to understanding of undertaking risks there. One of the respondents emphasize that the impact of consequences from some of the risks sets the company's risk willingness to very low when it comes to safety and HMS as the consequences of such is greater than the real ones. "*We are the ones that have the most to lose by not knowing this in connection with a development*" (Manager, Unit one, DomOil, 2017).

For DomOil the rise of social media, where perceptions belonging to public oppositions and NGOs[2] are being spread quickly, the scientific fact's matter. "*We see we could have all the facts but we wouldn't be listened to because the voices of- the perceptions of oppositions and NGOs are spread so quickly through social media* (…)" (Manager, Unit two, DomOil, 2017). How to gain a social license to operate is a central question for the company. Even though they have all the facts for a scientific license to operate, getting stakeholders to understand and expect that the company are managing the technical and environmental risks, in terms of risk benefit, is really difficult and a huge challenge for the company- in the Barents Sea as elsewhere. There is a huge amount of public engagement related to the Arctic areas, and because some voices driven by perceptions, and not facts, account a lot louder than others, is a real challenge for DomOil. The focus on perceptions, social media and the social license to operate is emphasized throughout the whole interview, and is regarded as a risk in almost any case DomOil talks about.

"*Social media is a very big risk for what we do*" (Manager, Unit two, DomOil, 2017).

An increasing concern in DomOil, in addition to other countries and oppositions, are policies of companies operating in the Arctic. There could be differences in how different nations and companies are conducting their activities, and might be doing things DomOil necessarily do not agree with both in the ways they present them and approaches to media and oppositions. This again can negatively influence people's perceptions and get them negative to the Norwegian sector. So, the different ways different Arctic countries and companies work can reflect incorrectly on the way the domestic company works.

DomOil are very aware of how perceptions infiltrate different stakeholders. The Arctic Council is used as an example by one of the respondents; sometimes the Arctic Council can have reports made by non-Arctic expert, but gets a stamp as an Arctic Council report. This report may not reflect the latest research and understanding, and may therefore become a concern. There are different views, and getting industry knowledge and competence into the Arctic Council assessments is challenging for DomOil, but they try to involve in cooperation with the organization. The respondent exemplifies the concern in by how media can pick up information, and sometimes take it out of context and put it on display. This can in turn feed negative perceptions already existing about the Arctic and create unnecessary risks. Especially as the Arctic is great for selling newspapers.

[2] NGOs = Non-Governmental Organizations

5.1.4.3. Climate risk

When talking about the Arctic DomOil is very conscious that there is not only one Arctic, but many different Arctic. In different parts of the Arctic the company look at the level of challenge and timeline developed. DomOil has chosen to categorize the Arctic in three degrees: workable, stretch, and extreme. As different Arctic varies, the same goes for areas within the Arctic. As one of the respondent highlights; the environment in the Barents Sea is very different from environment in other Arctic seas, and the open area in the Barents Sea is categorized as "workable". The same respondent explains that being classified as "workable" means that the company has pretty much all the technologies needed, and the extra capabilities needed can be developed short-term; in 5-10 years for instance. "*It doesn't mean we have to invest in research for 50 years before we can do anything*" (Manager, Unit two, DomOil, 2017).

Gaining knowledge about the physical conditions is important for DomOil, and they have a scientific-based approach. Regarding the Barents Sea and understanding the physical environment one of the respondents explains that it is an area where the company has a lot of data available. So, in that sense one of the respondents illuminates the risk and uncertainty aspect by it being more uncertain how much oil there is underground in the Barents Sea, than the evolvement of the physical environment. For DomOil perceptions about the Arctic is relevant, and the Arctic in general is hugely respective. Even though the Barents Sea is classed as "workable" after thorough environmental assessments, and DomOil has the technologies to manage the area, one of the respondent explains that environmental factors such as distance, remoteness, darkness, polar lows, waves, and heavy weather needs to be managed. Ice in the Barents Sea are very unlikely to appear and certainly not every year, but in terms of effective ice operations they need to be prepared. It could cause accidents as major oil spills, but also a risk in their normal operations. Other effects of climate change such as presence of fish mammals and birds, and their influence on the eco system, must be understood and managed by DomOil. As the Arctic is a long-term operation, many aspects need to be included in the portfolio of the company.

> "*We're not in the Arctic cause it's the Arctic, we're in the Arctic because it is one of the most attractive places to be. It competes in terms of prioritization, all the other geographical areas, it just so happens that the Arctic is sufficiently attractive- but we want to be there*" (Manager, Unit two, DomOil, 2017).

In addition to economic value considerations such as carbon tax in pricing and valuations, as well as carbon footprint in potential business opportunities, one of the respondents highlights that DomOil have to fact in climate change. This is another careful factor in the Arctic strategy of DomOil and in its valuations. One of the respondents points out that climate risk can be evaluated in terms of where they are, how long-term it is, how much it costs, and can also be linked to the social license to operate where concerns regarding oil spill, which is a local risk, and questions about their presence in the Arctic should be evaluated as the Arctic for DomOil is a being fairly long-term involvement and investment.

5.1.4.4. Economic risk

No special emphasis is made by any of the respondents from DomOil on economic risk. The closest to a finding in such manner is how production drives costs. From DomOil's perspective, the Barents Sea and production there drives costs because of the infrastructure as it is far away from land and it can be cold where low temperature is a bigger problem during the winter than ice is. Even toilet paper can in such case be seen as a risk as the respondents highlights because of the transportation costs are present. At the same time the reservoirs is shallow and relatively easy wells to drill which makes it cheaper. One of the respondents highlights that there are more complicated wells in the Norwegian Sea and the North Sea compared to the Barents Sea.

> "*Everything that concerns a bump to pipe, toilet paper, everything, right. It costs more money to get it out there than a field closer- but that is included in an economic analysis before deciding to develop a field. So that it is colder in the Barents Sea is kind of not a risk but a physical fact- that is how it is. You must pay for warmer mittens there than you have to further south*" (Manager, Unit one, DomOil, 2017).

5.1.4.5. Regulatory risk

Understanding the environment might have impact on both the regulatory- and environmental framework for DomOil. One of the respondents uses professional discussions with the Norwegian Petroleum Safety Authority Norway as an example; if the authorities requires DomOil to treat the statistics the company has found in another way they are already being used, it may become a risk as there can be consequences as for example higher costs and change in design of installations. The respondent further exemplifies this with ice management; it requires special climatic and atmospherically circumstances for ice to arrive in the open area in the Barents Sea. "*It is almost like a non-entity*" (Manager, Unit one, DomOil, 2017). At the

same time, there might be rules for ice management as for example having a boat stand-by for ice management just in case. The regulatory risk arises if the Safety Petroleum Authority Norway puts a requirement regarding having a boat on stand-by for ice management.

Another regulatory risk for DomOil is competition amongst different institutions and players in the regulatory system in Norway. As the different institutions consider themselves having the leading expertise in their specialized areas, these actors can end up competing rather than working together. This makes it difficult for DomOil in certain cases. There are huge amounts of assessments in beforehand of applying for a license where the license is based on evaluations of how the company can explore, develop, produce, and create commercial value. DomOil experienced an example: after the opening assessments and licenses nominated and rewarded, their next step was to apply for drilling. The Norwegian Environmental Agency cleared the drilling, but in the same turn also put a time restriction where drilling only could be conducted in a certain time of the year. One of the respondents explains that such restrictions could affect the whole reason for being in those licenses, and could potentially throw out the whole money case for that license. In this example, it all worked out all right, but the competitive aspect in such industry it can become a risk to the whole attractiveness of being in an area. The respondent emphasizes that any restrictions on a license should be forwarded when awarding licenses and not when someone pushes an opinion forward.

