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CREATING INNOVATION THROUGH COLLABORATION - PARTNERING IN THE MARITIME SECTOR

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Henriette Sophia Groskopf Tvede Schleimann

CREATING INNOVATION THROUGH COLLABORATION

PARTNERING IN THE MARITIME SECTOR

Doctoral School of Business and Management

PhD Series 23.2019

CBS  COPENHAGEN BUSINESS SCHOOL
HANDELSHØJSKOLEN

Creating innovation through collaboration

- *Partnering in the maritime sector*

By Henriette Sophia Groskopff Tvede Schleimann

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**Doctoral School of Business and Management
Copenhagen Business School**

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Preface

In this globalized world, the markets and industries are getting increasingly interdependent. Therefore, especially the old, traditional, and heavy industries are facing challenges to innovate and redefine themselves. In most industries, the utmost focus is to ensure a healthy cash flow; i.e. to make money. And, arguably, for businesses to make money, they have to ensure that the premises hereof are beneficial. Although, how is this possible in the old, traditional, and heavy industries that find innovation so complicated?

The answer may lie in the contract.

In industries such as the maritime industry, the lifespan is long-term, the machines are complicated and expensive, and it is crucial to avoid berth days, as the shipowner would then lose precious income. Therefore, arguably, the shipowner may benefit from a partnership with a supplier, as the supplier may be able to share information about its products with the shipowner, so that the parties can in combination find the ultimate products for the ships at the best possible price. On the other hand, the shipowner will be able to provide the supplier with continuous orders and a clear overview of when the products will be needed which means that the supplier will be able to plan ahead.

In this way, the asymmetrical information between the parties would decrease and innovative products are likely to occur. But how will the parties achieve this partnership and start to rely on one another?

Arguably, the reliance can be achieved through trust.

Trust can be defined in multiple ways, but - in general - it covers the concept of relying on the truthfulness or the accuracy of a statement. Although, how do business parties gain trust in an environment based on economic reliance, where – from a game theoretical perspective – the partnership will always be based on betrayal?

In this context, the answer may be a relational contract between the parties.

This means that the intersection between economics and law may be able to illustrate the optimized partnership between the parties in the maritime industry. Although, this intersection has not yet been exploited much in academia. The inspiration comes from other industries, such as the pharmaceutical industry and the construction industry, where the relational aspect of the partnership has resulted in renewed innovation and increasing income. Consequently, it is relevant to look into the concept of relational contracting in the maritime industry, as it is likely that it will be as successful as it has been in other, yet similar, industries.

This is the contribution that this dissertation will provide during the next eight chapters.

This dissertation was written between September 2015 and January 2019 at the BM Doctoral school of Management at CBS Law. The accomplishment of the dissertation, is done due to immense support and guidance from countless people.

This dissertation is a part of Blue INN0ship's project #15 *Servitization* . In that sense I would like to express my gratitude to the Danish Maritime Fund and Orient's Fund, for the financing of my Ph.D.

I would like to acknowledge the key role played by the research stays at UBC Sauder School of Business, Vancouver, Canada and Columbia Law School, New York, USA. My research stay at both educational institutions, was very fruitful and my writing process and thoughts regarding my dissertation, was highly influenced by this.

The research stay at both educational institutions was made possible by the support of the Otto Mønsted's Fond; Skibsteknisk Selskabs Fond; KV Fonden and Rudolph Als Fondet, for which I am extremely grateful.

To my supervisors, Professor Christina D. Tvarnø and Professor (MSO) Carsten Ørts Hansen, and colleagues at CBS Law – I cannot thank you enough for the tremendous support, kindness, encouragements and understanding that you guys have showed me throughout the years. A special thanks to Sofie Emilie Drewsen de la Porte for your proofreading skills.

Last but not least, I would like to express my deepest gratitude to all my friends and family, especially Michael. You guys have showed me nothing but immense love and support and you have always been there for me - for that I am forever grateful.

Copenhagen, February 2019

Henriette Sophia Groskopff Tvede Schleimann

Abstract

Innovation and optimization are essential elements for organizations worldwide, as these will ensure the survival ahead for the organizations. The competition in the markets are different from that 10 years ago, and will probably have changed again 10 years from now, because of the technological development. This means that – to a greater extent – it is important to be *first mover* in the attempt to create new and improved products. Additionally, it is important to optimize the organization's processes by focusing on its primary business purpose and outsource those elements which are not value creating. In the organization's striving toward optimized products and processes, strategic alliances are getting increasingly important between industries and between various global organizations.

