



UNIVERSITETET I AGDER

Analyzing potential effects of implementing Green Supply Chain Management practices:

A case study of the buyer-supplier relationship between Equinor ASA and Simon Møkster Shipping AS

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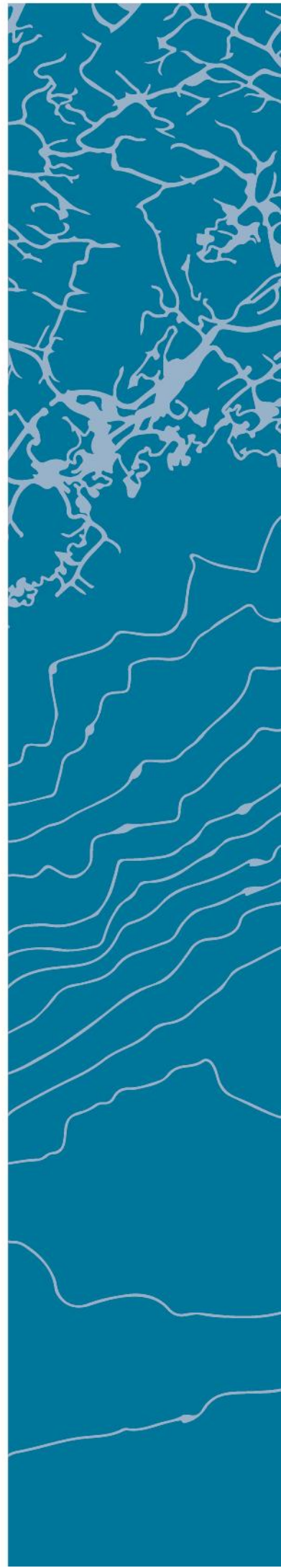
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I. Preface

This master thesis is conducted during the spring of 2019 and concludes the Master Program Industrial Economics and Technology Management at University of Agder. The thesis constitutes 30 points of credit and is based on a case study in the Norwegian petroleum sector.

We were highly interested in conducting a topical thesis, with the intention of finding a research area that were both relatively new and suitable for an explorative study. The main theme of this thesis is to explore the dynamic research field of Green Supply Chain Management. Here with a focus on collaboration, as we had unique access to a buyer-supplier relationship in the petroleum industry: Equinor ASA and Simon Møkster Shipping AS.

First and foremost, we wish to thank our supervisor Gøril Hannås, who has contributed with guidance and support throughout the assignment.

We would also like to thank Mariann Svendsen for valuable help with proof-reading the thesis.

Last, but not least we would like to show our gratitude towards the participating companies, Equinor ASA and Simon Møkster Shipping AS. Especially the representatives that took time out of their busy schedule to answer our questions. Without their patience and willingness to participate it would have been a much less rewarding journey of writing this thesis.

Grimstad, 24.05.2019



Martin Pettersen



Jørgen L. Johannessen

II. Summary

Green supply chain management is receiving a growing attention from both academia and practitioners, as a response to environmental concerns and an increasing synonymous between business operation and supply chain management. This concept is highly relevant for industries that extensively impact the environment. Where operators in the Norwegian petroleum industry is becoming aware of the environmental impact in their supply chain, especially within the marine fleet.

This thesis will therefore focus on a central practice to implement the concept: *cooperation with suppliers for environmental objectives*. The objective is to analyze how contract management may positively influence this practice, with an emphasize on the contracts. A literature review was initiated to develop an understanding of the research field and key aspects, and to iteratively construct the research model. The study was empirically driven, where a case study research was conducted based on the buyer-supplier relationship between Equinor and Simon Møkster Shipping. Empirical data was collected and analyzed from a total of seven participants, divided between the case companies.

Findings indicated that the standard contracting option: time-charter, results in a conflict of interest, especially with the increasing focus on energy efficiency. The supplier's lack of reasoning for collaborative efforts, appears to derive from an inefficient allocation of benefits. Time-charter contracts was therefore analyzed based on the applicability for energy efficiency, where empirical findings directed the attention towards the strategic fit of performance-based contracts. A conceptual change corroborates with this interest, where collaborative efforts for greening appears to be strengthen, as it potentially aligns their objectives and ties performance to an incentive structure. Enablers and operational barriers were further investigated, where the complex supply chain of petroleum was discovered as one of the key aspects. Hence, it would be demanding to challenge the standard and easily managed time-charter contracts, but at the same time increasingly important in an industry highly vulnerable to environmental concerns. The practice in focus is perceived as an antecedent for further implementation of green supply chain management and would therefore be part of a proactive response to a topical demand.

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1 Introduction

The environmental pressure is influencing every industry in today's business environment. This has transformed perceived best practices to the extent that business excellence not merely should include profit, but also the environmental impact (Srivastava, 2007). Petroleum is known to have an extensive impact on carbon footprint, both up- and downstream. The fact that almost 30% of total greenhouse emission in Norway originates from oil- and gas activity, shows both the potential and the extreme industry-specific environmental pressure (Gavenas, Rosendahl, & Skjerpen, 2015). Ergo, the environmental aspect is not a unique challenge by itself, but rather the severity and vulnerability correlated to the industry.

This inevitable interaction between industry and environmental impact makes it vital to innovate and restructure the supply chain, with a focus on both efficient production and transition to renewable substitutes (Thune, Engen, & Wicken, 2018). Supply chain- and operation management has evolved from a field that typically was based on operational and economic matters, to also address the broader environmental issues (Fahimnia, Sarkis & Davarzani, 2015). The importance of value chain efficiency, combined with the feasibility of renewable standalone solutions, illustrate the basis for a disruptive concept: *Green supply chain management* (GSCM). GSCM originates from both supply chain- and environmental management, with emphasize on a business-driven integration of a *green* dimension (Sarkis & Dou, 2018). However, according to Tseng, Islam, Karia, Fauzi & Afrin, (2019), the concept is broad and there exists no single definition to describe it completely. Therefore, as a thematic backdrop for the thesis and problem statement, it is important to find a focus area within the broadly defined concept of GSCM.

The literature differentiates between strategies and practices, where corporate strategies must translate to operational measures. These are referred to as *GSCM practices* and is seen as the actions that facilitate for GSCM implementation. This is a highly analyzed research area, where researchers often focus on the correlation between practices and performance (Zhu & Sarkis, 2004; Vachon & Klassen, 2008; Tseng et al., 2019). Tseng et al. (2019) further describe GSCM as a dynamic research field with associated practices that are highly industry specific.

Furthermore, researchers argue that most of the literature within GSCM has investigated the

manufacturing industry. This is based on the premise that traditional business operations have been detrimental for the environment, creating an increased pressure for adopting GSCM practices (Seman, Zakuan, Jusoh, Shoki & Arif, 2012). Thus, advocating for a gap within the current research field towards other types of industries, e.g. the petroleum industry, which has similar traits for environmental concerns. The research field has uncovered a multitude of possible GSCM practices, where *cooperation with suppliers for environmental objectives* is argued to be crucial for implementing GSCM, as well as an antecedent for other practices (Zhu & Sarkis, 2004; Swami & Shah, 2013; de Oliveira, Espindola, da Silva, da Silva & Rocha, 2018; Tseng et al., 2019).

Contract management is argued to impose a positive impact on implementing GSCM practices, especially for collaborative efforts with suppliers. Researchers posit a lack of literature that investigate both entities in a buyer-supplier relationship, where a focus on transforming a conflict of interest is perceived as one of the main challenges of the research field. This is often addressed through investigating the applicability of contracts, in response to the increasing vulnerability of environmental concerns (Barari, Agarwal, Zhang, Biswatjit & Tiwari, 2012; Ghosh & Shah, 2015; Zhu & He, 2017; Tseng et al., 2019).

Therefore, in an attempt to analyze a specific GSCM practice: cooperation with suppliers for environmental objectives, in conjunction with contract management, a problem statement for the case study is defined:

How may contract management influence cooperation with suppliers for environmental objectives?

As portrayed, environmental initiatives are a result of various types of pressures and incentives, where a potential for improvements correlates with supply chain management. These variables are often referred to as enablers or barriers, and influence the implementation of GSCM practices. (Sarkis & Zhu, 2006; Govindan, Mathiyazhagan, Kannan & Haq, 2014). This study will therefore investigate *enablers* and corresponding *operational barriers* as an underlying research question for the problem statement:

What enablers and operational barriers exist?

This thesis is structured as follows. *Chapter 2* is based on a literature review of green supply chain management, with additional focus on enablers and operational barriers. Contract management is further presented to highlight the relevance for this thesis. The last section in the theory chapter introduce a research model, identifying key aspects for answering the problem statement and underlying research question. *Chapter 3* portrays the methodological approach, of which, literature review and case study are the chosen research design. *Chapter 4* is a result of merging findings and discussion, which correlates theory and empirical discoveries from the case. Subsequently, an updated research model with findings is presented. *Chapter 5* highlights the key takeaways from this thesis, before *Chapter 6* presents future research suggestions.

2 Theory

This chapter presents relevant theory and pre-existing research to highlight the study aim, which is divided into three sections: *Green Supply Chain Management*, *Contract Management* and *Research model*. The first section will provide an overall understanding of GSCM as a concept, with subsections that illustrates the relevance of this thesis. This includes a review of the research field and reasoning, in addition to implementation of GSCM practices, focused on collaboration, enablers and operational barriers. With this established, essential aspects of contract management, including contracting for services and transforming a conflicting system, will provide the necessary substance to present and reason for the research model.

2.1 Green Supply Chain Management

2.1.1 GSCM as a research field

The origin of environmental management as part of a strategic practice can be traced back to the 1960s (Fahimnia et al., 2015). Although, it has become evident that research on GSCM has received increasing attention from the beginning of the 21st century (Tseng et al., 2019). An overview of the number of publications by year is shown in *figure 1*, to illustrate this trend within the academia.

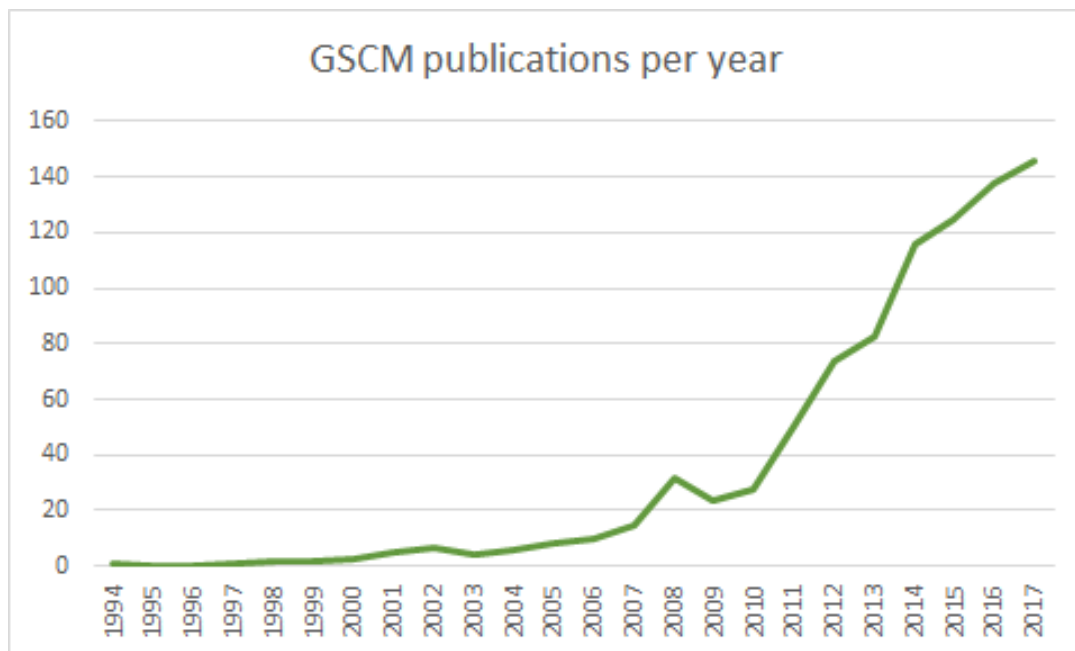


Figure 1: GSCM publications adapted from Tseng et al. (2019)

This graphic representation is retrieved from Tseng et al. (2019)'s review of literature published on GSCM from 1994 to 2017. The trend is also comparable with other literature reviews' representation of published literature on GSCM (Fahimnia et al., 2015; Maditati, Munim, Schramm & Kummer, 2018). As the research is growing exponentially, Tseng et al. (2019) draws a link to the increased awareness in several countries with large carbon footprint. Essentially, illustrating the interest for the field to address the environmental concerns by both the public and corporate organizations.

GSCM is argued to be based on both the research field of supply chain- and environmental management and is categorized as a subsection of the broader sustainable supply chain management (Srivastava, 2007). Researchers emphasize the concept as business-oriented, where there is a broad consensus to integrate a green dimension into supply chain management (Sarkis, 2003; Zhu & Sarkis, 2004; Srivastava, 2007; Sarkis & Dou, 2018). Here, both academia and practitioners claim that the concept could be a response to the increasing requirement of environmental thinking in operations structured as a supply chain. The researchers further posit that this has established GSCM as an important discipline in the academic world (Tseng et al., 2019).

The research field of GSCM is broadly defined, despite being characterized as a subsection. An extensive empirical study conducted by Zhu & Sarkis (2004) revealed a lack of consensus among practitioners and academics regarding GSCM, as this concept is based on relatively new fields and new terminology that describes older practices. Srivastava (2007) claim that this challenge is partly based on researchers defining the concept in correlation to their area of interest. This corroborates with Ahi & Searcy's (2013) discussion on definitional problems, and with Sarkis & Dou's (2018) notion that the research is dependent on focus and perspective. Tseng et al., (2019) therefore characterize the research area as dynamic with new dimensions regularly added, based on a systematic process of collecting data from reliable sources. However, there exists commonalities within the different studies on terms used to describe the concept (Sarkis et al., 2011). Tseng et al. (2019) illustrated the words most commonly found, shown in *figure 2*, to highlight the general focus areas in the literature.

(Ahmad, Rezaei, Tavasszy & de Brito, 2016; Raut, Narkhede, Gardas & Luong, 2017; Thune et al., 2018).