On a global perspective DomOil sees the Norwegian regulatory in the sense of a science and research approach, as "*second to none*" (Manager, Unit two, DomOil, 2017). Norway is "*absolutely the best place to be in the Arctic*" (Manager, Unit two, DomOil, 2017). As more complex challenges evolve in the North close to the East and the polar front, "*which is very messed up in the regulatory system and in the actual government management plan- so messed up, I mean, it's just beyond hope*" (Manager, Unit two, DomOil, 2017), having to deal with different authorities with different views and opinions DomOil perceives this as a potential risk. Also, in relations to the management plan which has an update for year 2020 in Norway, it is important for DomOil to already now be focusing on risks and doing it properly. One of the respondents explains that even though production from any fields will not be conducted yet, adjustments and considerations needs to be of current interest a lot earlier than before getting to the actual point of development. This to not make it unnecessarily challenging for DomOil's operations in the Barents Sea. "*So, we have to be far ahead of ourselves*" (Manager, Unit two, DomOil, 2017).

One of the respondents compares Norway to the state Alaska where the regulatory authorities are functioning as enforcements. In terms of such the Norwegian authorities' way of execution stands out as in the Norwegian offshore, the Petroleum Safety Authority Norway (Ptil) is perceived by DomOil to have a firm, but more stretching approach towards the industry. In general, DomOil feel happy about the regulatory system.

5.1.4.6. Political risk

Understanding all the potential environmental impact is very important. The real risk there explained by one of the respondents, in terms of consequence, is that if DomOil doesn't consider these aspects and do their business in the Arctic properly, the regulatory framework might become stricter. This can in turn result in companies losing the ability to develop in the Barents Sea and/or strict shut down conditions. In addition to this DomOil is aware about how the perceptions, as mentioned earlier, also color the public view. It is explained by one of the respondents that organizations and foreign countries have expressed concerns about, for example, an oil spill in the Barents Sea. So far, these stakeholders have trusted the Norwegian administration handling its sovereign sector. As the climate change is becoming a global issue, administrations such as the European Parliament are addressing their concerns, and if these stakeholders decide to push their views DomOil sees this as something that can affect Norway as a country. Changes in policies is exemplified by the respondent. DomOil seems concerned that acts of public, and other countries policies and views, affect their ability in Norway- and that it is no longer a sovereign issue.

> "(…) *They don't like the fact that we're drilling in the Barents Sea cause they're thinking it's causing climate change, so the Arctic has become a global signifier of climate change where the view is- the perception- in order to mitigate climate change we shouldn't be in the Arctic*" (Manager, Unit two, DomOil, 2017).

DomOil recognizes the activities in the Barents Sea to easily become a bargaining factor within the political system. One of the respondents explains that Norway has a very fact-based approach where the companies do the science and assessments to show that what they are doing is responsible. After this the company then move forward in the process, but the respondent emphasize that perceptions and the social license to operate is increasingly affecting Norway. As an example, one of the respondents points out that politicians do not necessarily have to be experts of the Arctic nor oil and gas to become leader or responsible for such department, and

are as other people equally receptive to perceptions and social media. It is being pointed out that politicians want to be elected. The politicians therefore respond to their electorate, and one of the respondent, a bit discouraged, points out that the politicians are adjusting their approaches in order to get votes. These adjustments may not be scientifically correct. Further the respondent has noted some of the debates within political institutions about the Arctic to be depressing and scientifically unsubstantiated. The lack of facts is missing in the heart of the discussion. In addition to this, one of the respondents points out that the younger politicians entering the political arena seems to go greener, and maybe don't have the exposure to geopolitics and the global perspective. The concern for DomOil is that some voices account a lot louder than others.

DomOil points out that they do not lobby in Norway the way they would be doing in for example the USA. They want to be making sure that the right things are focused on and that Norwegian policies does not end up being individual people's perceptions. But how to make sure of this staying on track without being seen as a company trying to lobby or steer is a struggle for DomOil.

5.1.4.7. Country risk

As they have many international operations all over the world it would have been interesting exploring how DomOil considers the different risk aspects included in country risk. But, as DomOil is a domestic company, country risk is not seen relevant for this particular study by the author.

5.1.5. Managing risks

As explained earlier the process for being an operator and/or licensee requires following the body of rules already existing and providing the Ministry with certainty that the petroleum company has done all measures necessary regarding the requirements in the Norwegian offshore. For DomOil, which is an established actor, the process to gaining approval/authorization and licenses might not be too time consuming. One of the respondents explains that development of oil fields is a huge investment requires gathering of data and knowledge by the company. This is not alone done by using statistics, but by conducting seismology samples to understand what kind of reserves the company is dealing with and what kind of area they are dealing with. DomOil try and build competence and move stepwise; they don't jump straight in the deep end, but take on a bit more challenge gradually. The company

have built experience and technology, and they "*don't move faster than technology allows us*" (Manager, Unit two, DomOil, 2017).

During the evolvement of the petroleum industry DomOil as experienced a shift from not sharing knowledge, to an understanding that all actors is in the same boat. If other companies made a huge blunder then it also made its impact on other in the same industry. Because the domino effect of such is present, and companies are aware of this, it seems to have bettered the cooperation. The respondent highlights that DomOil is not served by having knowledge that another petroleum company does not have regarding for example the physical environment. It is pointed out by one of the respondent that the only situation where competition is relevant is in occasions where DomOil bids for exploratory license. In such DomOil needs to have more information than their competitors.

> "*It is important that the only occasion where there actually are competition is in connection with exploratory licenses (…) – when we need to know that we know more than our competitors that increases our access to exploratory areas*" (Manager, Unit one, DomOil, 2017).

As an illustration of how multidimensional the Arctic is DomOil have put down much resources looking cross-boarders to see how it all fit together. This to make sure everything was pulled together across the strategy through to technology, to the license to operate, to stakeholder acceptance and "*try and pull those together and see the risks and the challenges*" (Manager, Unit two, DomOil, 2017). The respondent highlights this as a key enabler for the company to move more robustly ahead in the Arctic, to make the right decisions and to be prepared.

One of the respondent also expresses that the companies on Norwegian offshore has different expertise. The domestic company has much competency regarding understanding of the physical environment. Despite of many smaller companies also competing in the offshore industry the growing development of the expertise in the bigger companies such as the company makes it difficult for the smaller to gain the competitive advantage they seem to be looking for.

5.2. InterOil- the international company

An international licensee holder in the Norwegian offshore with most of its exploratory experience from Europe and Asia.