Traditionally, environmental actions were perceived as a sunk cost with little effect on the overall business picture. Walton, Handfield & Melnyk (1998) explained it as a destructive relationship between regulations and innovate actions, where changes were necessary to create a sense of urgency for greening measures. The negative correlation changed with an increasing attention from stakeholders, consumers and global politics towards a sustainable future (Green, Morton & New, 1996; Walton et al., 1998; Etzion, 2007; Sarkis, Zhu & Lai, 2011; Tate, Dooley & Ellram, 2011). This was exemplified through legislations such as Superfund, Sera and the Norwegian greenhouse tax (Walton et al., 1998; Bruvoll & Larsen, 2004). These trends are creating new challenges for business operations, correspondingly to an increased vulnerability towards value chain disruption (Cohen & Roussel, 2013). In this context, empirical research shows a potential to integrate environmental management from a holistic perspective to lower the total footprint (Vachon & Klaasen, 2006; Zhu & Sarkis, 2006; Soler et al., 2010). This has caused new challenges to increase economical- and environmental performance from a network performance, which will require transparency, monetizing environmental performance and applicable measures (Carter & Rogers, 2008; Nguyen, Laratte, Guillaume & Hua, 2016).

2.1.3 Implementing GSCM

The reasoning chapter illustrates why firms are both forced and motivated to focus on GSCM, in which literature differentiates between strategies and practices. Corporate strategies need to translate to operational measures, referred to as *GSCM practices*, that facilitate the implementation (Tseng et al., 2019). This transition is highly analyzed in the literature, where researchers often focus on the correlation between GSCM practices and performance (Zhu & Sarkis, 2004; Vachon & Klassen, 2008). Huang, Huang & Yang (2017) further illustrates this through classifying GSCM performance as: environmental, economic, operational and competitiveness.

Researchers have identified a severe number of GSCM practices, both internally- and externally oriented (Rao & Holt, 2005; Sarkis & Dou, 2018). Four empirical studies will be used to exemplify the extent and relevance of different practices. In an empirical study conducted by

Zhu & Sarkis (2006), the researchers investigated enablers, pressures and practices in Chinese automobile, power generating and electronic industries. This was characterized as a comparative study performed through questionnaires to managers on practices identified as *green purchasing*, *cooperation with customers including environmental requirements*, *investment recovery*, *eco design* and *internal environmental management*. Here, the focus was to investigate the importance of different GSCM practices. Some of the results indicated that implementation of GSCM practices was influenced by enablers and pressure from globalization and increased environmental awareness. Another similar study investigated the manufacturing industry in India, which identified essential barriers of implementing GSCM. The main takeaway from this research was the required coordination from all levels of the workforce and that identifying barriers was difficult due to the diverse characteristics of GSCM (Govindan et al., 2014). The third example from Sweden, investigated the consequences of understanding a sub-optimal use of *environmental information* in the Swedish food industry. Where the result indicated that *collaborative efforts* was critical for sustainable competitiveness (Soler et al., 2010). The last study addressed Western European manufacturing and service firms. Where researchers observed that *firm performance* and *top management commitments* could be an antecedents for *green procurement and green supplier development*. In addition, to the impact of green procurement and green supplier development on supplier performance. This research implied that both green procurement and green supplier development could impact supplier performance and that legitimacy concerns could drive basic green procurement, while top management was important for advanced practices, such as green supplier development (Blome, Hollos & Paulraj, 2014).

Empirical studies on GSCM implementation is shown to exist in various industries around the world and is used to analyze the effects of GSCM practices (Zhu & Sarkis, 2004; Sarkis et al., 2011; Fahimnia et al., 2015; Maditati et al., 2018; de Oliveira et al., 2018). However, as the research field is relatively new, there are many areas which is yet to be explored. The research that has been conducted in this field is mostly limited to the manufacturing industry, based on the perception of being the main culprit for the emerging environmental problems (Semana et al., 2012). Tseng et al. (2019) further identified that research on GSCM is predominantly conducted in China and America, where the researchers draws a link to the increased awareness and pollution levels in these countries. Researchers argues that the diverse amount of practices is

correlated to the industry-specific characteristics and dependent on the research area of focus (Srivastava, 2007; Tseng et al., 2019). The research conducted by Govindan et al. (2014) on the Indian manufacturing industry corroborate with this diversity of practices, illustrating a literature gap towards other regions and industries.

Key practice – Cooperation with suppliers for environmental objectives

Vachon & Klaasen (2008) defines environmental collaboration as an active involvement between the buyer and supplier, with the intention of jointly improving environmental impact on product and/or process. The researchers also stress that the main intention is to provide the means to facilitate for improving operations. This GSCM practice, often referred to as *cooperation with suppliers for environmental objectives*, has been addressed as a key commonality within the existing literature, despite the diverse number of industry-specific practices (Tseng et al., 2019). The practice is one of the most adopted, where Oliveira et al. (2018) further argues that it serve as an antecedent for the efficiency of other GSCM practices.

Vachon & Klaasen (2006) claim that the practice is highly important for integrating the supply network towards environmental concerns, where an example is to align goal and policies. In a more recent article, Vachon & Klaasen (2008) found empirical examples of this practice, such as supplier improvement of the buyer's processes and collaborative audits of operations. This is supported with Tate et al., (2011) suggestion that buying firms could benefits in several ways when suppliers adopt environmental measures. In this context, Sarkis et al. (2011) found that external GSCM practices could enable internal practices. This further corroborate with Swami & Shah (2013) findings that cooperation with suppliers is essential to coordinate and facilitate for performance.

An important discovery made by Tseng et al. (2019) suggests an increased attention on collaboration in research done after 2010, as part of GSCM practice and performance.

Although, the general conclusion is that there exist research gaps within the literature on implementing GSCM practices. Tseng et al. (2019) claims that a large extent of this literature lacks sound theoretical support, regarding the evaluation of the relationship between the enablers, practices and performance. Lastly, the researcher posits that there is a lack of literature that investigate the supplier perspective, when implementing GSCM practices.

Enablers and operational barriers

Environmental actions are a result of external and/or internal pressure and incentives, in which researchers argue that the full potential is obtained through involving the supply chain. These are often referred to as enablers and are based on a number of variables that support GSCM implementation (Malviya & Kant, 2017). There exists a plethora of literature on enablers, in which researchers argue the relevance for efficiently implementing practices (Lee & Klassen, 2009; Dubey, Gunasekaran, Papadopoulos & Childe, 2015; Malviya & Kant, 2017). As practices vary with industries and geographical location, the enablers identified to support these practices will likewise be affected. In this context Tseng et al. (2019) illustrate that new enablers in new contexts is discovered, regardless of the extensive literature on the subject. It is therefore important to identify enablers that could potentially influence the performance characteristics, when analyzing an implementation of GSCM practices. Researchers have increasingly applied *institutional theory* to identify- and explain enablers that originates from external pressure (Tate et al., 2011). In which Sarkis et al. (2011) further propose a connection between these external mechanisms and GSCM practices.

Institutional theory builds on the basis that economical rationality is not always the deciding factor for business decisions (DiMaggio & Powell, 1983). Within the institutional theory DiMaggio & Powell (1983) identifies three mechanisms where institutional isomorphic change occurs: *normative*, *coercive* and *mimetic*. *Normative* pressure is based on organizational desire to conform to socially relating requirements from various stakeholders. This pressure from governmental-, non-governmental organizations and stakeholders is essentially based on the increasing knowledge of environmental issues correlated with industrial operations. In addition to the increased effect of globalization and industrial growth in developing countries, making it challenging for organizations to ignore the factual results of operations (Walton et al., 1998; Sarkis & Dou., 2018). *Coercive* mechanism relates to the influence those in power inflict on enterprises. This could impact supply chain partners, which illustrate the disseminating effect that could occur throughout the network of enterprises in an industry Sarkis and Dou (2018). *Mimetic* mechanism refers to companies' imitation of successful competitors to cope with a competitive market. Thus, adapting to fluctuating market- demand and pressure is critical to operate in a sustainable supply chain. In such a climate, mimetic pressure could be established

towards other actors in the market and encourage an adaption of environmental practices (Tate et al., 2011).

Researchers acknowledge an unhurried transition within several industries, where barriers is identified as restricting variables (Sarkis et al 2011; Govindan et al., 2014; Raut et al., 2017; Tseng et al., 2019). Ahmad et al. (2016) argues that identifying these barriers, combined with an understanding of the alignment between SCM functions and strategies is important for efficient implementation of sustainable supply chain in the oil and gas industry. Hence, the enablers illustrate *why* the transition is essential, whereas operational barriers are crucial for *how* to operationalize the cross-disciplinary field. An important feature, is to translate strategies into action that makes an actual influence on performance from a supply chain perspective (Ahmad et al., 2016). This ties into the transformation from thoughts to action, and illustratively the difference between GSCM and greenwashing (Lewis, 2016; Tseng et al., 2019). The value correlated to a perception of environmental performance is the basis for greenwashing, a practice that actively promote the perception of an environmentally profile, where policies and performance are not equivalent (Lewis, 2016).

2.2 Contract management

Contract management could, according to Barari et al. (2012), positively influence implementation of GSCM practices. Researchers claims that applicable contracts could improve coordination and cooperation with suppliers for environmental performance from a supply chain perspective (Barari et al., 2012; Ghosh & Shah, 2015; Zhu & He, 2017). Here the research often focus on mitigating conflict of interests, through aligning the objectives for greening measures. Van Weele (2014, p.95) defines contract management as *“The process that ensures that all parties of a contract fully meet their obligations, in order to satisfy the operational objectives of the contract and the strategic business goals of the customer”*. This section will therefore present relevant theoretical pre-considerations of contract management that may influence the process of implementing the GSCM practice: collaboration with suppliers for environmental objectives.

2.2.1 Contracting for services

Jackson et al. (1995) highlights purchasing of business services as being essentially different from purchasing goods, which conforms with van Weele’s (2009) description of buying services

as distinctive in nature. There are according to van der Valk & Rozemeijer (2009) four key differences between buying goods and services: *intangibility, perishability, heterogeneity and simultaneity*.

Intangibility refers to the fact that services are intangible objects connected to the performance of a predetermined activity and are difficult to quantify. This complicates the negotiation on how to predict and fulfill a service agreement. Perishability points to the fact that services cannot be stored, where available capacity is therefore a major subject to agree upon between the customer and supplier. Heterogeneity views every service as unique based on the human factor, therefore a standardization of services is impossible. Simultaneity is described by the continuous interaction between the customer and supplier. Providing services therefore requires human interaction, creating an arena where employees is essential to the process (van der Valk & Rozemeijer, 2009; van Weele, 2014).

Li & Choi (2009) and Ates et al. (2012) analyzed the service process, focusing on the relation between different actors involved for delivery, illustrated in *figure 3*. The relation is based on three actors: buyer, supplier and end-customer, which typically is part of the outsourcing process. Research found the relation to be dynamic for service, whereas stable for manufacturing. Characteristics of the service triad range from a fully- to disconnected triad, depending on how firm the relationship is coupled. This has increasingly become an important dimension within contract management, where the correlation between the contracting options and coupling characteristics is focused, as this is identified as a root cause for service delivery challenges (Li & Choi, 2009; Wynstra, Spring & Schoenherr, 2015; Broekhuis & Scholten, 2018). Hence, buyers need to be aware of both the contracting process and the dynamic relationship within service delivery.

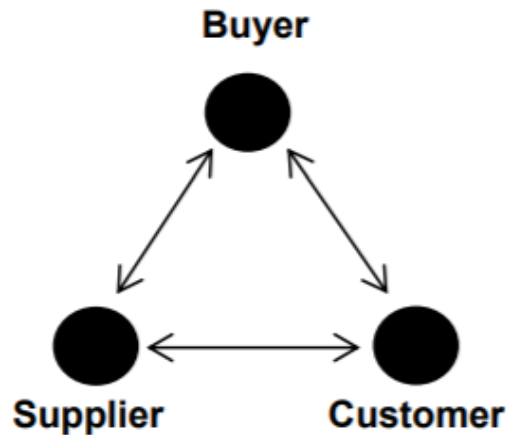


Figure 3: Service triad (Wynstra et al., 2015)

There are several ways of classifying services, the critical factor however is to acknowledge the impact this has on decision-making in purchasing and how it will influence the operational phase. Thus, it is important to differentiate between *business-critical-* and *non-business critical services*. A business-critical service is co-responsible and directly related to the value proposition towards a satisfied customer. These services should preferably be contracted through performance-based contracts, in order to specify and monitor with a focus on performance rather than cost (Price, 2004; Broekhuis & Scholten, 2018).

Specifying business services

From the initial make-or-buy situation, followed by resource allocation, the buying firm need to define the requirement for the service through the specification phase (Weele, 2014). Srivastava (2007) defines this as a critical stage for implementing GSCM practices, since most of the environmental potential is locked-in throughout the design phase. Managers distinguish between functional- and technical specifications, where the difference is based on describing either the functionality- or technical properties and activities. Researchers argue that functional characteristics promote supplier innovation and mitigates over-specifications. From the inherent difference between goods and services, Axelsson & Wynstra (2002) further argues that there is three ways of specifying business services: input, throughput and output or outcome. Here, van der Valk & Rozemeijer (2009) underline the increased importance of specification as a prerequisite for purchasing services, based on the overall complexity of specifying services. van

Weele (2014) suggests a performance-based approach (outcome), rather than activities (throughput) and resources (input), which correlates to functional- versus technical specification. Furthermore, the researcher argue the problematics of assessing a total cost of ownership perspective and sufficient quality, based on an ineffective collaboration within the service triad.

Specifications will serve as the input to selecting service provider, which is perceived as one of the most important decisions (Van Weele, 2014). Problematics of defining the scope of operation, combined with the degree of intangibility, will increase resources and complexity towards supplier- assessment and selection (Essig, Glas, Selviaridis & Roehrich, 2016). A decision-making process, often referred to as tendering, is used to create a competitive bidding strategy for the buyer to maximizing profit, based on a pricing mechanism (Runeson & Skitmore, 1999). The increasing focus on environment has integrated environmental qualification within the assessment and criteria beyond profit margin, making it an essential part of innovating traditional purchasing (Sarkis & Dou, 2018).

Contracting perspective and length

Besides the contracting type, an important factor for actualizing GSCM is the perspective contracts are closed upon, which essentially is linked to the problematics of flow vs. efficiency and integrating the end-customer. Van Weele (2014) argue that there are four different perspectives. In the *dyadic* perspective the parties act independent of the value chain, incorporating objectives restricted to the isolated buyer-seller relation. A *supply chain* perspective recognizes the interest of the downstream chain, either through a consulting- or active role. Furthermore, a *value chain* perspective further recognize that the focus and goal of the supply chain is to jointly serve the end-customer, in which an understanding of the interdependency within the triad is emphasized. The last perspective, *network*, further integrates and recognize the influence of other actors (Weele, 2014).

Monczka, Hanfield, Guinipero & Patterson (2009) claim that long term contracts is based on initial price and adjustment mechanism, in addition to continuous improvement. The researchers further elaborate on the advantages correlated to collaboration, as it potentially would increase the focus on joint value. Here, with a focus on improving individual- and relational performance. Suppliers could for instance innovate the buying firm's operations, based on their specialized expertise.

Tate et al. (2011) argue that the contracting length could act as an overriding factor for increased transaction costs, directly caused by environmental improvements. This gives the supplier the opportunity to diversify fixed costs from improvement and understanding of the continuance of their relationship. Thus, long-term contracts is emphasized by researchers to be an important aspect in order to innovate the traditional purchasing process with an integrated green dimension (Sarki & Dou, 2018).

Although, Monczka et al. (2009) argue that using commitment actively in contracts increase the risk and impact if the wrong supplier is chosen. This is directly linked to GSCM, as choosing eco-friendly suppliers is perceived as vital for implementing GSCM practices (Bai & Sarkis, 2011). The intangibility characteristics of services further complicates this selection process. services.

Pricing mechanisms

The pricing mechanisms can be seen as the building blocks for contracts, where risk shifts between the buyer and seller (Monczka et al., 2009). van Weele (2014) presents three generic types: *fixed price*, *cost-reimbursement* and *unit contracts*. Fixed price creates an economic and timely stability through a predetermined cost and time, in which the risk is shifted to the supplier. These contracts set an elevated pressure on preparation and specification. Cost reimbursement mitigate this pressure, and usually includes a fixed time rate. Both pricing types includes incentivized alternatives, which has the potential to create a cooperative relation.

Unit-rate contracts is typically used for repetitive activities with challenges correlated to establishing time and activities. This is often the case in the offshore industry, where vessels frequently operate on time-charter (TC) contracts (Rose, 2009). These contracts allow the charterer (buyer) to choose operating pattern and pay the variable costs associated. The shipowner (supplier) provide the crew that operates the vessel and is usually quoted on a daily basis (Pirrong, 1993). Researchers focusing on the correlation between TC contracts and energy efficiency, claims that there is a limited motivation for the shipowner to exceed the benchmark (Veenstra & van Dalen, 2011; Agnolucci, Smith & Rehmatulla, 2014).

2.2.2 Transforming a conflicting relationship

Prior to negotiation, both sides develop a strategy for their own interest, creating the basis for a major challenge within contract management: conflict of interests (Eisenhardt, 1989). The power balance will play an immense role for these negotiation (Caniëls & Gelderman, 2005). Although, the emphasize should be toward transforming a conflicting system to a cooperative one. This contractual challenge is often referred to as the agency problem in the literature (van Weele, 2014).

Agency theory

Researchers argues that the time-charter market is a classic representation of the agency problem (Graus & Worrel, 2008; Vernon & Meier, 2012). In the shipping context, Veenstra & van Dalen (2011) and Agnolucci et al. (2014), focuses on the conflict of interest that arise from energy efficiency considerations. This has become a focus in the market, as energy consumption is an increasingly important feature for operating an offshore vessel. These articles claims that economic benefits from environmental innovation is not properly allocated between the parties, making the shipowner reluctant to improve environmental features.

Jensen & Meckling (1976) suggest that the agency theory is an attempt to define the contractual relationship between two parties, a *principal* that delegates work to an *agent*. According to Eisenhardt (1989) this theory assumes an inherent problem in the relationship where each party prioritize their own interests, goals and objectives instead of focusing on mutually beneficial collaboration, better known as the agency problem. The researcher argue that this reasoning is based on the assumption that people are opportunistic by nature through, e.g. *self-interest*, *bounded rationality* and *risk aversion*.

The theory addresses this problem by determining the most efficient contract and offers a unique insight on several key inter-organizational behaviors, such as information systems, outcome uncertainty, incentives and risk management (Eisenhardt, 1989; Kogg, 2003). Eisenhardt (1989) distinguish between two sets of contracts: *behavior oriented* and *outcome oriented*. The first type focus on specifying how the agent should act. This correlate to the technical-, input- and throughput specification, where activities and resources are emphasized. In contrary, outcome- or performance-based contracts actualize mechanisms that relates to outcome- and functionality

specifications. Essig et al. (2016) argue that these contracts have the potential to align incentives between the agent and client in addition to fostering innovation, which is important for collaboration between parties for environmental performance. The shift toward a co-operative system with common objectives is increasingly important for service, as it depends more upon collaboration to deliver (van Weele, 2014). Therefore, it should enable managers to resolve conflict of interest that occurs in a supply chain, through understanding the relationship traits and prevent opportunistic behavior between companies.

2.2.3 Performance-based contracting

Performance-based contracts (PBC) incorporate some similarities with GSCM, as there exist several definitions and nuances, although these contracts exhibit some central differences from charter contracts. As a first point, these contracts are outcome oriented, in contrary to input. This specification method explicitly focuses on outcome to be delivered by the supplier. Hence, shifting the focus toward functionality and performance to be delivered by the service provider, instead of activities and resources. In addition, this will orient the performance towards the customer. Secondly, PBC ties this performance to an incentive structure. Essentially creating a correlation between performance achieved and a reward/penalty structure, and at the same time transferring risk to the supplier (Selviaridis & Wynstra, 2015). Essig et al. (2016) argue that this could create a basis that facilitate for both collaborative innovations.

Already in the late 1980s, Eisenhardt (1989) argued that performance-based contracts are applicable in contractual relationships that involve a substantial goal indifference. This since the contracts could be used to mitigate the conflict of interest, as it potentially aligns the objectives through performance. Essentially illustrating that the principle is not innovative. Although, researchers are increasingly applying the contracts in different settings. Wynstra et al. (2015) argue that it is applicable for services, as it takes into account the simultaneously characteristics. PBC has also received an increasing interest from both academia and practitioners, with an emerging focus on the strategic fit in supply chains (Selviaridis & Norrman, 2014; Selviaridis & Wynstra, 2015). In this context, the researchers claims that PBC could increase coordination and collaboration across the supply chain, as it potentially align their incentives based on customer performance. It is further argued as a potential response to the trending focus on supply chain performance beyond traditional economic and operational terms. Researchers argues for the

strategic fit within SCM, although with a focus on defining appropriate performance criteria that includes an environmental dimension (Melnik, Davis, Spekman & Sandor, 2010; Selviaridis & Wynstra, 2015). Hence, PBC is argued to be applicable if there exist an efficient performance measurement system (Essig et al., 2016).

2.3 Research model

The theory presented is a result of iterative work with the literature review to establish the research model, illustrated in *figure 4*. This figure represents the relevant areas that the researchers established in the given context and will be used as a framework for the empirically driven research.

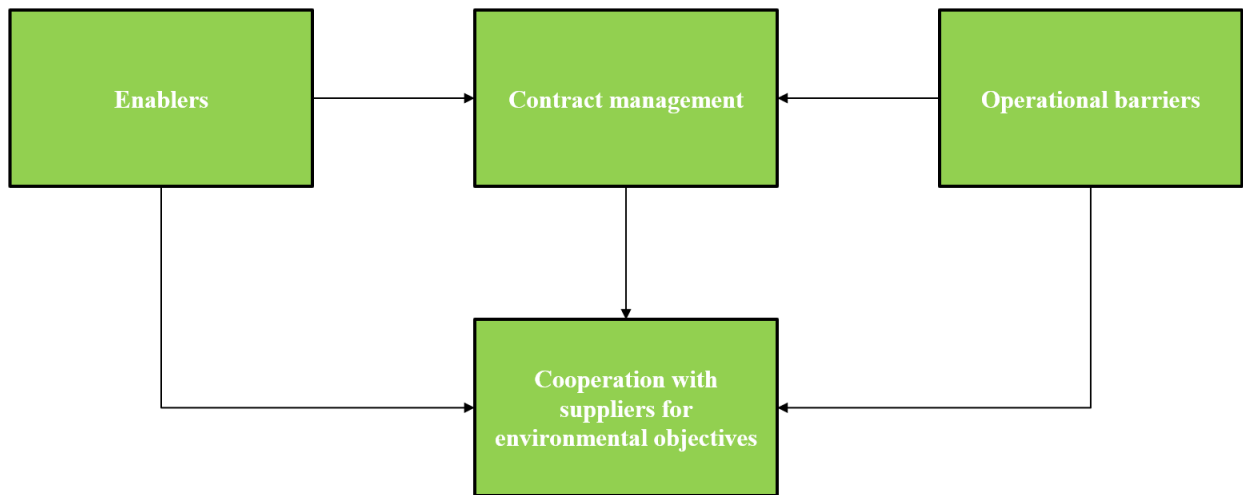


Figure 4. Research model

The explorative study will be initiated by analyzing how contract management may influence the GSCM practice in focus: *cooperation with suppliers for environmental objectives*. This practice is perceived as crucial for implementing GSCM in the literature and can serve as an antecedent for implementing other practices. Contract management is argued to positively affect GSCM practices, especially the correlation between efficient contracts and collaborative efforts. Hence, showcasing the possibility of analyzing the underlying factors in the contractual relationship between Equinor and Simon Møkster Shipping from both perspectives, gives a unique potential for empirical discoveries. Where research conducted on the standard contracts in the shipping:

time-charter, has revealed that the agency problems was a recurrent theme. These contracts will therefore be challenged and analyzed with a focus on establishing efficient contracts.

Enablers and barriers are often emphasized as important aspects in the field of GSCM, as these variables influence the implementation of practices. This study will therefore try to uncover enablers, and corresponding operational barriers, if a potential change of contracts appears to be applicable. With an emphasize on collaborative efforts for improving environmental performance from a supply chain perspective.

The last section will provide an updated version of the research model, which includes findings from a multi-perspective. This is intended to provide a structured attempt to answer the problem statement and research question.

3 Methodology

The purpose of this chapter is to present and explain the methodical choices taken for this study. This chapter will therefore start by introducing the research design, in addition to how data was both collected and analyzed. Where the focus is to understand how these choices will influence the quality of our study. The last section will provide an overview and reasoning for the applied case. We perceive our study as inductive, where the study focuses on exploring research gaps through a qualitative case study research, identified in the literature review. This aligns with Hatch (2002) assumption that qualitative research often emphasizes on an inductive approach and is driven by empiricism.

3.1 Research design

The aim of this section is to describe the overall approach for our research, with the intention of providing a reasoning for the selected design and methods. An early focus on the design also provided us with an opportunity to determine strengths and weaknesses of different approaches. This is, according to Easterby-Smith, Thorpe & Jackson (2015), a crucial part of the research, where the purpose is to shape research activities to optimize the potential to achieve the study aim. We therefore established *literature review* and *case study research* as pertinent.

3.1.1 Literature review

A literature review is described as a fundamental part of a study and is often used to explain how the research project could contribute to the literature and as a potential mean to justify the project (Easterby-Smith et al., 2015). We therefore decided to conduct a literature review to establish an understanding of a broadly defined concept. The literature review is based on scientifically approved articles and books. These are published under strict regulatory instances and are undeniably reliable sources. Our literature review revealed that GSCM is a relatively new and emerging theoretical field, with new dimensions regularly added. This provided us with a rationale to conduct an explorative research. The review gave us an understanding of important aspects of GSCM, including enablers and collaboration with suppliers. This combined with identified research gaps was used to scope the thesis. Our focus was here to understand how the case study could contribute to pre-existing literature. Based on these key findings, we assumed that analyzing the external GSCM practice: *cooperation with suppliers for environmental*

objectives from both perspectives in a buyer-supplier relationship could provide a unique contribution. Easterby-Smith et al. (2015) further describe a literature review as a continuous process throughout a research project with the goal of informing the development of future research and validate the arguments for such research. Thus, with identified research gaps and corresponding scope, we contemplated on related research fields that could provide a more in-depth understanding of the study.

3.1.2 Case study research

A case study research looks in-depth into one or multiple cases, over a period of time. This research method is used to contribute to knowledge about organizational and socially related phenomena (Yin, 2009). This design is applicable for an in-depth contextual case and suitable to combine with semi-structured interviews (Yin, 2014). The interviews gave us an opportunity to collect rich data regarding the case, in order to drive the explorative study using empirical findings. We perceived that our choice was fitting, as we desired to investigate how contract management may influence environmental collaboration in a singular case between Equinor and Simon Møkster Shipping. This allowed us to get a detailed understanding of the relationship and corresponding characteristics.

3.2 Data collection

We focused on securing both validity and reliability, when conducting the data-collection and analysis. Where our empirical findings were generated through qualitative interviews. In this context, Creswell (2009) explains that qualitative validity is the use of certain strategies that validates findings. He further describes qualitative reliability as the notion that the observations provide an accurate representation of the data. Measures taken to ensure this is described in the subsequent section and in *3.3 data analysis*.

3.2.1 Semi-structured interview

We chose a qualitative approach, with the intention of developing an understanding of a phenomena linked to a context, where Dalen (2011) emphasize a focus on how people experience it. Thus, the research tends to be of an explorative characteristic. Easterby-Smith et al. (2015) argue that, in contrary to the term data collection, a qualitative approach could be seen

as a process of developing data. We perceived this as *how* and *what* data should be gathered to achieve our study aim.

We chose semi-structured interviews, a more flexible approach than structured interviews (Easterby-Smith et al. 2015), to address the explorative nature of our study. For instance, we desired to explore how aspects within contract management may positively influence collaboration for environmental concerns. This method is argued as a time consuming and complex, which made us start the preparation early on, with a focus on defining the process steps needed to retrieve the necessary data. Open-ended questions divided into a topic guide were used throughout the interviews, to maximize the validity of the participants response (Aberbach & Rockmann, 2002). Hence, the topic guide facilitated for us to conduct a more directed interview, with exploratory characteristics. This was also distributed in advance to give the participants a basic understanding of the topics that would be discussed, without the possibility to rehearse their answers. The topics discussed in the interviews was a result of key aspects discovered in our literature review.

The interviews were conducted in Norwegian, as this was the native language of all representatives. This, combined with starting with broad and generic questions recommended by Dalen (2011), created an arena for open discussion. Here, we started with a topical question about the relevance of a holistic perspective when implementing environmental practices. Before working our way through the interview guide, which kept on the interviews on topic with a focus on including contextual examples. The laddering technique, eliciting lower/ higher levels, is also suitable with semi-structured interviews (Bourne & Jenkins, 2005). This was used for aspects that the participants brought up on assumed key areas, giving us an opportunity for an in-depth questionnaire with reflecting examples. For instance, when a participant started to pragmatically explain how today's contracts created a conflict of interest, we asked follow-up questions to explore the root causes. We decided not to tape the interviews, to facilitate a more open environment not restricted by legality issues in the firms. In this regard, Yin (2014) argue that listing devices potentially could lower the focus of an interviewer and make the participant uncomfortable. This would also mitigate the possibility of lapses in concentration, as the interviews is taped, in sense losing important visual factors. Instead, we defined roles between

the interviewer and note-taker, where the note-taker had the opportunity to inquire information about unclear areas during the interview to validate our potential findings.