5.2.1. Defining risks

Risk for InterOil defined as the probability for an event to occur multiplied with the consequence. Risk is potentially positive as well as negative, and refers to an event. InterOil has defined risk, but not uncertainty. The procedure the company uses is aimed specific towards events, and therefore the term uncertainty is not defined. Uncertainties are considered in their procedures by the work of regarding probability. Recently the Petroleum Safety Authority Norway (Ptil) started focusing a lot more on uncertainties in the industry, and one of the respondents highlights that uncertainty have gotten more focus within InterOil as well. Further one of the respondents explain that the manageability and uncertainty requires additional analysis in different situations. The plan is that in the next upgrade of the risk assessment uncertainty and manageability will gain focus as well as other areas that exist in their procedure. One of the respondents explains that in each of the risks InterOil is, or can be, exposed for, the company question itself whether the risk is manageable and if they can influence the risk. If the answer is yes then they have the ability to reduce the consequence. If the answer is no then they as a company need to consider carrying out measures to influence it or just let it be as it is. Same goes for uncertainty. This influence the risk picture as it can increase or decrease the risk.

> "*I believe risk, risk, what we divide risk and uncertainty, is that risk refers more to an event, while uncertainty refers to an expected outcome. Or the uncertainty towards an outcome* (...) *We have not defined uncertainty- we have defined risk, but we have not defined uncertainty, so when I say we divide those is it because I mentally view uncertainty on another side- this is not specific in the procedure, but the procedure is aimed towards concrete events.*" (Manager, Area X, InterOil, 2017)

5.2.2. Approach to ERM

Identifying risk in InterOil is done by different departments in the company since the different personnel there have different types of competency. Therefore, as one of the respondents explains, each department should manage their own risks. In other occasions where subjects such as company risk is focused on, the whole company gathers to identify and assess risk together. During the brainstorming, all risks are written down and evaluated on basis of whether

it is of current interest or not. All of the company's employees participates in this particular example. In the evaluation, the respondent explains that InterOil uses a risk matrix based on their assessment on current fields. Risk is divided in high, medium and low level risk colored in respectively red, yellow and green. This is known as the first step InterOil calls "plan and perform risk assessment" where the whole risk picture is taken into account. Next step is "treat risk". The risk picture is assessed through the ALARP (as low as reasonably practicable)-principle. Questions such as which mitigating actions is needed to reduce risk, what kinds of investments should take place in order to reduce risk is on actual. The ALARP-principle applies for each risk assessed.

Risk assessment in InterOil is a topic in every leader meeting which is once every month. One of the respondent highlights that information specific meetings, meeting where all employees of the company participates, is every two weeks. There exists no routine for risk update, but the respondent explains that if there appears relevant information this becomes a is subject on every leader meeting.

5.2.3. Identifying risks

Probability and impact is a part of the calculations of risk and are used as estimates in their risk maps. This is prominent in the work of reservoir estimates and analysis tools such as Monte Carlo or Six Sigma are used. One of the respondents explains that the risk register that InterOil uses in different procedures defines the roles that are supposed to administrate the different defined risks. Managing director, office administrator and HR-manager are so far the only explicitly defined roles in the procedure in risk assessment system. In the same turn the respondent points out that the system InterOil uses makes it possible for both internal as well as external actors to edit in it. The respective actor does not necessarily have to be an employee to be granted permission. For InterOil this is a way to effectively include resources in for example projects from anyplace in the world. This risk procedure contains chapters detailed with definitions, participants and focus areas. This kind of system allows information sharing both internally and externally. This enables everybody working in, or with, InterOil to have the same insight of information in an effective way. In the same time the procedure is used for development internally as well. The respondent further explains that in given project or procedures the participants and definitions might be limited. The basis of InterOil's risk procedure is supposed to be generic where the same principles are used all over, but as the

respondent from InterOil points out; different aspects are considered at different times by the actor responsible for the operation in the risk assessment procedure.

> "(…) *the procedure is not relevant in relation to risk assessment regarding the well program then the HR manager- he has probably something to contribute with as well-spud personnel, geologists, geophysics and those who designs wells and everything enters the picture*" (Manager, Area X, InterOil, 2017).

The risk procedure list is updated relatively and the respondent explains that the risk assessment is developed based on best practices and how things are done in the industry.

5.2.4. Critical risks

Following in the next subchapters are findings regarding the strategic risks referred to in the theory chapter.

5.2.4.1. Strategic risk

In the question regarding considerations InterOil has done related to strategic risk, one the respondents explain that a huge part of their strategy is based on the High North. InterOil wants to develop more in the Norwegian Barents Sea, and explains that this corresponds with the mother company's strategy regarding expanding international. Considerations done by InterOil is to analyze what risks are related to the High North. Analysis on infrastructure, planned field development and political risks are factors one of the respondent highlights. In the same turn the respondent also points out that all risk assessments and analysis cannot be provided to me. But in general, InterOil has analyzed whether this can be a show stopper for the company. To further secure InterOil's strategy an external advisor company conducted a benchmarking on InterOil's strategy towards other petroleum companies.

5.2.4.2. Reputational risk

InterOil expresses that they try to considerate reputational risk in all their activities. In their risk map it is how their home country operates and is perceived by the public that is noted as a reputational risk. Consequences such as challenges with recruiting is emphasized by one the respondents as a risk attached to reputation. Even though InterOil is not directly connected to the actions that the home country conducts it is something that they consider in their risk assessment. Focus on reputation in different aspects of risk considerations are highlighted within the organization. It is challenging to manage and restore reputation if lost, and is seen as one of the most important risks.

"(…) *regardless whether we are a part of it or not it contributes to, or can contribute to our reputation* (…) *that it can have consequences compared to especially on the recruiting side, but also even though the Norwegian authorities are extremely objective and clinical in how they manage things in relation to the regulations, it is still people that sits and handles things at the authorities that probably also is colored by the general press*" (Manager, Area X, InterOil, 2017).

5.2.4.3. Climate risk

InterOil's evaluations regarding the Barents Sea considering seismic samples, analyzing pools and be open for possibilities are done by one of the departments in the company. InterOil views the Barents Sea as a lower risk area compared to the North Sea and the Norwegian Sea. This is because of milder weather conditions, commercial expectations towards findings are higher in the Barents Sea and more shallow reservoirs. At the same time some specific challenges exists: immigration of sea bird are one of these. Also, even though the respondent describes the weather conditions in the Barents Sea as milder in connection with wave length and wind, some challenges such as polar low pressures and temperature can occur. Challenges with ice is also a risk factor; even though there has not been recorded ice in the areas around Kropfjell and Bear Island (Bjørnøya) there is a statistical chance for ice to occur during the winter. In total InterOil does not view the physical environment in the Barents Sea as a risky area.

"*But generally speaking, in total the Norwegian part of the Barents Sea is a low risk area, but with certain challenges. In some parts of the year immigration of sea bird in some areas and – but that is very specific things and many environmental analyses has been conducted. The weather is kinder than the Norwegian Sea and the North Sea, commercial lower risk because of lower drilling costs since the reservoirs are shallower and the water is relatively shallow, and you expect higher findings. So, sum a sum a rum the Barents Sea- we did a benchmarking of the Barents Sea against other offshore regions in the world, and the Barents Sea is probably the most attractive offshore area in the world to be in as an oil company.*" (Manager, Area X, InterOil, 2017).

5.2.4.4. Economic risk

In addition to shallow well drilling my respondent from the company also emphasize the taxation system in Norway, where the community gets 78 percent of the surplus, having a risk moderating effect. In turn one of the respondents argues that this leads to the Barents Sea being less sensitive for the ups and downs in the oil price. Investments made in the Barents Sea,

because of the need for less capital, the respondent highlights how it removes some of the risk for an investor and puts one faster in a position to make money. If the investor is risk averse, which many are, the Barents Sea is relatively speaking a comfortable place to invest.