We prepared three rounds of interviews using a snowball strategy, resulting in a total of seven interview participants, in addition to one follow-up. The purpose of the first round was to establish key characteristics of the case study, with an understanding of how contract management may influence the GSCM practice in focus. This directed our attention towards a conflict of interest between the parties, based on the time-charter contracts used today, and how performance-based contracting could be an interesting aspect to investigate further. We therefore used this as the starting point for designing the next interview round. Common for both rounds was an established focus on a holistic approach that could improve environmental performance. In addition, to the relevance of establishing enablers with corresponding operational barriers, for our improvement proposal. In the last round, we primarily focused on the operationalized aspect of time-charter contracts, which we found to be necessary to establish a practical understanding of the collaboration between the entities. *Table 1* includes all participants with their core competence, to show the correlation with the different interview rounds. This information is anonymized to a certain level, based on requirements from the companies.

Table 1: Participants with correlating coding

| Coded origin of empirical findings: | Interview type: | Core competence: |
|-------------------------------------|-----------------------------|--|
| Informant: E1 | First round | Leading advisor Supply Chain Management, Equinor |
| Informant: E2 | First round | Leading advisor Supply Chain Management, Equinor |
| Informant: E3 | Second Round | Procurement strategy in supply chain management, Equinor |
| Informant: E4 | Third Round | Senior consultant within field/support rescue, Equinor |
| Informant: M1 | First round Second round | Contract and operation management, Simon Møkster Shipping |
| Informant: M2 | First round | Sales, marketing and contract management, Simon Møkster Shipping |
| Informant: M3 | Third round | Captain on a field support/rescue vessel, Simon Møkster Shipping |

3.3 Data analysis

In this section, we discuss the systematic analysis of the data collected. Creswell (2009) define three key characteristics that are important for justification of research methods in qualitative studies. In a qualitative study these are *qualitative validity*, *qualitative reliability* and *qualitative generalizability*, which will be actively discussed in the following sub-section.

3.3.1 Analyzing semi-structured interviews

When analyzing qualitative data, it is challenging to condense unstructured and complex data to a format that is understandable to others. The researchers further describe this process as time consuming and challenging (Easterby-Smith et al., 2015). Therefore, a focus on structuring a clear procedure for analyzing the data is important (Yin, 2014). We perceive that this will

increase the qualitative reliability of the study, as it operationalizes the process for another researcher to utilize.

In this paragraph, we discuss our process steps using Creswell's (2009) recommendation on validation strategies for qualitative research. He posits that this would allow us to assess the accuracy of findings, which correspondingly would increase the validity. Each interview was followed by a discussion between the two of us conducting this study regarding notes taken. The sessions are recommended to mitigate biased interpretation of data and memory errors. We also think it provided us with a deeper insight based on our different roles during the interview and perception. This concluded with notes that was thoroughly processed to ensure a coherent understanding of the observations. Member checking was the next process step which focused on confirming key findings, rather than raw data. Following this clarification, we took the opportunity to ask for potential interview candidates and in one occasion a follow-up. The data was then adapted in response to informants' feedback and to secure that data was not taken out of context. Lastly, findings that address the study aim was focused from both perspectives, which we perceive as the most unique aspect of our thesis. This revealed discrepant information, that was highlighted in the analysis (Creswell, 2009).

Generalizability refers to the diversity within the context of the thesis to such an extent that the inferences can be used in other contexts (Easterby-Smith et al., 2015). Yin (2003) argues that results of a case study can in some instances be theoretically generalized. However, qualitative generalization is used sparingly in qualitative research, as it is not intended for generalizing findings, but rather find a description and themes developed in context with a specific case (Creswell, 2009). The aim of our study is not to generalize beyond this case, where we presume that contextual factors will influence the results.

3.4 Limitations and challenges of the research design

The research started with a literature review to understand and conceptualize GSCM within the context of our study, which facilitated for an empirical research model. As we progressed, the knowledge on the topic increased and our research model was altered several times. This was a time-consuming task, where the main challenge was to scope the thesis within a broadly defined

concept. It is therefore possible that the first round of interviews was based on an incomplete picture of GSCM.

We chose to study one in-depth embedded case through semi-structured interviews, which is suitable as an empirical basis for a case study research (Yin, 2014). This approach gave us valuable data from two perspectives, although increasing the vulnerability towards criticism for areas such as generalization and bias challenges. It was also important to understand that the subjective nature of qualitative interviews could be infused by the snowball strategy, illustrating a potential weakness in our method. This, since the first round of interviews provided the second round of informants, which potentially mitigated different perspectives, as they may recommend people with similar perception and ideas.

It became evident during the first round of interviews that there was not a lack of inputs, but rather the time at our disposal. We had arranged meetings which could last up to two hours for each informant. However, as the interview guide was constructed to allow an open dialogue on relevant topics, we found ourselves short on time to complete the interviews. This was a conscious decision taken during the interviews, as we saw a greater value of collecting pertinent data, instead of trying to rush through the interviews. The plan was also to conduct follow-up interviews if deemed necessary, which was agreed upon before the interview. We did one follow-up interview and three new contacts, as the participants themselves recommended colleagues they thought had more insight on certain topics.

The relatively low number of interview participants resulted in some areas being outside their core competence, such as inter-organizational changes, increasing the potential of inaccurate findings. This made us use this as an area of description, where their main competence within supply chain- and contract management, correlated to our knowledge background. In addition to the last round of interviews, which primarily had operational expertise. Our empirical findings could also be potentially influenced by the lack of transcription, which could have created a more accurate picture of the interviews (Yin, 2014).

3.5 Case companies and contextual factors

Our case study is essentially based on the interest in exploring the petroleum industry. The case applied in the research is therefore built on the buyer-supplier relationship between a petroleum operator (Equinor) and an offshore shipping company (Simon Møkster Shipping). Choosing to investigate Equinor was initially based on their unique market position, which increase the potential to assert supply chain changes (Cohen & Rousset, 2014). Equinor's awareness towards greening is increasingly directed towards the supply chain, especially the marine fleet. Where the company report that cooperation with suppliers is one of the main approaches to lower the total carbon footprint (Equinor CSR, 2018). This resulted in an interest to investigate a shipping company, Simon Møkster Shipping, which was intended to provide us with a unique framework to analyze both perspectives. Here, our purpose was to explore how contract management may influence collaborative efforts between the case companies for environmental performance. The point-of-entrance also played a central role for both case companies, since it provided the researchers with employees willing to support our research with guidance and empirical data.

The offshore characteristics of operation in Norway makes these types of companies complementary to enable production, where their business relationship dates back to the 1980s. Equinor is a partly privatized company and is perceived as a frontrunner for the petroleum industry in Norway, approximately controlling 70% of the market (Equinor, 2019a). Their supplier, Simon Møkster Shipping, is characterized as a major actor in the shipping industry with a focus on differentiation. Their main relational tradeoff, and basis for this thesis, is field support/rescue. This service is a result of cooperation between Equinor and Simon Møkster Shipping to improve performance. These innovating vessels provide safety services to a grid of platforms, in contrary to the traditional option of one vessel per platform, including services such as rescue, firefighting, oil recovery and emergency towing (Equinor, 2019b). Time-charter contracts is used to control the contractual relationship between a total of three vessels: Stril Poseidon (2003), Stril Hercules (2008) and Stril Merkur (2011), which was build according to contracts with Equinor. This contracting option between a shipowner (Simon Møkster Shipping) and charterer (Equinor) is perceived as the standard option in the market and is receiving an increasing attention from researchers regarding the applicability for energy efficiency. Where the

time-charter market is exemplified as an example of the agency problem (Veenstra & van Dalen., 2011; Agnolucci et al., 2014)

4 Findings and discussion

This chapter is divided into three sections: contract management, enablers and operational barriers, and an updated research model with findings, in an attempt to answer the following problem statement and research question:

How may contracting management influence cooperation with suppliers for environmental objectives?

What enablers and operational barriers exists?

The first section will start by analyzing the commercial contract that control the buyer-supplier relationship, in addition to how this affect operationalization. This forms the necessary basis for a conceptual change: time-charter contract vs. performance based contract. A business case for this change will be presenting, with a focus on how this may positively influence collaborative efforts for energy efficiency. The next section will provide a detailed explanation of identified enablers, and in some case correlating operational barriers, as these variables directly affects findings from the business case. Lastly, an updated research model will provide a structured attempt to answer the study scope.

4.1 Contract management

This section will focus on how contract management could facilitate for implementing the external GSCM practice: *Cooperation with suppliers for environmental objectives*.

Buying business services differs from goods in several ways, in which informant E3 explained: “*Specifying goods is more concrete, making the risk picture for service different with a greater need for follow-up.*”, whereas informant M1 focused on: “*Biggest difference is that quality and delivery is less specified, in which the human factor severely influence performance.*”

Showcasing that *intangibility* and *simultaneously* appears to be the most prominent factors. Thus, conforming to van Weele (2014) argument, that the intangible characteristics results in a problematic correlation between performance and predetermined activities to fulfill the service agreement. The collaborative effort between the entities to deliver the service further impose a challenges, as it is produced and consumed at the same time. This interaction combined with the

severe influence from human factors, makes the delivery unique and the gap between specified quality and delivery fluctuating.

In accordance to Cohen & Roussel (2013), an understanding of the value generation system would also be important for differentiating suppliers. Informant E2 here claimed that for an upstream petroleum value chain, the value generation point is likewise the end-customer, which essentially are the platforms. Hence, the function of supply services are to ensure continuous operation. Another important aspect to consider is the categorization of the service from a business perspective. Researchers underline the importance of differentiating between business-critical and non-business-critical services (Price, 2004). This, since business critical services should preferably focus on performance- rather than economic terms, as it is directly related to the value proposition towards a satisfied customer. Here, informant E3 argued that this will severely affect how Equinor control the relationship, where business critical suppliers will be managed as strategic.

The Field support/rescue service directly links to Equinor's top priority: *always safe*, where informant E4 said: "*It is important to address both Equinor and governmental safety requirement*". Illustrating that the service is a response to both corporate and governmental requirements. When the contract between the parties were publicly announced, Equinor's senior vice president expressed that: "*Safety and emergency preparedness are top priorities in our operations*" (Equinor, 2017). This showcase the value proposition that the service provides to the end-customer. Although the service is a safety feature, it correspondingly links to *low carbon*, where Equinor CDP report states: "*Our main priority within the supply chain is working with emission reduction in logistics (shipping and transport of oil and gas products), as this is the most significant source of emissions in our supply chain*" (Equinor CDP, 2018, p.91). Thus, improving environmental efforts from a supply chain perspective is receiving a lot of attention, in which the marine fleet is perceived as the main priority. As the service is part of the marine fleet, it further correlates to the approach that Equinor's CSR report identified: "*Collaborate with suppliers to reduce the emissions from our maritime operations in Norway*" (Equinor CSR, 2018, p.25). These characteristics conform with informant M1's argument: "*This service is a highly critical function for Equinor, making our relation strategic*", These characteristics warrants an assumption that the service could be categorized as business critical. It further

illustrates the relevance of the GSCM practice: “*cooperation with suppliers for environmental objectives*”, where Equinor recognize the importance of improving environmental performance from a supply chain perspective.

With an understanding of the service characteristics, an in-depth inquiry to establish of contractual relationship between the entities was necessary. Pricing mechanism was therefore perceived as an important aspect to discuss, which appear to evoke different behavior between the parties. Here, informant M1 expressed that: “*Time-charter contracts are used to operate the three field support/rescue vessels for Equinor*”. This was thoroughly discussed, as the informant pragmatically explained it as important for collaborative efforts between the parties. The informant explained that the principle for time charter markets is generic: “*The supplier provide the predetermined vessel and crew to operate, and the buyer determine how the supplier operates. Here the buyer pays the suppliers a charter rate and covers the operational costs*”. The main operational costs were established through this interview as fuel consumption, which essentially means that energy efficiency is reflected in the pricing structure. This makes, according to informant M2, charter rate and fuel consumption the most important dimensions when the supplier is preparing a tendering offer.

From the buyer’s perspective, informant E3 explained that the selection process is based on a scorecard system that mirrors the corporate strategy. Here the informant claimed that the increasing attention towards greening the marine fleet from top management, is making *low carbon* more important to include in these contracts. In which it appears that they utilized the competitive nature of the market, through a tendering process, to lower the carbon footprint. The informant further said that activities and resources is specified in this tenders, aligning with characteristics of input specification, where the intention is to make the service available at a predetermined rate. This is primarily due to the demanding task of creating a requirement analysis, based on the intangible characteristics of the service. In addition, the time-charter contracts permit the operator to manage the service flexible. Informant E1 corroborate with this, pointing to the correlation between the dynamic characteristics of the service and the vulnerability of the value generation system. When asked for an example, the interviewee described the severe economic damage if a platform were forced to shut down. Hence, aligning with researchers’ proposition that charter contract often is used to manage standardized activities

where it is challenging to estimate variables such as time and volume (Zhang, Zeng & Zhao, 2014).

Informant M2 pragmatically expressed that the use of time-charter contracts severely influence the collaborative nature of the relationship. This disruptive tendency were claimed to restrict efficient operationalization of the commercial contract. It was therefore important to understand how the commercial contracts is operationalized, with a focus on the coupling between the entities. This is, according to Wynstra et al. (2015) a root cause for challenges with service delivery in contract management. With this important aspect in mind *figure 5* was constructed, based on empirical findings from the operation manager and captain at Simon Møkster Shipping, and the purchasing- and logistic specialist at Equinor.