> "*This means that in a developmental phase will have less need for capital requirements and you will from the moment you start producing faster get in a position where you have a positive cashflow. So you remove a lot of risk for those who invest. On the flip side of it is of course that you don't get much back in the earning period since the community gets this* (…) *but the effect you gain a setting where you have relatively low financial risk, low capital demand, fast in an earning position. Yes, you lose a lot of the potential surplus, but it removes your risk both on the expense side and- and it sounds weird when I say removes risk on the income side, but you are not that exposed for fluctuation. If the oil price goes up here than the most of it, almost 80 %, goes to the community. So you actually just buffer on the 20 %. So you have little joy of, as oil company not society, but we do as oil company have less joy of an increase in oil price in the Barents Sea than we have in other places in the world. On the other side are we less exposed for a decrease in oil price.*" (Leader, InterOil, 2017).

InterOil has also perceived a general trend where more of the American market operators retreat back to the States to deal with shale oil. One of the respondents highlights that there are also change in other market structures where companies who were investing in upstream business retreat to its core business. In addition to this, cases of smaller exploratory companies which business model has been to find and operate more effectively than the bigger actors, and sell their finding to the bigger oil companies. Now other actors, both national such as Statoil and Aker BP, and international, that has experience and capital find oil independently, makes less need for the smaller companies. The Barents Sea is a long-term operation and requires huge investments. "(…) *Then you need a lot of money to develop this. It is not for the local sausage kiosk on Ørlandet*." (Manager, Area X, InterOil, 2017).

5.2.4.5. Political risks

Considerations identified so far regarding political risk that InterOil focuses on are in connection with the Norwegian tax office, the Paris Agreement that Norway has ratified, licensing in the Barents Sea and the political powers from Governmental changes due to election autumn 2017. The respondent points out that political risk belongs to the corporate level and is on the whole managed by the general manager in InterOil. The company has also

two-parted the political risk, where they have one aspect related to definitions of the framework, and the other one is related to compliance of the framework. The compliance of the framework is by InterOil seen as regulatory risk, and will be highlighted in the next chapter. One of the respondent points out the project BaSEC[3] is a competent cooperative organization amongst the petroleum companies where different regulatory requirements that the petroleum industry needs to be aware of are registered. The project is not perceived as fully developed by InterOil. InterOil is positive to the increasing cooperation in the High North, but believes there is still room for improvement.

5.2.4.6. Regulatory risk

In their procedure one of the respondents explains that compliance lists up different laws and regulations that the company needs to follow. Assessing what kind of demands present and how the company is fulfilling its role in comparison to these are of subject in a compliance matrix. In this matrix evaluation factors/criteria are measured in three degrees; unacceptable, controllable or if it does not have any risk element what so ever. These constitute the risk levels in the compliance matrix. Changes in the legislation might become a risk if for example the government decides to increase taxation of CO2[4]. As this has happened before, the respondent points out that InterOil need to evaluate how it affects the company if it happens again as it can influence the financial aspect of developing a field.

Cross-border coordination of activities in the Barents Sea is something InterOil emphasize as something the petroleum industry can profit from. Especially harmonization of regulations is illuminated as an action that is needed in the industry for petroleum companies to benefit from other countries expertise. The respondent uses the North Sea as an example. Here coordination of activities between Great Britain and Norway has been a subject the last couple of decades. According to the respondent this structure has not been handled especially effective as the use of rigs from the English side cannot be used on the Norwegian side. In general the respondent emphasizes that the cooperation in the High North could be better and is preoccupied with utilizing resources between Norway and Russia. One of the respondents highlights that if the

[3] Barents Sea Exploration Collaboration (BaSEC) is a collaboration between Statoil, Eni Norge, Engie, Lundin and OMV and includes 16 operating companies. (Norsk olje & gass, u.d.).

[4] CO2 = carbon dioxide

regulations are not harmonized between the Russian and the Norwegian in the Barents Sea the coordination of resources might become a risk. Even though the respondent doesn't view itself as an expert in the area, the information from colleagues and the industry has highlighted (current political) sanctions as challenges for cooperation in the High North. The respondent illuminates that harmonization of regulatory framework is not something that is done overnight. It is something that requires work from a company's perspective as well as on a governmental level- and it takes time.

> "*And I am talking about resources such as for example if there are different regulations on rigs on Norwegian and Russian side, then a Russian rig cannot immediately be on the Norwegian side and the same the other way around. You may not if you are out flying with a helicopter – let's say there would occur a need to pick a person up from somewhere that is hurt or ill or something like that, then you cannot immediately land a Russian helicopter on a Norwegian rig, or a Norwegian helicopter on a Russian rig. There might be differences in technical demands, there may be differences in banal things such as systems to tank fuel, it is more of a – what can I say – if you get it right then you'll experience an upside because you get to utilize the resources in a significant way, but if you don't then the costs in the operations will probably be higher, and one is less competitive as a region. So, it is more of a lost opportunity than a real risk*" (Manager, Area X, InterOil, 2017).

One of the respondents points out differences in communication and structures from neighbor countries compared to Norway. If there were to occur an emergency InterOil sees challenges with these differences. Even though there exists cross-border cooperation in case of emergency, the differences in structures can impose a challenge and there is much to gain from an improvement.

> "*There already exists agreement to travel across the Russian borders if there is an emergency, but we believe there is a lot to gain through improvement of this. It is differences in communication, structures, leadership structures, report structure on Russian side compared to Norwegian side* (…)" (Manager, Area X, InterOil, 2017).

5.2.3.7. Country risk

InterOil perceives the Norwegian Petroleum Directorate and the Ministry of Petroleum and Energy as clinical and objective actors. Though they are a foreign company in Norwegian offshore one of the respondents points out that they have been welcomed by the authorities in

different forums where topics such as cooperation has been on agenda. InterOil highlights how the Norwegian petroleum industry in terms of sharing of information and openness between companies, is different from other offshore areas. This cooperation in the Norwegian offshore is important for InterOil to further pursue.

As the mother company is foreign, InterOil needs to follow the requirements the mother company impose. One of the respondents explains that their management system follows both the Norwegian regulations, but also the regulations from the mother company. InterOil must therefore, as in a high degree as it is possible, in their formal management system and procedures follow the requirements the mother company sets. So, as long as this is not in conflict with Norwegian requirements InterOil fulfills this in the terms in the host country as well as in the foreign.

> "(…) *we need to follow the demands from- when we form our management system which risk evaluation is a central part of, we start with the Norwegian regulations. These we need to follow. Then we look at the regulations the parent company impose, and we follow these as long as they're not in conflict with Norwegian regulations.*" (Manager, Area X, InterOil, 2017).

Regarding improvements of structures the company highlights a conversation with the Ministry of Petroleum and Energy. The guidelines the authorities follow are the ones stated by the Arctic Council which says that "*every country is responsible for making sure of the safety and preparedness in each own territory.*" (Manager, Area X, InterOil, 2017). As my respondent highlights "*it does not say a word about how to cooperate across.* (…) *I believe we have a long way to go*." (Manager, Area X, InterOil, 2017).

5.2.5. Managing risks

InterOil's mother company has a strategy that is developed on a company level. InterOil's strategy is developed accordingly to that. The mother company has its business strategy, and with this as a basis for InterOil's business strategy is formed in supporting its mother company's strategy. The mother company focus for example on international development and growth. This influence the business strategy of InterOil. One of the respondents explains that to support the mother company's strategy InterOil evaluates what they can do. This puts focus for InterOil on questions such as how many licenses they should aim for and how they want to develop in different projects. InterOil's strategy is in a huge part based on the High

North and this is accordingly to the mother company's strategy to internationalize. One of the respondents explains that their strategy is analyzed and assessed. Risks such as infrastructure, field development, political challenges related to it were analyzed. Arctic areas and strategy are on the whole analyzed through the same process as explained under the previous paragraph "risk and uncertainty". As a part of developing InterOil's strategy workshops were conducted, and these led to an analysis where the main risk elements were highlighted. Afterwards InterOil hired an independent analysis- and advisory company to conduct a benchmarking of their strategy against other companies' strategies in the same industry.

> "*So what we did was that we got [external actor] to do a benchmarking of our risks- no, not our risks- they did a benchmarking of our strategy against other companies* (…) *that made a type of traffic light compared the risk for implemented strategy based on what other companies have done in Norway* (…) *So even though it is not a risk analysis compared to the risk procedure it is a risk analysis compared to see where we put the list and what we have being capable to implement before*." (Manager, Area X, InterOil, 2017).

In the company's strategy focus on how the company can differentiate itself is present. This is important when applying for licenses. The mother company has huge amount of data gathered from expeditions and experience in the Arctic. According to one of the respondents the knowledge and experience that InterOil and its mother company has is something that differentiates InterOil. In addition by having experience in the Arctic and having operations there can be used directly in the Norwegian Barents Sea. InterOil views this to as a possible contribution to improved coordination of preparedness planning and leadership. "*It is really one of our selling points towards the industry and authorities*" (Manager, Area X, InterOil, 2017).

Chapter 6. Discussion

The aim of this research has been to study how petroleum companies identify and manage risks in the Barents Sea. The empirical data reviles how companies approach enterprise risk management (ERM) and how they identify risks, and what strategic risks are perceived to be critical and how these risks are managed. The study reviles two major findings. First, companies approach ERM in a holistic manner, but that one of the case company approach risk identification in a more planned manner and the other in a more accidental manner. Second, how critical risks are handled differ in the two case companies. One company is working in a long-term aspect while the other one sees risk in a short-term aspect. The following sections will discuss the major findings by combining theory and evidences.

6.1. Holistic approach to ERM

This study shows that both DomOil and InterOil have a holistic approach to enterprise risk management (ERM). Risk is being assessed at all levels during their workshops including a big part of its company employees. The combination of strategy and risk assessment from both DomOil and InterOil fits with COSO's definition. Data shows that risk is being assessed at all levels of DomOil where they have a top-down, bottom-up approach. Having this escalator communication of risk enables identification at more level than one, and even top managers are willingly to deep dive into risks that is of high importance. The frequent meetings and risk follow up in both companies where leadership meeting, information meeting and risk assessments substantiate are present in both companies. InterOil points out that departments should assess specific risks related to their area of competency, but in the wholesome inclusion in the overall level indicates a holistic approach. This is according to COSO's definition of ERM that binds strategy to identifying risk. DomOil appears to have an approach to risk in a higher degree related to a risk-based internal control imperative, and InterOil maybe being more concerned about risks being identified to their mother company's visions- and in such terms relate to Mikes (2009) a shareholder drive imperative. Both companies appear to coincide with Bromley et al. (2015) where incorporating strategic risks in their risk portfolio, and considering risk with both a negative side as well as a positive.

As risk management is according to Lam (2003) to ensure a risk level in an acceptable range, and as Power (2004) highlights; values, ideal, accountability and responsibility, in additional to technical analytical practice, one can say that risk management is a complexity of different

factors. Including people from all over the companies to understand their tasks in accordance with the corporate strategy and expectations to communications across the whole organization, risk management could be done in a dynamic and holistic way of approaching risk. DomOil emphasizes how they cooperate with the top-level of the company and across business units to be sure that risks are being pursued and seen in a broader and bigger risk picture, and that it gets the attention it needs.

Neither DomOil nor InterOil has a definite way of answering how they define uncertainty, but perception of risk and how one chooses to conceptualize (Arena, et al., 2010) it into risk, is evident from the interviews that both companies does. As the latest change of focus on uncertainty by the regulatory authority, InterOil highlights that "uncertainty" and "manageability" has gotten two columns in their risk matrix, but as the changes is fairly recently it has not been tried in action so far. Regardless of what kind of terms the companies uses, through the leadership meetings, information meeting, and workshops and brainstorming, indicates that uncertainty has a way of being conceptualized into the risk aspect. To what degree and in a more detailed way is rather, ironically enough, uncertain.

6.2. Risk identification

To illustrate how the two petroleum companies identifies risk, the following sections will discuss their approaches. I argue that risk identification in DomOil tends to be more planned, whilst in InterOil the risk identification may in a higher degree be accidental. As mentioned in the previous paragraph data shows that both companies have workshops and brainstorming to identify a whole spectrum of risks. DomOil conducts workshops where all kinds of risks are being written on post-its just to unkennel everything. Same goes for InterOil that conducts brainstorming that at times includes all of the company's employees. They can have themes for the brainstorming, and all risks, whether it is of current interest or not, is being written down. I argue that these workshops will help to enable identification of different risks, but is highly dependent on the further assessment in evaluating the probability and consequence of such risks. Walker et al. (2002) found in their study the companies made an effort to gather groups across business units to discuss objectives and identify risks, and included qualified people to understand risk better. Both DomOil and InterOil does so. Both companies highlight that they have leadership meetings once a month where risks are put on agenda. It is though rather uncertain whether all parts of DomOil's business units have the risk map as an initial priority in each leadership meeting, but as data says; the norm is that it should be.

Data shows that a result from these workshops in DomOil is a risk radar, and in InterOil a risk matrix. Further in this study this will be referred to as risk maps. Similar for both is that they rank risks based on consequence, probability and in which way they are either positive or negative. As the risks are not static both companies respond to their respective risk maps in a dynamic way. The purpose is to be sure to manage and pick these up when they become real. DomOil highlighted that to use the risk map one must understand the company strategy. InterOil never commented such.

6.2.1. Planned or accidental risk identification

Data shows that InterOil has no exact routine for updating the risk map, but it is rather more based on risk appearance; the map is updated frequently as risk kind of turns up. Just to specify for further discussion: InterOil has a data collaborative software program referred to as risk system. Risk routine is how InterOil uses this program and follows their own norms to such. The totality of these two is referred to as the risk procedure. As data shows the company has specified roles to participate in risk assessments in the risk routine, but it is also highlighted that the administrator of an operation has the highest responsibility to consider if other roles are necessary to participate. From this I argue that the initiative of risk assessments contains major gaps. It is highly dependent on the people participating in a given operation to independently using their experience and knowledge to assess whether other roles not specified in the risk system. This conflicts with Aven et al. (2008) which argues that different risks are supposed to be identified through a structured and systematic analysis and evaluation by people with necessary competency.