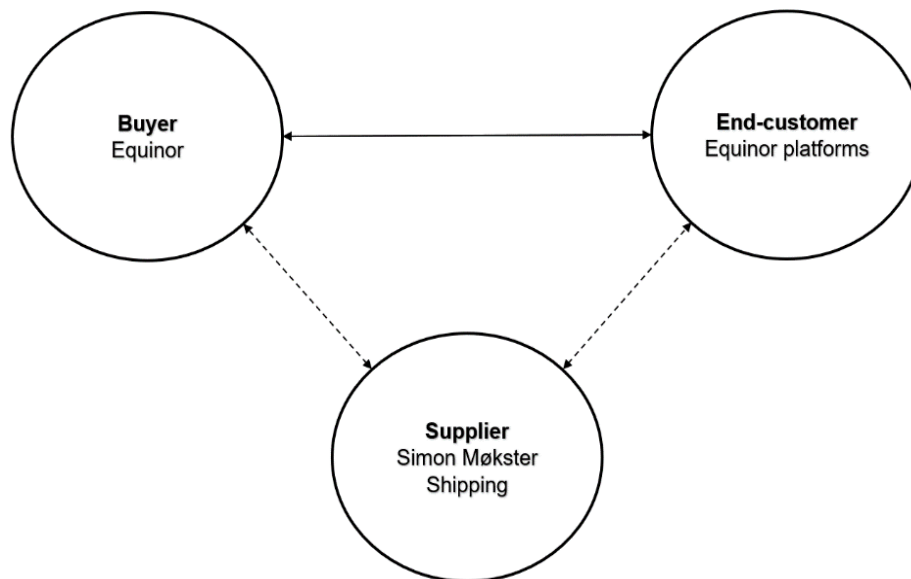


Figure 5: Service triad - Field Support/rescue

Figure 5, illustrated as a triad, align with Li & Choi’s (2009) design of the entities involved in the process of buying and operating a service. Here, the simultaneously characteristics of the service, as discussed earlier, evidentially form a *triad* configuration, based on the interaction between the supplier and end-customer to deliver the service. The reasoning for illustrating Equinor as two entities is based on an interesting remark from informant E2: “*The commercial section is contracting the service on behalf of the platforms*”, which illustrates how the end-

customer is internal and also that the purchasing function is centralized. In addition E4 explanation of service operation further elaborates on their fragmented structure: *“Although the supplier operates the vessels, they are instructed and managed from marine operations, a function in Equinor located at Sandsli, Bergen”*.

The limited role of the supplier is mainly a result of Equinor’s decision to exclusively manage the vessels, illustrated as dotted lines. For this setup, the end-customer communicates mainly with their internal function, which manage the suppliers’ operation pattern. This makes it according to informant M1: *“easy to manage, but also restricting our potential to improve performance based on our operational expertise”*. The interviewed captain at Simon Møkster Shipping corroborates with this statement: *“We perform the service solely on guidelines from Equinor, although a more active role from our side could improve fuel consumption”*.

Informant M1 explained that for environmental performance: *“There are two ways of improving fuel efficiency: technical and operational”*. The technical approach refers to the vessel itself, whereas operational improvements refers to how the vessel is operated. Informant M2 argues that technical specifications is often the focal area, where for example there is an increasing demand from the buyer to install battery packages. Although the costs often makes this option undesirable, whereas operational improvements could be achieved through collaboration. Here, both informant M1 and M2 claims that their restricted role is infused by a pricing mechanism that do not incentives the supplier to take a more active role in the relationship. This phenomena arise as the supplier lack a reasoning to improve, based on time-charter contracts that allocate the fuel consumption costs to the buying firm. Hence, the reasoning why time-charter markets are often investigated for conflict of interests when energy efficiency is the study aim. Essentially corroborating with informant E2 explanation: *“I assume that our increased focus on carbon footprint in the shipping industry is perceived as a pressure rather than an invitation to mutually collaborate”*.

An understanding of the characteristics, value system and business perspective of the service, creates a basis for meeting the different objectives of contract management. This also imply a necessity for evaluating the correlation with Equinor’s corporate strategy: *always safe, high value, low carbon*. Representatives from both entities (M1, M2 & E2, E3) directed the researchers’ attention towards performance-based contracts, as it potentially could improve fuel

consumption through collaborative efforts. Illustrating the potential of evaluating contracts as an important part of cooperation with suppliers for environmental objectives, which serve as input for the improvement proposal presented in the next section.

4.1.1 Improvement proposal

Making changes from a supply chain perspective is challenging, which is why Cohen and Roussel (2013) propose to initiate these changes by clearly stating the priority, with a correlating business case as reasoning for the change. The priority is therefore as follow: change time-charter contract with performance-based contract, illustrated in *figure 6*. This is based on discoveries from the last section, where operationalizing the commercial time-charter contracts appears to be challenging, with correlating indications of a conflicting- and inefficient system. Here the main intention is to improve collaborative efforts to enhance the overall environmental performance.

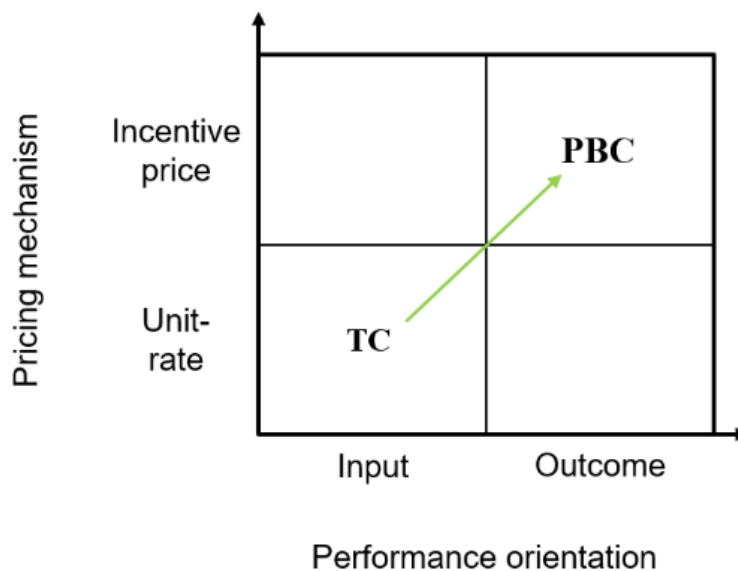


Figure 6: Improvement proposal adapted from Essig et al. (2016)

When asked about a potential improvement, informant E1 explained that business cases at Equinor have to be defined beyond the traditional cost perspective. Hence, the last section of the proposal will be how the business case potentially could improve the environmental performance, *low carbon*.

4.1.2 Business case

Agency theory will be used to investigate the potential of PBC in conjunction with the limitations of time-charter contracts. This is argued to be a suitable framework for analyzing the applicability of PBC, while the time-charter market is often referred to as the classic example of the agency problem.

Agency theory takes into account all situations where a principal (Equinor) delegate work to an agent (Simon Møkster Shipping), to understand the buyer-seller relationship. The theory addresses the agency problem which were indicated as a part of their current relationship.

Informant M1 also explains that agent opportunism, in which the supplier primarily act out of self-interest, is an existing problem in the industry. The main focus is therefore to determine the most suitable contracting method between parties that differs in multiple aspects. Here the theory differentiates between two types of contracts: behavior-oriented- and outcome-oriented contracts, which highly corresponds to time-charter and performance-based contracting.

Informant M1 explains that: *“There is traditional conflict of interest between shipping companies and petroleum operators”*, where empirical findings indicate that the root cause is a combination of two variables discovered: the performance orientation and pricing mechanism. These variables are the central differences between the two contracting methods, as indicated in *figure 6*.

Performance orientation

Informant M2 conforms with M1’s explanation, stating that: *“Shipping companies wants most vessels to the highest price, and petroleum companies wants the least number of vessels for the lowest price”*, which further illustrate a potential root cause with the input orientation. Although the focus on resources gives Equinor a controlling role, the method creates a conflicting goal between the parties, as the buyer want the least number of resources and vice versa. This could potentially create a tactic towards maximizing their self-interest, whereas the actual performance to be delivered is not prioritized.

Performance-based contract address this problem through an outcome orientation. Specifying the outcome to be delivered appear to be a potential approach to align objectives, as both parties will be dependent on performance of the service. Thus, maximizing self-interest would be co-aligned with the other party, creating a better environment for collaboration. An outcome orientation is

likewise revolved around performance from an end-customer perspective, hence recognizing the simultaneous characteristics of services. Moving the focus towards performance rather than resources and capabilities, further conform with services that are characterized as business critical. Correspondingly, informant M1 explains that these contracts could better manage the influence of their crew, as the service delivery is highly dependent on the human factor. Outcome criteria should be the focus in the relationship, based on the criticality of this service for operation, with a focus on the linkage between the outcome criteria and the corporate strategy.

Pricing mechanism

Informant E1 explained that supplier's willingness to adopt green measures in the shipping industry is comprised of the potential to create a competitive edge, as fuel is an important sales argument, and important for the continuity of their relation. Although, Informant M1 explains that for operating services: *"TC contracts do not create an environment for closer collaboration. The lack of win-win situation for improvement increase the differences between the entities, as there is no incentive for performance exceeding benchmark"*. The time-charter contract is designed without an incentive structure, in which Equinor solely operates the service and pays for fuel consumption. The pricing mechanism therefore creates a situation where the agent struggles to perceive the reasoning for disseminating Equinor's corporate strategy. This situation would limit the agent's willingness to take an active role, as performance exceeding benchmark would demand more resources from the agent, whereas the buyer incur the benefits. Instead, the lack of a reward/penalty structure could create a reasoning towards self-interests, potentially increasing the difference between the entities.

Adopting PBC could result in the agent taking a more active role, as the outcome-based orientation serve as the basis for the pricing mechanism. In contrary to the reasoning problematics in the exemplified situation, this contracting option will potentially balance the active role that Simon Møkster Shipping takes to improve the fuel performance. Hence, facilitating for a win-win situation to disseminating the corporate strategy of Equinor. Regarding this area, informant M1 explains that PBC has the: *"Potential to create win-win situations for performance exceeding the benchmark, essentially creating an arena for collaboration and innovation"*, corroborating with the potential to align incentives. The informant E1 also

emphasize an arena for collaboration, as both parties are incentivized to improve relational performance. The captain (informant M3) expresses this operational potential, if the agent had an incentive to take a more active role.

Agent opportunism

Informant M1 explains that: *“There is currently not a good way of regulating the fuel consumption in the industry, with penalties that do not efficiently mitigate suppliers to specify the accurate numbers”*, illustrating an environment that is vulnerable for agent opportunism. The supplier would potentially act out of self-interest to secure a contract with the buyer, based on the competitive characteristics of the shipping industry, where fuel consumption is an important feature to win the tendering round. Informant E3 explains that the criteria in the selection process is structured as a: *“Score system focusing on the three dimensions of the corporate strategy. Here, the impact and visibility of fuel consumption within shipping makes this a vital target for improving low carbon. It is therefore important that suppliers show to improvements, in which fuel are highly weighted”*. This underline the importance of fuel consumption as a sales argument and the reasoning for suppliers to operate with optimal- rather than actual numbers. The environmental focus combined with the visible footprint of the shipping industry will most likely make this increasingly important to secure contracts in the future.

This validates an implementation of PBC, as it is identified to curb this increasing risk of agent opportunism, based on the correlation between what the agent actually delivers and the payment structure. To exemplify, if the supplier were to provide optimal fuel consumption, their profit margin will correspondingly be affected. Hence, the risk of supplier operating out of self-interest is mitigated as both parties is dependent on the performance, regardless of an efficient regulation system. Informant M1 explains that the relevance and magnitude of agent opportunism in the industry is one of the main reasons for buyers to consider PBC. A focus on outcome will also provide the buyer with a better knowledge of what the supplier is actually doing, resulting in a scenario where the supplier will be more reluctant to deceive the buyer as the information is more transparent. Beyond the buyer-supplier relationship, both Informant E1 and E2 explains that transparency is crucial to improve supply chain management. Increasing the visibility of performance across the supply chain, that both entail business- and operational metrics, would

also facilitate for taking suitable measure to improve, with a correlating understanding of the impact of these improvements.

Environmental performance

The main area to improve environmental measures, according to both entities, is fuel consumption. This section will therefore draw a correlation between the arguments for PBC and fuel consumption, besides mitigating agent opportunism towards fuel regulation.

There were a general consensus among the participants that PBC could facilitate for active collaboration, where interviewee M1 illustrated this potential through the successful implementation of the service field support/rescue. Similarly, the representative argues that PBC could actively change the relation from transactional to strategic cooperation. A possible improvement of the relation was brought up by informant E1, which highlighted the potential to utilize supplier expertise to a greater extent. This opinion was shared with the supplier, where informant M3 expressed a personal opinion on the matter: *“There is a potential for performance-based contracts, because the operational competence is mainly with the service provider”*. More specifically, informant M2 explained that the supplier has both the competence to make technical (improve the vessel) and operational (improve capacity) improvements to lower the total fuel consumption. An interesting opinion was brought up by informant M1, who argued that not only their expertise was properly utilized, but also marine operations at Equinor. Here, the informants suggested to increase the marine operations influence on their area of expertise. Likewise, informant E2 explained: *“The people responsible for drawing up contracts does not necessarily have the practical understanding on how to efficiently operate”*. Researchers have also increased their attention towards the benefits buyers could experience, when suppliers adopt environmental measures (Tate, Dooley & Ellram, 2011). Collaboration with suppliers has been shown to facilitate for internal GSCM practices, with a focus on improving environmental performance from a supply chain perspective (Vachon & Klassen, 2006). This improvement proposal could therefore act as an antecedent for internal innovation.

Essig et al. (2016) underline that PBC could foster internal innovation, where the supplier could draw a correlation between internal innovation and profits. This correlation was present between the supplier and a different operator, where interviewee M1 described: *“We were motivated to improve our vessels with battery capability, as there were financial incentives in place”*. While

discussing resources needed for internal innovation, an example from an ongoing internal program were illustrated: “*Since this campaign started, we have had a fuel-saving of about 21 million NOK for Equinor in the last five years, which shows the measurability of this campaign*”. This initiative was started by a technical manager and is an internal competition between the captains, where the goal is to operate environmentally friendly. To mitigate the unique nature of the service, the competition is based on the individual vessels benchmark from the last five years. Where the vessel that improve the most from the benchmark is rewarded with an inconsiderable amount of money. The initiative, referred to as *fuel race campaign*, which shows an untapped potential for productivity if properly incentivized. In this context, PBC could potentially facilitate for efficient resource allocation.

This thesis is focused around a specific buyer-supplier relationship. However, PBC has the potential to increase supply chain coordination between the parties, as the pricing mechanism would revolve around end-customer performance. This makes it possible to utilize the most applicable competence in a network of specialist, to improve performance. Hence, aligning outcome among supply chain partners to disseminate low carbon across the supply chain. The performance orientation could potentially provide an understanding of the positive effects from collaboration between supply chain partners. Selviaridis & Wynstra (2015) suggest that this could increase transparency and predictability, based on information sharing and trust. A possibility could therefore be to impose these changes in a buyer-supplier relationship, to assess the efficiency of these contracts in a smaller scale, as part of a concept study. This could be seen as an active iterative process towards a more efficient integration of environmental objectives in contracts. However, it could appear to be practically challenging to implement the improvement proposal across the supply chain, based on the severe complexity level in the industry, which will be further analyzed in the next section.

To conclude the business case, an important question is important to understand: What is the underlying reason for contracting field support/rescue with TC contracts? Based on empirical findings that identified both strengths and weaknesses, the root cause for using these contracts appears to corroborate with Informant M1 statement: “*This is the standardized way of managing these relations and the way we always have done it*”. Challenging this standard contracting option could therefore result in more efficient operationalization of the commercial contact. This

is, according to informants M1 and M2, a trend among different operators that Simon Møkster Shipping conduct business with.