Data shows that DomOil and InterOil identifies risk in two different manners. As DomOil seems firm in how they handle risks with frequent assessments, always trying to be ahead of themselves, how they identify risk is planned. InterOil differentiates in that manner. As it is evident from the data, InterOil can allow anyone to access the risk procedure. They also do not express a specific update routine for risk updates. Anybody with access have the possibility to edit in their risk system, and in such way the risk procedure contains gaps for how the company identifies and assesses risk. It can actually be in such manner that one of the company's employees are travelling and suddenly are aware of something is not already expressed in the program. The person responsible can then access the program and edit in a new risk or perspective that the individual believes is important. The written procedure is also not always

relevant where responsible roles are defined, and instead it becomes the judgement of managing director and/or others for the actual topic is relevant.

6.3. Critical risks

In this chapter, the different strategic risks from the theory will be discussed. There are many considerations, and not all risks are as complete as what chapter 2 implied. Turning from strategic risks to critical risks is therefore an implication based on the following discussions.

6.3.1. Strategy risk

Some strategic goals are transparent within the organization, such as InterOil's strategy to expand in the High North, or as DomOil's scientific-based approach and developing right technologies. Theory shows that strategic risk originates from companies' strategic objectives (Deloitte, 2013) and thus is often dependent on managers decision-making (Weller, 2008). This study has not been able to collect concrete data regarding the decision-making structure and continuous assessment of DomOil's or InterOil's follow up on corporate strategy. From the data gathered there are sprinkles of evidence that indicates that risk and strategy is actual in both companies. This is shown through most of the empirical data of the study and in the discussion. But it is relevant to point out that neither of DomOil or InterOil has emphasized strategy alone as a risk.

6.3.2. Reputational risk

Reputational risk is as illuminated by theory as a growing concern amongst companies in the energy sector as well as in the general. Turning the focus of such, being aware of the enormous power stakeholders have, petroleum companies should create a response for different events. Different stakeholders are influenced by perceptions, and it is challenging to control as it infiltrates from many holds at different times. It does not necessarily be because of an accident or hazard, but with increasing focus on Arctic and how the climate is (perceived) fragile, makes the companies present there needing to justify their presence there. The striking power of social media enables voices and perceptions travels fast and DomOil repeatedly during the interview saw their social license to operate as one of the biggest risks for them overall. So, DomOil really focuses on the impact reputation has. Deloitte (2013) points out how stakeholders are influenced by reputation, and the consequences of such, can be of huge impact. It can reduce investors willingness to invest, it can create resistance by NGOs and public opinions- and if these become big enough it can reduce the possibility for DomOil to operate in specific areas.

The domino effect by one stakeholder blowing up something (most likely) negative regarding a petroleum company, can be enormous and uncontrollable for DomOil. Throughout one of the interviews, DomOil turned to the influence of perceptions in aspects of different stakeholders. In for example risks related politics was emphasized because of the great influence perceptions have. The regulatory system, and perceptions about climate change, creates a huge risk seen from DomOil's perspective. How words are being spread quickly- voices that are not necessarily from a scientific- or facts-based stance and are being heard. This makes it hard for DomOil's operations to be socially accepted. Reputational risk is emphasized by DomOil in many different aspects, and they are strictly conscious about the major influence it has.

It is not only the public and NGOs who becomes a risk, but all aspects. Cases of reports made which gets a stamp by actors regarded as experts or authorities, but where the report is not necessarily reflect latest research such as the case of the Arctic Council. For the international company reputational risk is present, and they are aware that if reputation is lost it is challenging to gain back. Their focus seems though to be mostly in relation to recruitment and perceptions about their mother country. InterOil on the other hand focus more on the perceptions about their country of origin and how this influence the general perception of people, and how this in turn influence their possibilities for recruitment. Only once during the interviews was it highlighted by one of the respondents from InterOil that they need to be careful with their reputation, because once it is lost, it is hard to restore. According to Deloitte (2013) an increasing concern in the energy sector for reputational risk has appeared the last years as it is harder for companies to control. DomOil seems to be very well aware of what Deloitte (2013) found in their studies where reputation risk can easily escalate to a huge strategic crisis. Neither of the companies does not necessarily need to focus on the customers in such way Deloitte (2013) emphasize, but being aware of how perceptions infiltrate people, and in such turn through political risks (hence debates) and the domino effect on all stakeholders, is for DomOil of high importance. As this is so evident in DomOil's work, planning, and discussions, they are focusing on managing reputation risk. As DomOil is focusing on stakeholders, they also focus on how they can influence these perceptions and are aware of the responsibility they have. As Power (2004) points out management of strategies, and use resources in areas such as legal system and social media, is important for reputational risk management.

6.3.3. Climate risk

It is evident in the data that climate is not perceived as any major risk by neither DomOil or InterOil. I therefore argue that climate risk cannot be seen as a critical risk in this study. The expert from the Norwegian authorities did neither focus much on climate as a high risk, but emphasized that the demands from the authorities put on petroleum companies are significant. All in all the closest one gets too risky elements is the eco system, and physical factors such as remoteness, icing, polar lows and darkness. Yes, the Norwegian Barents Sea is much debated from all holds, and in many cases the negative influence petroleum companies have with their presence is in focus. The potential of major risks are present but for DomOil and InterOil these risks are not related to the Norwegian Barents Sea exclusively, but the Arctic as a whole poses physical challenges. Both companies actually emphasize that the Norwegian Barents Sea is a very attractive place to be because of the shallow ground, and milder climate (compared to other Norwegian offshore areas).

6.3.4. Economic risk

Regarding economical risk neither companies puts this as a risk focused on. As one of the respondents from InterOil highlights; it is not much they can do about the macroeconomic changes and challenges. In the same turn the same respondents focuses on the Norwegian Barents Sea being a predictable and attractive place to be, amongst other reasons because of the Norwegian taxation system and the area for being less sensitive to changes in an economic and financial manner. DomOil does not highlight any specific economic factors (other than higher transportation cost on toilet paper) as a strategic risk other than conducting certain thorough valuations before applying to areas. One can speculate that it is because of the same reasons as InterOil; it is nothing that neither of the companies roar over and in that manner according to theory that suggests economic risk as an external shock that can increase the vulnerability (Toksöz, 2014).

6.3.5. Regulatory risk

In general InterOil has a risk matrix which has an overview of compliance, and risks are measured in terms of “acceptable”, “controllable” or if does not involve any risk for the company at all. The financial aspect if the Norwegian government decides to raise their CO2 taxation can become a risk. InterOil’s focus is on harmonization of regulations cross-borders. DomOil focuses on the competing risk and how different authorities can influence the company’s operating path in the Barents Sea based on their different views. The regulatory

authorities might change regulations based on political factors and/or new research available, but it is not emphasized in particular for any of the companies. As highlighted by the expert in chapter "4.3." any change in the regulatory framework does not seem to be around the corner. Petroleum companies operating in the Norwegian Barents Sea needs to follow the requirements, and as these highly depend on the petroleum acting responsible and thorough. As Toksöz (2014) illuminates regulatory risk to be the complexity of a hotchpotch of regulatory frameworks, it might not be too strange that this is not emphasized in an especial high degree by DomOil or InterOil.