4.2 Enablers and operational barriers

This chapter will present enablers and operational barriers, if the *improvement proposal* were to be implemented.

4.2.1 Enablers with a focus on environmental performance

In this thesis, the purpose of implementing performance-based contracting is to positively influence collaborative efforts improve environmental performance. This section will therefore present enablers to explain why organizational actions, such as implementing PBC, would focus on more than economic rationality. Researchers have increasingly applied institutional theory to identify- and explain enablers that originates from external pressure, when implementing GSCM practices (Sarkis et al., 2011; Tate et al., 2011).

Normative

The ascending pressure towards environmental concern is tied to society's increasing knowledge of environmental issues as a result of industry operations. Here, the high levels of emission from the petroleum industry, combined with the emerging result of environmental damage increase the public's demand for innovational change. Making it challenging for governments and organizations to ignore the factual results of petroleum operations. Representatives from Simon Møkster Shipping (M1 & M2) highlights this, with a perception that society is the foundational drive for environmental thinking. Informants E1 and E2 corroborates with this impression, although they argue that their role as a front figure enhance this pressure of legitimizing organizational actions. In this context informant E1 said: *"The external pressure from the public is related to corporate social responsibility and public profile, enhanced by the access to social platforms, increasing their opportunity to influence"*. Stakeholders' ability to express their concerns is, as the informant explained, infused by the access to communication platforms that facilitate for both quicker and broader grasp of information. Image exposure is therefore, increasingly evident for environmental concerns. The normative pressure could act as an enabler for integrating environmental thinking into business decisions, based on the desire to conform.

As the trending pressure towards greening expose the supply chain to an increasing vulnerability for disruption (Cohen & Roussel, 2013).

Coercive

In the industrial-political system that characterizes the upstream petroleum sector in Norway, Thune et al (2018) identify three actors: upstream petroleum companies (Equinor), upstream supply companies (Simon Møkster Shipping) and the government, in which the last actor has formed a unique business framework. This framework where the government has a central- and active role, was emphasized by informant E1 as a controlling power over the industry. Research conducted identify institutional pressure as an enabler, actualized through legislations and license to operate (Sarkis et al., 2011; Tate et al., 2011; Diabat, Kannan & Mathiyazhagan, 2014). License to operate is used by the Norwegian government to control exploration- and extraction of petroleum, which interviewee E1 explained as a governmental mechanism to regulate operators behavior on value, safety and environment. This shows how the institutional pressure is a key enabler for disseminating greening, based on their power to dictate market conditions. Hence, illustrating the governmental mechanism as essential to create a sense of urgency for environmental actions through policies and regulations (Gjøllberg, 2010).

Tate et al. (2011) argues that the governmental pressure results in an increasing proportion of buying firms with best practices include environmental measures, making it more likely for suppliers to adopt this trend. Informant M2 describes this ripple effect: *“There has to be an external pressure from the government towards the operators in order for environmental actions to be integrated throughout the supply chain... Equinor as a front figure sets the standard in the market and with this also the driving mechanism”*, illustrating Equinor’s market position, and likewise their ability to assert a coercive pressure in the Norwegian industry. This is corroborated with the correlation between power position and organizational ability to make supply chain changes (Cohen & Roussel, 2013). Equinor’s market position is the underlying theme throughout interviews with both parties, where informant M2 explained: *“Equinor’s relationship with their suppliers is totally unique, and does not exist in other sectors”*, and informant E2: *“We are a big actor in Norway, making the supplier industry look towards our agenda. This gives us an enormous power to influence our supply chain”*. The dominating entity (Equinor) in the buyer-seller relationship is therefore likely to coerce the other party (Møkster) to adopt their

environmental objectives. Illustrating both government and Equinor as enablers, where the first actor dictate market conditions that influence the corporate strategy of Equinor, which is further disseminated across the supply chain

Mimetic

Simon Møkster Shipping AS operate in a highly competitive industry, where innovation is vital to remain competitive (Borch & Solesvik, 2016). A competitive edge, according to informant M2, is fuel consumption which directly ties into both economical- and environmental performance. This enables Equinor to disseminate their strategies as informant E2 explained: *“Our role as the top of the food chain makes it possible disseminate our agenda. Although it is optional, the characteristics in some heated markets creates a pressure to conform”*, corroborated by informant M1: *“The market characteristics forces companies to adopt environmental measures to stay competitive”*. This illustrate a situation where the probability for supplier adoption of increase if competing supplier engage in environmental activities, especially for a competitive dimension.

4.2.2 Internal- enablers and potential barriers

The previous section discussed external enablers to make greening a part of the agenda, which combined with internal enablers is important to adopt corporate greening. Here, *top management commitment* and *organizational adaptability* are identified as key enablers. There are however some organizational characteristics which may restrict these enablers, referred to as *potential barriers*. These barriers were not considered as operational, as they are only suggestive inhibitors at an organizational level that the interviewees could only hypothetically propose due to their position within the companies. These were still included to underline the importance of having these enablers in the organization, as a pre-requisite for incorporating GSCM practices.

Top management commitment

Cohen & Roussel (2013) explains that high-performing supply chain organizations develop not only as a result of changes in the external market characteristics but also corporate strategies. Researchers highlight that these innovational changes need to originate from top management commitment and is therefore argued to be an enabler for GSCM practices (Dubey et al. 2015; Malviya & Kant 2017; Sarkis & Dou, 2018). When asked about the correlation between changes

and top management both informant E1 & E2 clearly expressed that changes need to be supported by top management. They further explained that changes are initiated from the top and communicated to the employees that operate the strategy. Here, Jacobsen & Thorsvik (2016) argues that successful changes in an organization builds on a sense of urgency with a correlating corporate vision to respond, but likewise the ability to communicate the vision throughout the organization. Informant E1 exemplified how top management commitment enabled for a corporate strategy with an added environmental dimension: *“Paradigm change with Eldar Sætre (CEO), who introduced the new corporate strategy: Always safe, high value, low carbon. For the first time, low carbon was introduced as one of the most important pillars, creating changes from top to bottom. This affected the whole organization when it was communicated”*. Integrating low carbon communicated a clear vision to the employees, in which all business decision should include environmental concerns. This is exemplified, as earlier mentioned, through the necessity at Equinor to characterize business cases beyond economic figures. Dubey et al. (2015) further emphasize top management to focus on a proactive- rather than reactive strategy towards greening. In response to this, informant E2 elaborated that low carbon could be perceived as both a reactive- and proactive approach, although the external pressure sets a focus towards a proactive approach. According to Jacobsen & Thorsvik (2016) this would give a potential to anticipate, rather than being forced to change. This is increasingly important in an industry that is highly vulnerable to environmental pressure.

Representatives from Simon Møkster Shipping (M1 & M3) underlined the importance of this enabler, where informant M2 said: *“Top management is vital for changes, as they construct and own these changes to corporate strategies, with a correlating responsibility to disseminate them”*. However, as representatives from Equinor (E1 & E2) perceived that all changes start with top management, informant M1 & M2 expressed that mid-management could initiate organizational change. In comparison to Eldar Sætre who initiated low carbon in Equinor, a technical manager was the internal drive for environmental management in Simon Møkster Shipping. This could potentially be a result of differences in organizational complexity, where Sarkis et al. (2011) explains that higher complexity often results in increasing challenges to plan and implement organizational changes, such as GSCM. Hence, establishing the complexity would increase the ability to manage innovational challenges.

Organizational adaptability

Correspondingly to top management commitment, there must be an organizational framework to operationalize these values across the organization. Modern organizations, in contrary to earlier assumptions, is characterized by constant change (Jacobsen & Thorsvik, 2016). The increasing dynamics in the market is therefore making adaptability and business contingency closely aligned. When discussing organizational adaptability, informant E1 explains that: *“Ambition to action is used in Equinor to disseminate the corporate strategy throughout the organization in addition to transform strategies to action”*. This is considered to be Equinor’s performance process to drive vision and strategies throughout the company, in addition to enable them to operate in a dynamical market environment. Ambition to action aligns top management visions and employee ownership across the organization, creating an incentive for organizational actions. While discussing this topic with informants E1 & E2, the internal structure where identified as a potential barrier. This appears to be related with Sarkis et al., (2011) proposition, that draws a correlation between organizational complexity and implementing GSMC practices. Representatives from Equinor (E1 & E2) describes the internal structure as fragmented, where the reasoning behind this design is to facilitate for control and maintain a coherent structure. However, this characteristic would most likely act as a deterrent for implementing organizational actions.

Representatives from Simon Møkster Shipping (M1 & M2) likewise perceive organizational adaptability as a key enabler. Here, with a focus on the correlation between responding to changes in the market and the competitive nature of the industry. This coincide with the phrase *“innovate or perish”*, which is used by researchers to illustrate that competitiveness is tied to an organization’s ability to change according to market demands (Jacobsen & Thorsvik, 2016). Informant M1 argues that top management need to drive organizational changes. This has shown to be problematic in the past, as this example shows: *“We have a strategy based on our goal to be a Norwegian shipping company with an infinite perspective. Although the actual implementation, the operationalization is challenging. We have clear thoughts on how to operate, but often it is a big gap between the ideal situation and the understanding on how to get there”*. This gap is emphasized in the literature where researchers aim to facilitate organizational changes, which shows that the role of management is important (Jacobsen & Thorsvik, 2016). According to informant M1, this role as a facilitator for change is not always present. As a

consequence of this, creating a sense of urgency and employee ownership is not emphasized, which results in a lack of understanding for change.

4.2.3 External- enablers and operational barriers

The two previous chapters have discussed enablers and operational barriers, both internal and external, to create a sense of urgency for environmental concerns. Green developments in response to both market- and corporate dynamics, could therefore provide a reasoning for PBC to focus on environmental performance. Thus, the focus here is on enablers and operational barriers, which was identified to facilitate for an efficient implementation of the improvement proposal. In this chapter *systemic perspective*, *performance measurement system* and *profitability* with corresponding barriers will be discussed, as findings argue that this could have a severe impact on cooperation with supplier for greening objectives.

Systemic perspective

Market conditions have transformed major petroleum companies to global networks of specialization, which increasingly has tied business operations and supply chain management together (Thune et al., 2018). Therefore, to respond to the environmental trending pressure, as discussed earlier, would endeavor a network approach. This shows the relevance of GSCM as a concept to manage environmental concerns from a supply chain perspective, where performance-based contracts could potentially align supply chain partners. The efficiency of PBC would therefore be dependent on the perspective that contracts are closed upon. Although, restricting the perspective that performance criteria are closed upon would incur the risk of sub-optimization, as dyadic improvement do not necessarily conclude in overall performance. For a buyer-suppliers relation this essentially entail how the commercial contracts should be operationalized beyond a dyadic perspective. Closing contracts from a value chain perspective would align with an outcome-based method, where informant E2 & E3 argued that the entities involved understand the interdependency and focused on jointly serving the platform.

Both leading advisors at Equinor specialized in SCM, stressed the importance of a holistic approach when implementing change. Informant E2 illustrated this through flow versus efficiency: “*Flow is centered around end-customer performance, whereas efficiency do not consider the overall picture*”. Recognizing this difference would potentially increase the

transparency in the system, which is necessary to facilitate for supply chain performance. The advisors further explained that an understanding of what function the supply chain serve to the end-customer is important, where interviewee E1 pragmatically said: “*Supply chain is actually a support function to the platform and our task is to secure optimal production environment*”. This is according to Cohen & Roussel (2013) an important part of making strategic fit changes to the supply base in order to align the corporate- and supply chain strategy. Decisions to improve performance would therefore focus on supporting the value generation system, while realizing the challenges of sub-optimization. This enabler, focusing on aligning the corporate- and supply chain strategy is often referred to as *supplier relationship management* (Dubey et al., 2015). To exemplify, an outcome orientation in the contractual relationship between Equinor and Simon Møkster Shipping need to recognize how fuel consumption improvements will affect the end-customer.

Operational barrier – Supply chain complexity

The complexity of Equinor’s supply chain was however argued as a potential barrier if PBC were to be implemented. A lack of systemic control, illustrated by their fragmented structure, would potentially restrict the transparency needed for efficient implementation of PBC. When asked about the complexity, Informant E1 explained that petroleum production is dependent on a complex supply chain to be competitive, which is further increased with the offshore characteristics. Making it challenging to maintain control from a value chain perspective. This apparent lack of systematic control has been an area of attention for several decades and has been a major driver for developing an integrated view of all companies in a supply chain (Cooper & Ellram, 1990). A descriptive recap of the current state was given by informant E2: “*A problem with flow vs. efficiency is created by our fragmented organizational structure. An example from the interaction with a shipping company would be: it should take maximum three days from a need is identified until it is registered and set in motion. Then, it should take a maximum of 12 hours for a vessel to complete the order. The efficiency of these procedures is irrelevant if the idle time between the activities is high. It is still efficient, but the flow varies*”, illustrating that Equinor have a problem when differentiating between flow and efficiency. In the petroleum industry, identifying these challenges, combined with an understanding of alignment between SCM functions and strategies, can create a synergy between resources and SCM for efficient implementation of sustainable supply chain (Ahmad et al., 2016). Thus, transparency across the

supply chain is a necessity to make applicable changes. Informant E2 explains self-critically that the root cause of this problem as: *“Until now, we have not been focused enough towards an optimal value chain, trust but more importantly understanding is key here. It is this understanding that must be the foundation. The silo perspective prevents and understanding of mutual needs and the possibility for the flow of both the needs and information”*. It is this lack of understanding on optimizing the value chain combined with the fragmented organizational structure that could prevent Equinor from making the transition towards GSCM.

Operational barrier – Value generation

Information from participants at Equinor highlights another factor that potentially could restrict a focus on performance improvement in the supply chain. For instance, interviewee E1 & E2, made a strong argument based on the value-generation point of this type of production. Interviewee E1 pragmatically said: *“Supply chain is only a support function ... It is therefore only cost-driven, we do not generate any money”*. The other representative exemplified this by comparing it with another industry: *“In contrary to for example the retail industry, our margins and value generation is with our end-customer, the platforms.”* Cohen & Roussel (2013) used Zara, a Spanish clothing retailer to exemplify this disparity of viewing costs in supply chains that have end-customer demands as a competitive edge. However, the characteristics of a petroleum supply chain is different. Here, the end-customer is the value generation point, whilst purchasing, logistics and service functions are primarily cost-driven. There is also a huge disproportion between how much value is created and the costs of each individual function. Thus, it is easy to overlook the importance of a holistic view and focus on each function as individual parts where cost reduction is achieved independently, rather than as a sum of all functions. This reasoning is only enhanced by the fact that the financial impact on the bottom line is negligible compared to a halt in production because of possible efficiency considerations in the supply chain. The cyclical nature of the petroleum industry is also a factor which could correlate to the lack of a holistic view on supply chain, where interviewee E2 described this implication: *“This is the challenge within our supply chain, we have a legacy that originates from large margins. In relation to improvements: we neglect it during upswings and during downswings it is not an area of focus”*. This further illustrate the challenge researcher impose on properly monetizing environmental performance (Nguyen et al., 2016). As supply chain improvement often is neglected, despite the argument of being perceived as one of the biggest potentials for environmental improvements.

Operation barrier – Collaboration with suppliers

When representatives from the supplier (M1 & M2) were asked about *supplier relationship management* as an enabler, they emphasized the restriction of Equinor's fragmented structure. To exemplify, informant M1 expressed: *"They do not operate efficient supply chain management, but is highly fragmented ... It is obvious that we have potential to contribute a great deal and even if the suggestion creates a better total outcome on environment, the individual parties does not see the benefit or even think it is damaging for their performance"*. The apparently silo driven functions in Equinor could counteract these holistic measures to avoid negative impacts on their budgets. A lack of transparency therefore creates a challenge towards understanding changes which could prove to be beneficial. Informant M1 here explained that the perceived resistance to make fuel consumption improvement from some divisions is, combined with a lack of an incentive structure, the main reasoning to not take a more active role in the service triad. In addition, according to informant M2, the fragmented structure appears to create a challenging gap between commercial contracts and operations. This could create a barrier for changing contracts, as the division structuring the contracts do not understand the operational challenges. The practical implications of this gap are supported by a captain in Simon Møkster Shipping: *"There seems to be a gap between business and marine operations at Equinor"*.

Operational barrier – Disseminating capability

Another important facet of Simon Møkster Shipping is that they are also operating as buyers to their own suppliers. This is relevant as informant E1 explains their responsibility throughout the value-chain: *"Equinor takes responsibility for their entire value chain, meaning not only their own suppliers but also subcontractors ... creating an extra layer of complexity on choosing the right supplier, as there is a need for accountability beyond their own suppliers"*. In a scenario where a supplier has developed environmental management capabilities, could further assist their suppliers to achieve the same, and a desired ripple effect could be attained throughout the supply network. This highlights the important role that Simon Møkster Shipping could have on creating a green supply chain. However, as participant M1 describes their relationship with their own suppliers: *"Most of our suppliers are much bigger than us, for example Caterpillar which deliver engines for the entire marine industry. In this sense, our power influence downwards is different. We cannot exercise power towards them, in the same way that Equinor does"*, suggesting that the

ability Simon Møkster Shipping to disseminate environmental measures do not apply in this case.

Performance measurement system

“If you can’t measure it, you can’t manage it” (Cohen & Roussel, 2013 p. 171). This statement illustrates the relevance of a robust measurement system, in which Tate et al. (2011) argue as essential to manage contractual agreement based on performance. Selviaridis & Wynstra (2015) further propose that PBC is efficient when the outcome is accurately measured. Thus, a suitable measurement system would be important for the contracting method to be properly utilized. Researchers emphasize *performance measurement system* as an enabler for GSCM practices, as it is vital to assess, manage and control the environmental performance from a supply chain perspective (Björklund, Martinsen & Abrahamsson, 2012; Malviya & Kant, 2017).

Empirical findings from both informant E1 & E2 uncovered that managing from a systemic perspective would act as an antecedent for a performance measurement system. This could potentially be the first step toward accurately evaluating the holistic performance. Cohen & Roussel (2013) claim that this could enable a system that promotes operational excellence to drive the corporate strategy. This would, according to informant E2, increase transparency of the network, which is necessary to create both a sense of urgency and reasoning for change. The informant perceived that this would provide an assessment system based on performance benchmarks and a possibility to assess change. The outcome orientation of PBC, focused on performance and functionality, illustrate why this is stressed as a key enabler, in contrary to input oriented contracts, such as time-charter.

Operational barrier – Holistic system

Previously, the findings have discovered barriers within the organization and throughout the supply chain. When asked about measuring supply chain performance, informant E3 explained that Equinor use a scorecard system to disseminate the corporate strategy. This was corroborated with interviewee E2, although this informant pointed to an operational barrier: *“We do have measurement systems towards our suppliers on for example on-time services and fuel, but again we see the challenges towards holistic perspective. Here, we need flow measurement systems in place”*. There are also indications of a system that do not have the foundation for implementing green measures, where participant E1 honestly expressed: *“We measure operation costs of a*

value chain, but we lack measurement from a total cost ownership perspective, in addition to efficient monetized environmental metrics". Indicating that there is a lack of a cross-functional system, including metrics such as total cost of ownership and throughput time. This corroborates with researcher's findings that companies often lack these systems in place from a supply chain perspective, making it problematic to draw a certain linkage between GSCM practices and performance (Vachon & Klassen, 2008; Björklund et al., 2012).

This operational barrier is also identified by the supplier, as informant M1 claimed that the silo perspective at Equinor creates a challenge if performance-based contracts were to be implemented. Here, the informant explained that the commercial department at Equinor would most likely be responsible for designing the performance criteria, which the informant perceived as an existing problem for specifying inputs. Although, these types of contracts will demand an increasing interaction between the entities and a systemic perspective to be efficient.

Operational barrier – Service characteristics

In *4.1 Contract management*, the intangible characteristics of the service was addressed. This could, according to informant E3, create a barrier for operating on contracts that focus on functionality and performance. The informant explained that designing suitable performance criteria, that is both manageable and drives performance, is highly demanding. In addition, as the service is characterized as a critical safety feature, the buyer would be reluctant to implement improvement proposals if this could potentially lower operational performance. Without a cross-functional system in place, it would be challenging to assess whether there is a negative correlation between environmental- and operational performance. This could further enhance the barrier for efficient outcome-oriented delivery of service, from end-customer perspective. When asked about this potential barrier, informant E1 described some concerns on the current processes at Equinor: *"End-customer focus is extremely important. There have been many situations where end-customer has not been a participant ... We have to be much more focused on the end-customer and how this affects the corporate strategy"*. It is this perspective which is necessary to take into consideration when assessing each process in the supply chain.

Representatives from Simon Møkster Shipping (M1 & M3) corroborates with this barrier. The supplier's understanding of this was primarily based on the unique nature of the service, which is part of the reasoning for today's contracts. Informant M1 explained that to establish performance

indicators, which drives relational performance, would be challenging. This, since Equinor requires a fluctuating demand of a service that always include unique characteristics, mainly caused by the weather conditions.

Profitability

GSCM is stressed to be perceived as a business concept, with a potential to improve the bottom line. Hence, the reason why profitability is established as a crucial enabler for GSCM practices (Dubey et al., 2015). It is therefore important to analyze the potential implication of profitability in the buyer-supplier relationship, if the improvement proposal were to be implemented. As discussed in the chapter 4.1.2 *Business case*, performance-based contracts could be a suitable for integrating environmental measures, through combining an outcome orientation with an incentive structure.

Informant E3 expressed an interest for adopting PBC, based on the possibility to correlate performance achievements to a reward/penalty structure. The informant focused on the possibility to transfer parts of the risk to the supplier, through an incentive structure for both performance exceeding or failing to achieve the benchmark. When asked about profitability, both informant E1 & E2 focused on the importance of continuously cooperation, with a focus on creating win-win situations for environmental measures. This, since Equinor is highly dependent on suppliers, regardless of their potential to impose a coercive pressure. Informant E1 argued that an economic win-win situation for implementing environmental measures is created by the competitive edge that supplier adoption could provide. This is consistent with the fact that environmental measures serve as a sales argument for the supplier. Researchers analyzing willingness to adopt buyer corporate environmental strategies posits that commitment could act as an overriding mechanism for the imbalance in transactional factors endeavored from environmental measures (Tate et al., 2011; Sarkis et al., 2011). This appear to be actively used, as informant E1 said: *“Using contract length as a factor varies from case to case, but with areas correlated to high carbon footprint, commitment and collaboration is actively used to promote profitability”*. Informant E1 explained further that the first step towards innovating the buyer-supplier relationship, is to admit that there is a conflict of interest, regardless of both sides preceding understanding. Only then can changes be initiated based on win-win situations. Here, representatives from Simon Møkster Shipping (M1 & M2) expressed that PBC could be a

potential to improve collaboration based on mutual economic benefits, which was discussed in 4.1.2 *Business case*.

Operational barrier – Risk and role allocation

Efficiently managing- and allocating risk through a reward/penalty structure is challenging, in which Selviaridis & Wynstra (2015) argue that PBC is suitable if the buyer is risk averse. This appear to be a challenging aspect, where informant E3 explained: *“It is challenging to design an incentive structure that will promote win-win situations, we would probably have to balance the loss of control against the risk that the supplier is willing to take”*. Therefore, it seems that Equinor would expect that Simon Møkster Shipping will absorb part of the risk, if they were to take a more active role. In this context, informant M1 expressed that the severe differences in organizational structure and economic outcome, would restrict the risk that Simon Møkster Shipping is willing to take. To exemplify, if operations were to stop as a result of supplier disturbance, how much of this loss would be economically feasible for Simon Møkster Shipping to absorb? The balance between risk and reward must therefore correlate with the supplier’s willingness to further invest in the relationship. Correspondingly, Equinor need to evaluate the risk that the supplier is willing to absorb against today’s micro-management approach, which is linked to their value system’s vulnerability and need for flexibility. Informant M2 further explained that Simon Møkster Shipping may have superior expertise to utilize in the relationship, but it does not necessary mean that the supplier has the ability to efficiently take an active role.

Operational barrier – Measurement costs

Both representatives from Equinor and Simon Møkster Shipping (M1, M2, M3 & E1, E2, E3) has identified barriers related to both creating the necessary measurement system and a correlating incentive structure. The resources necessary to design these features for efficiently implement PBC appears to be severe. Correspondingly, this system would increase the enforcement costs, as performance need to be continuously monitored to operate PBC. In this context, Tate et al. (2011) propose a negative link between measurements related costs and supplier adoption of green measures. This is especially evident if a multi-purpose is not detected, which could be the case as time-charter contracts is the standard in the market.

4.3 Research model with findings

The study revealed several interesting findings relevant to the proposed research model, where the bi-directional perspective has strengthened the chance to understand the root causes. These discoveries are shown in *figure 7*, as part of a structured attempt to answer problem statement and underlying research question.

How may contract management influence cooperation with suppliers for environmental objectives?

A focus on contract management revealed a challenging operationalization of the standard commercial contract in the market: time-charter. This is especially evident for the increasing focus on energy efficiency, where the pricing mechanism and performance orientation creates a conflict of interest between the parties. The commercial challenge is addressed through a focus on determining the most efficient contracts, where empirical findings, backed up by pre-existing literature, directed the attention towards performance-based contracting. The analysis indicates a strengthen coupling between the entities, as it potentially aligns the entities objectives with a corresponding reward/ penalty structure for achieved performance.

In the context of greening, the findings point to improved environmental performance through collaborative efforts and internal innovation. Collaborative possibilities are highly emphasized, where time-charter contracts are argued to induce a pressure rather than motivation. Operation improvements are particularly in focus, where the suppliers claimed that lowering the total fuel consumption is achievable based on their operational expertise. Both behavior and reasoning towards environmental efforts indicated that challenging the standard contracts could achieve a more efficient outcome. Performance-based contracts are also seen as an approach to mitigate agent opportunism, which appears to be an industry-wide problem. The challenge of suppliers providing optimal fuel consumption to win tendering offers, is also infused by the strengthening focus on energy efficiency from the buyer. Findings further indicated that performance-based contracts could promote internal innovation, as the supplier could draw a definitive correlation between environmental efforts and an incentive structure.

Beyond the organizational boundaries, a potential for improving supply chain coordination and collaboration between supply chain partners was detected. This since performance throughout

the chain could be aligned with a focus on the end-customer, which may increase transparency across the supply chain.

What enablers and operational barriers exists?

Identifying enablers was emphasized by both academia and informants. External pressure, top management commitment and organizational adaptability was established as key enablers to facilitate for an environmental oriented approach. An interesting remark was the informants focus on coercive pressure, in order to create a sense of urgency. Here the central position of the government and Equinor in Norwegian petroleum industry was highlighted. Top management commitment further appears to be the critical enabler for corporate greening, where a corresponding organizational framework is central. This was argued from both entities, although their difference in complexity gave an indication that the supplier perceived that mid-management was just as important.

The importance of a systemic perspective, in addition to performance measurement system and profitability, was established as key enablers towards performance-based contracting. A systemic approach is important to recognize if fuel improvements, as a result of cooperative efforts, could enhance environmental performance from a supply chain perspective. It is therefore important that contracts are closed beyond the dyadic perspective, essentially differentiating between efficiency and flow. As a result of this, the fragmented structure at Equinor was perceived as the main operational barrier, which further appears to restrict an efficient performance measurement system. A lack of transparency and a limited ability to measure green supply chain practices is argued as a challenge in the literature. Essentially making it problematic to manage relationships based on performance-based contracts, with the intention of improving environmental efforts from a supply chain perspective. For instance, the centralized purchasing function in Equinor appears to create a challenging gap between commercial contracts and efficient operationalization. Lastly, profitability was mainly addressed through the importance of facilitating for a “win-win”. Regardless of environmental performance, the mutual economic benefits towards energy efficiency was the first indications of changing contracts from both entities. Although, the perception of how these contracts would be constructed was rather divided. Here, the buyer expects that the supplier absorb parts of the risk as Equinor’s control is

reduced, whereas the supplier was reluctant to invest in a relationship that was built on both a reward and penalty structure.