6.3.6. Political risk

Even though data shows that both DomOil and InterOil sees Norway as a predictable country to conduct business in, and the indications for it to continue are there, DomOil's point of institutions competing instead of cooperating. If this is a trend that continues, it might become a risk. Such as the case with the Norwegian Environmental Agency can become a real political risk as well as economic as it can make real influence on valuations made by the petroleum company. Also as the government party changes every fourth-year agreements from previous governments might be changed, and is something both DomOil and InterOil highlights as a risk. In the case of InterOil it is as the theory shows, political risk is not viewed as an important country risk with mature political institutions (Toksöz, 2014). Another aspect which DomOil is that lobbying is not especially acceptable in Norway as it is in the USA. It is not expressed as a political risk, but is something the company needs to consider in their risk management.

Both DomOil and InterOil highlights cooperation as an important step for petroleum companies to develop in the Barents Sea. There are some political challenges. DomOil focuses more on the competition between institutions in the Arctic areas that may become a risk for companies operating there. The example provided is that some authorities having regulatory and political power might not be clear in their communication. This can become an obstacle which is exemplified in chapter "5.1.4.5.". In the same turn, if these institutions behave in a predictable manner- which both InterOil and DomOil in generally sees the Norwegian actual institutions to do- uncertainty for companies are reduced. This might also be underlined from the what is written in chapter "4.2." about Norway and their long-term strategy where the Norwegian government focus on reinforcement of cross-border relationships.

The Norwegian Barents Sea is an area for international business, and for actors operating there many uncertainties exists. There are differences in Norwegian conditions compared to other countries where both the international company as well as the domestic company, which has cross-border operations, highlights Norway and its regulatory authorities to be cooperative, clinical and objective. Considering the environmental uncertainties Miller & Waller (2003) highlights- general environment, industry and firm specific- risk can be identified. As the international company highlights, and perceived as the biggest risk interpreted from the interviews, is harmonization in the general environment. Cross-border resources cannot be used without any more fuss, and without a harmonization of regulations between Norway and neighbor countries in the Norwegian Barents Sea can hinder utilizing the resources. Within the industry risks the domestic company is conscious on their actions in the Barents Sea. The whole industry might be influenced if the company doesn't fulfill its responsible role in the Arctic, and even though it is reflected as a risk for the company, it is in its whole a risk for all companies operating in the oil and gas industry

6.3.7. Country risk:

A foreign company faces many different risks when internationalizing, but data shows that InterOil has not emphasized any specific risks related to country risk. I argue that this is because of an incremental adoption to the Norwegian offshore. For now, InterOil is a licensee holder, and therefore has shared responsibility with other petroleum companies in the Norwegian Barents Sea. Risks might change as entry modes change highlighted by Ahmed et al., (2002) which is influenced by change in strategic decisions. In general, from chapter 5 it is evident that InterOil commend the Norwegian oil industry to have an openness and cooperative stance. Being an international actor where the mother company has set its requirements from another country's stance, the international company has to follow both the Norwegian requirements as well as its mother company. It could be seen as risk, as limitation or restrictions that Ahmed et al. (2002) highlights as possible international risks may occur, but InterOil has not specified this as risk. As the Norwegian regulatory framework is formed as mentioned in the previous paragraphs, with a more stretch but firm approach, InterOil has not highlighted any perceived specific risks. Only highlighted by InterOil is differences in for example leader- and preparedness-structures, and sees the harmonization of regulatory frameworks as a possible show enabler.

Figure 3: Main SRM findings- political and reputational risk

6.4. Long- and short-term management of critical risks

Enterprise risk management (ERM) focuses on a holistic approach to risk handling, and viewing the company in a wholesome manner. Risk are not necessarily approached separately based on expected duration, but rather by continuous work across business units and top-down, bottom-up (escalator) communication. As strategy and strategic objectives of a company is concerned with long-term thinking, the combination of ERM and strategic risk management follows this lead. Handling such risk is not necessarily done within a short period of time, but starting early to be prepared and equipped for what can turn into future risks- hence critical risks. This chapter will discuss how DomOil and InterOil manage their critical risks.

The findings in this study shows that DomOil has a long-term management of selected critical risks, whilst InterOil has a short-term management of selected critical risks. I argue this because data shows that DomOil has a solid strategy for working in the Arctic as they have put down a lot of resources assessing that area. As one of the respondents highlighted DomOil has enormous competency on the areas located within the Arctic(s). DomOil expresses a high focus on long-term risk regarding the Arctic as a strategy. As one of the respondents pointed out; DomOil needs to handle future risks already now. By engaging in industry organizations, and having a cooperative attitude towards the Arctic Council providing them with valuable industry

input, strongly indicates long-term engagement and management. As DomOil has put down human resources to handle Arctic aspects, it provides some sort of predictability in a somehow unpredictable environment. These resources have a dynamic and responsive role in the corporate strategy and within the company as a whole. This also fits with the enterprise risk management picture enabling the company to have a broad risk-based approach which Mikes (2009) emphasized in her study where other aspects such as non-financial and strategic objectives are included.

InterOil, as it is a daughter company of a foreign oil and gas producer/distributor, created its own strategy with a basis in the mother's strategy. Their strategy is in support of the mother company's strategy, and developing the business strategy was done through many internal workshops. Doing a traditional strength, weakness, opportunity and threat (SWOT)-analysis led to illuminate the main risk elements, and by hiring an external actor to do a benchmarking of their business strategy towards other company's business strategy, it seems to enable the international company to fortify their position and continuously work on their competitive advantage; differentiation. InterOil has much experience and knowledge from the Arctic areas and sees this a highly important competitive advantage when applying for licenses in those areas. In addition, InterOil has given the mother company's existence, experience and knowledge s a high position in their strategic focus and in that way being able to differentiate in a competitive market. Even though strategy in itself should be long-term approach, InterOil does not express much that indicates a long-term management of critical risks and the engagement seems rather short-term from the data.

Chapter 7. Conclusion

The aim of this study has been to answer the research questions:

"How does petroleum companies identify and manage critical risks in the Barents Sea?"

To answer such a research question two problem statements were addressed:
"*How does petroleum companies approach enterprise risk management and how are risks identified*?" and the second one "*What strategic risks are perceived to be critical and how are these managed*?"

This study will make two main contributions: Firstly, I claim that both the domestic and the international company have a holistic approach to ERM, but still the risk identification process may tend towards being deliberate or accidental. What DomOil expresses through their systematic approach to risk identification indicates a of high degree of control resulting in a deliberate risk identification. InterOil as well have frequent meetings and risk assessments, but even though their procedure and system is actively managed and used, their risk identification seems also to happen while employees are traveling, during ordinary conversations, and by enabling both internal actors as well as external actors to edit their procedure. This way risk identification, in addition to being planned also gives the impression of being accidental. They have their procedures with roles explicitly defined, but as the manager in InterOil points out: sometimes other roles need to participate instead, or in addition, to those already defined. In such case it is the judgement of the person responsible for the explicitly action who will make the decisions need taking.

Secondly, reputation and political risks are perceived to be the most critical strategic risks by the two case companies and they tend to be either short- or long-term managed. It is evident that reputational risk is of great focus in DomOil, and they are very conscious the major influence it has. Perceptions amongst ordinary people, organizations and political parties are of high importance. In turn, the domino effect perception might have on stakeholders is a critical risk that needs to be long-term managed. Even though there might not be a final solution for how companies handle reputational risk, an emphasize of the matter is of high relevance. Perceptions is a real threat, and an increase of focus on the matter should therefore be present. DomOil has put down much resources in risk management, to carry out measures to handle risks in a strategic and long-term aspect by assessing the Arctic, communicating with all

business levels and leaving nothing to change. In addition to this, by being consistently focused on having a scientific-based approach to its operations they provide organizations such as the Arctic Council and BaSEC with valuable input DomOil has a strong commitment in their own operations as well as the industry itself. InterOil on the other hand has a corporate strategy that supports the mother company's strategy, and their incentive to develop in the Arctic seems to have its base in their mother company's strategy. The expression the company then provides under such terms is a short-term approach. They are participating in forums absorbing information and providing their knowledge and expertise. But in general, InterOil gives an impression that a long-term approach is not present.

The framework for the study including the findings is summarized in Figure 4.

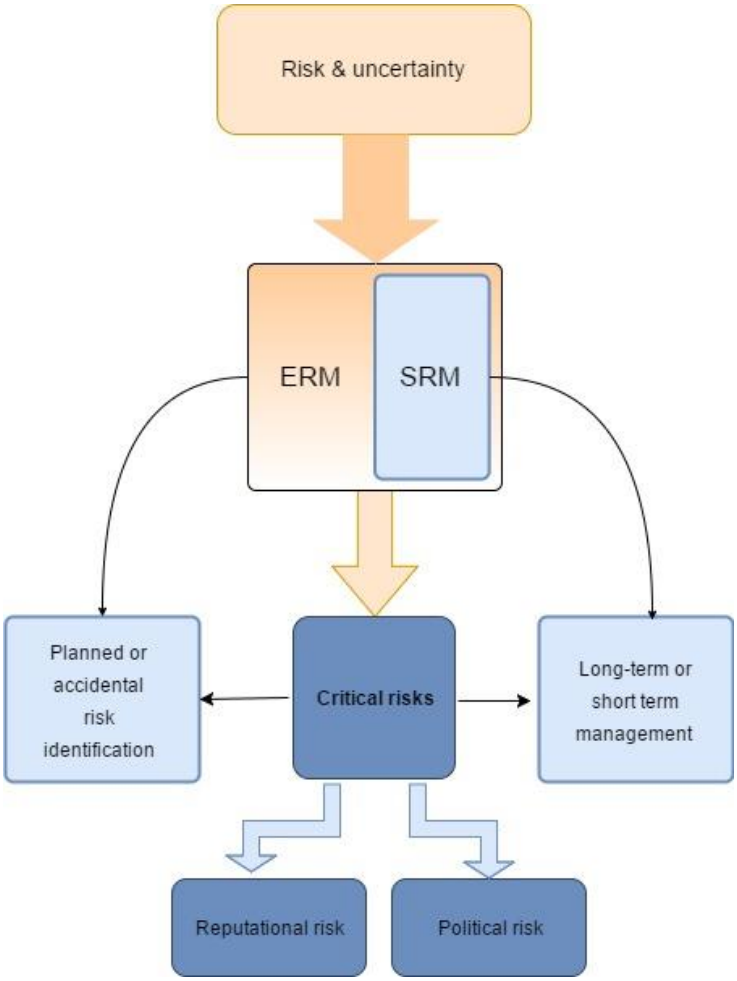

Figure 4: Illustration of main findings

One surprise finding was how the Arctic physical environment in the Norwegian Barents Sea was not perceived as risk by either of the companies. Both DomOil and InterOil expresses

that the area is noted as workable and a low risk area, and the environmental aspects is not emphasized by any of the respondents. Yes, they need to consider the environmental impact such as infrastructure, remoteness and how their operations influence the ecosystem there, but other than that the Barents Sea do not propose any special hinders. It is manageable.
Therefore, the Norwegian Barents Sea is a very attractive area for the petroleum companies to invest and operate in.

7.1. Implications

To identify risks according to the corporate strategy and the strategic management acting will enable the company to discover risks that might occur in the future already now and hinder them from becoming a major disaster. All petroleum companies, whether it is in the Norwegian Barents Sea or the Canadian or Russian Arctic much of the same challenges are faced and the stakes are high for everyone. Perceptions through stakeholders such as ordinary people, organizations and political parties develop fast, and what one may call the domino effect if a petroleum company has an accident can, and probably will, be fatal for the whole petroleum industry. We have experienced and observed the major publicity and debates from Deepwater Horizon, Exxon Valdez and even the helicopter accident in Norway last year, destroying lives of innocent people. These damaged the reputation of the whole petroleum industry.

This thesis was set to gain a broader view on how petroleum companies identify Arctic high stakes. Limiting it to the area of the Norwegian Barents Sea has shown that both the nation Norway as a petroleum nation and companies operating in the Norwegian offshore has a great responsibility. Practical implications from accidents and disasters in the Norwegian offshore can eventually result in foreign actors leaving the Norwegian petroleum industry. As the economies from this industry are extremely important for Norway the effects will influence the whole nation. Further the practical implications for this study is illuminating critical strategic risk and its importance in handling risk. This should be put on corporate agenda in petroleum companies as fast as even possible.

7.2. Limitations

Since I am no expert on the Arctic nor an experienced scientist this study must be seen for what it is- a final research paper in the program of master of science in business. The research period is from January to June and the time restriction is fairly present and controlling. To gain access to information for this study requires that central people in the company are willing to share

information- information that is not always possible to share in terms of it being visible, or because it may revile company strategies that might be held more closely at the company's heart. This study is not set as the final solution on what petroleum companies should manage its strategic risk. It is rather a study on what two petroleum companies, one domestic and one international, does and what risk factors there are and which the company gives precedence to. The subject is very broad and contains many different factors. This study may be seen as a scratch on the surface. Further research to gain an even better understanding of the phenomenon I studied I suggest two distinct possibilities: #1: Interview all top-level managers in the given company, and managers at different business units. This will provide a higher degree of insight in managers decision-making and a greater understanding of risk identification and management according to strategic objectives. #2: Conducting a thorough longitudinal case study over several years, where strategies, forecasting and other corporate aspects are developed and challenged, this would have contributed to an even higher degree of understanding. I encourage anyone interested in this phenomenon to study it further. And maybe for the benefit of safety and further prosperity there are many aspects that not only could but should be more illuminated in academic literature.

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In-depth interviews

Manager, Unit one, DomOil (2017) 1st interview session, 27.04.2017

Manager, Area X, InterOil (2017) 2nd interview session, 28.04.2017

Expert, Norwegian authority (2017) 3rd interview session 12.05.2017

Manager, Area Y, InterOil (2017) 4th interview session 23.05.2017

Manager, Unit two, DomOil (2017) 5th interview session 24.05.2017

Appendix 1

Interview guide

Anonymity
Confidentiality
Sound recorder

Company perspective
The respondents work tasks

Risk and ERM
What does [company name] consider at risk at a corporate level
Risk definition
Considerations regarding the terms risk and uncertainty
Routines for handling risk
Prioritization regarding these risks
Risk as agenda in [company name]
When is risk a risk?

Strategic risk management
Developing the corporate strategy regarding risk
Risk considerations regarding
- Political risk
- Economic risk and the global market
- Regulatory risk
- Reputational risk

The Barents Sea
What kind of risk assessments is important in the Norwegian offshore?
How are risks mapped/were mapped?
How does the Norwegian offshore stand out compared to other offshore areas?
- The Barents Sea different from other areas
  - Risk assessments