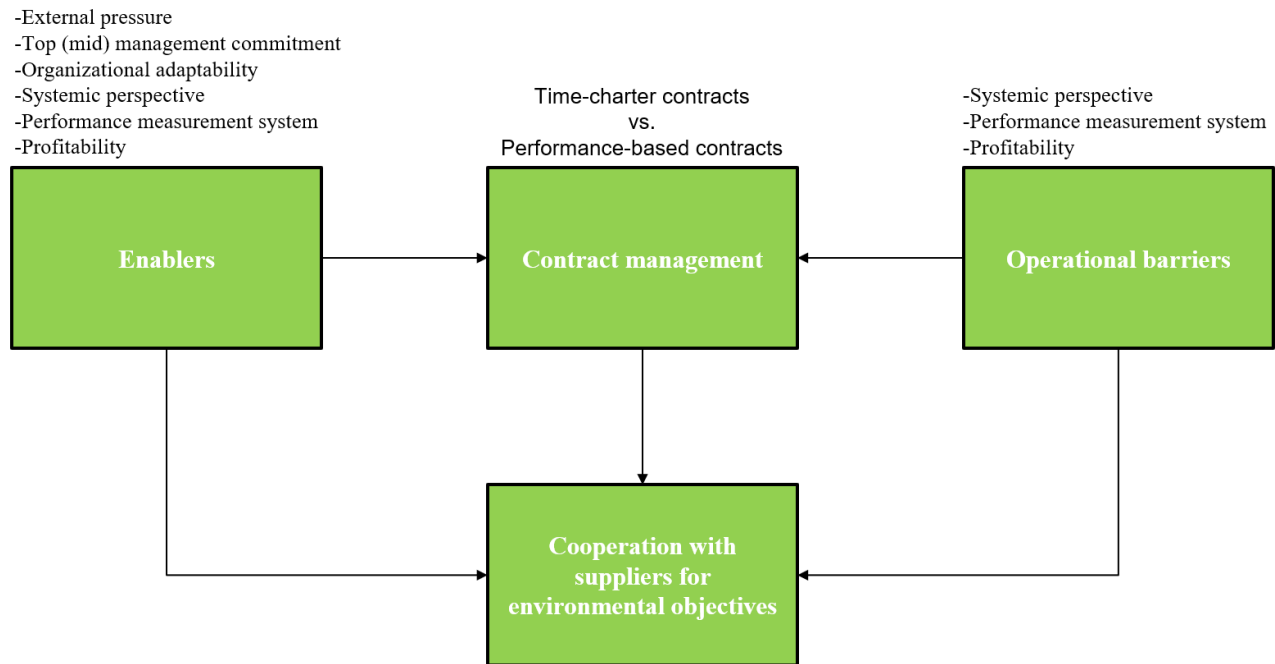


Figure 7: Updated research model with findings

5 Conclusion

This thesis analyzes the potential to implement GSCM in the petroleum industry, to illustrate what Equinor and Simon Møkster Shipping conceptually could do in response to the increasing focus on environmental concerns. Although the end-product is fossil, there remain severe potentials to improve the process, in which greening the supply chain shows to have significant potential for improvements. The complex and global supply chain that is necessary for offshore production, makes this increasingly challenging. Here, it is shown that a focus on contract management would potentially change a rigid system to include collaborative efforts and internal innovation, which in turn could be beneficial for improving the environmental performance.

Equinor's CSR reports showcases their focus on greening the supply chains, with an emphasis on the potentials in the marine fleet. This makes it increasingly important to induce a pressure to transform, based on their dominating position in the industry, but likewise investigate potentials for collaborative efforts for voluntary adoption. In this context, challenging the standard contracts, such as time-charter, is this thesis suggestion to Equinor and Simon Møkster Shipping. As this may positively influence cooperation with suppliers for environmental objectives, which is seen as both a key practice and antecedent for implementing GSCM. Essentially responding to environmental concerns in a more proactive way.

6 Suggestions for future research

This study has shown the potential of implementing performance-based contracts for environmental objectives, where future studies may investigate how these contracts should be structured. In addition, to study the actual rather than a conceptual change, where enablers and operational barriers inter-relate and influence on efficiency would be analyzed. Here, with an intention of analyzing if the contractual change will influence the implementation of the practice.

A larger study could also investigate the applicability of multiple contracting options, including an adaption of the original contracts. Where the study extends beyond a single buyer-supplier relationship.

There could also be a potential of measuring the outcome, through quantitative research, for the impact that GSCM practices would have on the total carbon footprint in the supply chain.

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Appendix I

Interview manuscript – Round 1 Equinor

Introduction of master thesis with problem statement and research question.

Introduction

1. What is your work title?
2. How does your job correlate with our theme?
3. What do you think you can contribute to our thesis and how do you think that our thesis can be relevant for Equinor?

I. Green Supply Chain Management

4. What do you perceive with the term green supply chain?
5. What do you think is important in the transition to a green supply chain?
 - a. What type of practices?
6. What changes have you experienced with the increased focus on sustainability?
Examples?
7. Research has shown a problematic gap between concept and operation. Have you experienced this, with regards to transforming strategies to actions?
8. Do you believe that operationalizing a concept on sustainability would be easier/harder transition?
9. What measures have you done to accommodate this transition?
10. The CSR report shows that collaboration with suppliers in the marine fleet is focused on lowering the total carbon footprint, how is this practically accommodated?

Conceptualization of GSCM

11. It has been increasingly important to integrate environmental management into the corporate strategy. Why do you think that is the case?
12. What changes have there been a focus on and what drives these changes?
13. How does the external pressure correlate to your position in an upstream value chain?

14. What would you characterize as “enabling” factors for implementing a greener supply chain? (Internally/Externally)
15. What if any, barriers do you believe exists in the organization today for implementing a greener supply chain?
 - a. Do these variables correlate to the enablers?
16. Supply Chain management has become an integrated part of doing business. How does this affect the challenges in environmental management?
17. Why is it important to include the suppliers? and how does your role in the value chain affect this?

Industry specific adoption

18. What makes the industry unique in the context of transitioning to a green supply chain?
19. How would you characterize your supplier base in relation to number of suppliers, differentiation between suppliers and inter-relationship among suppliers?

Geographical area

20. What is unique about the Norwegian region?

II. Contract management

21. What do you think are the differences from a buyer and seller perspective within this transition? and why?
22. How would you characterize the contracting process in Equinor?
23. How does different contracts impact the relationship?
 - a. What type of contract does Equinor have with Simon Møkster Shipping?
 - b. How does this contract type influence the relationship with the supplier?

Buyer-Seller perspective

24. How does you as a buyer benefit when suppliers adopt environmental practices?
25. Is it important for you as a buyer to understand the implications of this transition for the supplier? Elaborate
26. How would you describe the buyer-seller relation between Equinor and Simon Møkster Shipping?

27. Is the strategic importance a factor that influence supplier commitment to integrate environmental practices? Elaborate
28. Has your focus on environmental management changed the classification of suppliers?

Contracting for green innovation

29. Is the contracting type used in the shipping industry applicable with an increasing focus on environmental objectives?
30. Innovation creates an increase in uncertainty, how does this affect the contracting process?
31. How has this new focus changed the sourcing criteria?
32. What new elements has been added/focused?
33. Has this changed the access to competitive suppliers that fulfill the new requirements?
34. Has this changed your strategy towards supplier collaboration and structure of the portfolio?
35. What actions has been taken to minimize these costs? and is there a increased focus on incentives for supplier commitment?

Practical implications

36. How have you facilitated the involvement of suppliers?
37. Would you characterize the changes you are doing now as proactive or reactive?
Elaborate

Final remarks

Appendix II

Interview manuscript – Round 1 Simon Møkster Shipping

Introduction of master thesis with problem statement and research question.

Introduction

1. What is your work title?
2. How does your job correlate with our theme?
3. What do you think you can contribute to our thesis and how do you think that our thesis can be relevant for Simon Møkster Shipping?

I. Green Supply Chain Management

4. What do you perceive with the term green supply chain?
5. What do you think is important in the transition to a green supply chain?
 - a. What type of practices?
6. What changes have you experienced with the increased focus on sustainability?
Examples?
7. Research has shown a problematic gap between concept and operation. Have you experienced this, with regards to transforming strategies to actions?
8. Do you believe that operationalizing a concept on sustainability would easier/harder transition?
9. What measures have you done to accommodate this transition?
10. Equinor CSR report shows that collaboration with suppliers in the marine fleet is focused for lowering the total carbon footprint, have this affected Simon Møkster Shipping relationship with Equinor?

Conceptualization of GSCM

11. It has been increasingly important to integrate environmental management into the corporate strategy. Why do you think that is the case?
12. What changes have there been a focus on and what drives these changes?
13. How does the external pressure correlate to your position in an upstream value chain?

14. What would you characterize as “enabling” factors for implementing a greener supply chain? (Internally/Externally)
15. What if any, barriers do you believe exists in the organization today for implementing a greener supply chain?
 - a. Do these variables correlate to the enablers?
16. Supply Chain management has become an integrated part of doing business. How does this affect the challenges in environmental management?
17. Why is it important to include the suppliers? and how does your role in the value chain affect this?

Industry specific adoption

18. What makes the industry unique in the context of transitioning to a green supply chain?
19. How would you characterize your supplier base in relation to number of suppliers, differentiation between suppliers and inter-relationship among suppliers?

Geographical area

20. What is unique about the Norwegian region?

II. Contract management

21. What do you think are the differences from a buyer and seller perspective within this transition? and why?
22. How would you characterize the contracting process in Simon Møkster Shipping?
23. How does different contracts impact the relationship?
 - a. What type of contract does Simon Møkster Shipping have with Equinor ?
 - b. How does this contract type influence the relationship with Equinor?

Buyer-Seller perspective

24. How does you as a buyer benefit when suppliers adopt environmental practices?
25. Is it important for you as a buyer to understand the implications of this transition for the supplier? Elaborate
26. How would you describe the buyer-seller relation between Equinor and Simon Møkster Shipping?

27. Is the strategic importance a factor that influence supplier commitment to integrate environmental practices? Elaborate
28. Has your focus on environmental management changed the classification of suppliers?

Contracting for green innovation

29. Is the contracting type used in the shipping industry applicable with an increasing focus on environmental objectives?
30. Innovation creates an increase in uncertainty, how does this affect the contracting process?
31. How has this new focus changed the sourcing criteria?
32. What new elements has been added/focused?
33. Has this changed the access to competitive suppliers that fulfill the new requirements?
34. Has this changed your strategy towards supplier collaboration and structure of the portfolio?
35. What actions has been taken to minimize these costs? and is there a increased focus on incentives for supplier commitment?

Practical implications

36. How have you facilitated the involvement of suppliers?
37. Would you characterize the changes you are doing now as proactive or reactive?
Elaborate

Final remarks

Appendix III

Interview guide – Round 2 Equinor

Introduction of master thesis with problem statement and research question.

Introduction

1. How is our theme, specifically towards contracts, been relevant in relation to your position at Equinor?
2. What do you think is contract management, and what are the key elements to focus on?
3. How is contract management handled internally, as the supplier network is complex and varying?
4. Can you explain the contracting process for purchasing of field support/rescue and logistics?

Pre-contract

5. Specification of services is often the first step to define the work scope towards a supplier. Is the focus here directed against specific activities or performance delivery?
 - a. Is the work scope directed towards operation or end-customer?
6. What criteria and KPI's does Equinor have as a standard when choosing service suppliers within logistics?
 - a. Has the transition to an energy company created a larger focus on green measures to change the criteria in the contracts?
7. What are the criteria that decides the length of a contract?

Contracting

8. After the choice of supplier, what are the key elements to consider in this phase?
9. What types of contracts do you use with supplier within logistics?
 - a. How is the communication during this phase?
 - b. TC contracts was brought up in the first interview round as the standard contracts, what does this entail?

- c. Why are these contracts used, and do they facilitate for green measures?
10. Research shows that performance-based contracting has a potential to create mutual incentives for green measures and innovation. What advantages/disadvantages do you see in a transition in these contracts, based in the case in question?

Post-contract

11. What standard procedures follows after a TC contract has been signed?
12. How are contracts being monitored to ensure contractual commitments are being followed?
13. Research show an increased use of contract managers that are responsible for choice of contracting types, negotiations and monitoring execution. How is this done in Equinor?
14. In retrospect after a contract has been concluded, is there any analysis performed of chosen purchasing strategy and the operational element?

Final remarks

Appendix IV

Interview guide – Round 2 Simon Møkster Shipping

Introduction of master thesis with problem statement and research question.

Introduction:

1. What to you perceive as contract management, and what is important aspect to consider?
2. Is there a difference between contracting for services and goods?
3. The last interview round showed that Simon Møkster Shipping use an differentiation strategy, what is advantages and/or disadvantages of this strategy?
4. Can you explain the contracting process with Equinor, regarding the three vessels within field support/rescue?
 - a. Is this process different from other buyers?

Pre-contract

5. How do Simon Møkster Shipping prepare a tendering offer for Equinor, what is the important elements that is focused?
 - a. What pre-qualifications do Equinor demand?
 - b. Is there a focus on specifying resources and activities or functionality and performance?
 - c. What criteria and KPI's was specified in the tender?
 - d. Was there any environmental direct criteria in the new contracts?
6. Can commitment, through contract length, act as an overriding incentive for green measures?

Contracting

7. What is important element to consider in a negotiating process?
8. How much communication is there between the parties in this process?
9. The last interview showed that time-charter contract was used, what characterizes these contracts?

- a. What advantages/disadvantages do you perceive with the use of these contracts?
- b. Does this facilitate for collaboration with a focus on greening measures?
- c. Do Simon Møkster Shipping have vessels operating on different types of contracts?
- d. The previous interview illustrated that performance-based contracts was a potential substitution in this relationship, could you elaborate on this?

Post-contract

10. How is the contract followed up to secure that the contracts meets the specifications?
11. Research shows an increasing use of a contract representative, which is responsible for choosing contracts, negotiation and execution. Is this used for the contracts with Equinor?
12. Do you see any improvements correlated with the purchasing strategy at Simon Møkster Shipping and Equinor?

Final remarks

Appendix V

Interview guide – Round 3 Simon Møkster Shipping

Introduction of master thesis with problem statement and research question.

Introduction:

1. What is your working title?
2. What is your role in the service?

Field support/rescue

3. What does this service include, and how important is it to the platforms?
4. What actors is involved in the service delivery?
5. How is the service operated?

Collaboration

6. How would you describe the relationship between the different entities?
 - a. Would you describe the relationship as efficient?
 - b. What could improve the relationship between the entities?
7. Have the relationship with Equinor changed over the last decade?

Energy efficiency

8. How would you describe the focus on energy efficiency?
 - a. Have this changed over the years?
9. Do you see any enablers and barriers for this service?
 - a. Specified towards energy efficiency?

10. Do you see any operational and/or technical improvements for environmental objectives?

11. Is there a gap between the commercial contracts and service operations?

Final remarks

Appendix VI

Interview guide – Round 3 Equinor

Introduction of master thesis with problem statement and research question.

Introduction:

1. What is your working title?
2. What is your role in the service?

Field support/rescue

3. What does this service include, and how important is it to the platforms?
4. What actors is involved in the service delivery?
5. How is the service operated?

Collaboration

6. How would you describe the relationship between the different entities?
 - a. Would you describe the relationship as efficient?
 - b. What could improve the relationship between the entities?
7. Have the relationship with Simon Møkster Shipping changed over the last decade?

Energy efficiency

8. How would you describe the focus on energy efficiency?
 - a. Have this changed over the years?
9. Do you see any enablers and barriers for this service?
 - a. Specified towards energy efficiency?

10. Do you see any operational and/or technical improvements for environmental objectives?

11. Is there a gap between the commercial contracts and service operations?

Final remarks