The maritime industry is an old and proud industry with multiple actors in the market which is why it may easily be characterized as massive and complex. This old and conservative industry is distinctive because of its lack of innovation and technological development compared to other industries. Currently, the primary interaction between the shipowner and the supplier is through ordinary purchase and sales of products, although, this dissertation will attempt to alter this by suggesting a long-term collaboration between the parties and, thereby, create a foundation for innovation and optimization.

Therefore, the dissertation analyzes relational contracting, including *partnering*, as an alternative to the parties. This contract form ought to create more innovation and mutual optimization for the parties. Hence, this thesis analyzes relational contracting in order to define how to shape the optimal contract for a successful collaboration.

By creating a collaboration, it is possible for the parties – together – to create the products needed. Thus, the dissertation attempts to alter the current, classical purchase and sales situation into a collaboration where the shipowner and the

supplier enter into dialogue about the products, the development and the product performance. A collaboration is not achieved from day-to-day, but may be reached through introductory dialogues and the contract itself. The primary purpose of the contract is, however, to create the incitement for both the shipowner and the supplier, which will make them choose to collaborate, as they will be legally bound by it. The incitement structure does not only ensure the legally binding collaboration, but is also a tool for the parties to gain a mutual trust in one another. Some of these incitements, which are included in the contract, are – among others – the shared risk; openness about the finances concerning the products, which the parties are collaborating on, in order to ensure that no party feels neglected; as well as a mutual purpose and goal for the collaboration.

In the attempt to establish a long-term collaboration between the parties, this dissertation is divided into four parts. The purpose of the four parts is to clearly illustrate how relational contracting can create value and optimize the situation – both for the shipowner and the supplier. It is demonstrated through a characterization of the maritime industry in an attempt to define the market and, thereby, which rules are applicable to the shipowner and the supplier. This is essential in order to understand how the collaboration between the shipowner and the supplier ought to appear to meet the industry specific elements. Moreover, this thesis will conduct a transaction cost analysis in order to eliminate *management* as a party which currently functions as third party in the classical purchase and sales situation between the shipowner and the supplier. Hereafter, the dissertation will analyze the concept of relational contracting by defining what it entails and the advantages hereof, including the possibility of creating a successful collaboration.

Additionally, the dissertation convers *partnering contracts* as a type of relational contracting in terms of how a relational contract may be outlined between the shipowner and the supplier and how the incitement structure should be

conducted. Afterwards, the dissertation will illustrate how a relational contract is a possibility from a game theoretical point of view. In the end, the dissertation will discuss relational contracts in order to conclude on the purpose of the dissertation. Through the above, the dissertation concludes that relational contracting could benefit and contribute to a stronger collaboration - and, thereby, create innovation between the parties. Thus, this dissertation contributes to research and address the goals of the purpose statement where the focal point was to create value between the parties in the maritime sector. The conclusion is supported by both economic theories, including transaction cost theory and game theory, and from a legal perspective, where the importance of the contract formulation between the parties has been stressed. Consequently, based on this dissertation, the future for the maritime industry must without a doubt be relational contracting for the parties.

Abstract in Danish/Resumé på dansk

Innovation og optimering er essentielle elementer for alle virksomheder verden over, da disse skal sikre virksomhedens overlevelse fremadrettet. Konkurrencesituationen er i dag anderledes end for 10 år siden og vil formentlig også være anderledes om 10 år, grundet den teknologiske udvikling, hvorfor det i højere grad gælder om at være *first mover* i forsøget på at skabe nye og bedre produkter. Dog gælder det ligeledes også om at optimere virksomhedens processer ved at fokusere på virksomhedens egentlig forretningsformål og derved outsource de ikke værdiskabende elementer. I virksomhedernes stræben efter at optimere produkter og processer er strategiske alliancer ved at finde stort indpas inden for forskellige industrier mellem forskellige globale virksomheder. Den maritime industri er en gammel og stolt industri med mange aktører på markedet, hvorfor at den kan karakteriseres som massiv og kompleks. Denne gamle og konservative industri bærer præg af manglende innovation og manglede teknologisk udvikling, som ellers er set i andre industrier. På nuværende tidspunkt sker skibsejeren og leverandørens primære interaktion gennem almindelige køb og salg af produkter, hvorfor at afhandlingen forsøger at ændre på dette, ved at etablere et længerevarende samarbejde mellem partnerne - og derigennem skabe grobund for innovation og optimering.

Afhandlingen analyserer derfor relationelle kontrakter, herunder *partnering*, som et alternativ til partnerne. Denne kontraktform skal forsøge at skabe mere innovation og fællesoptimering for partnerne. Afhandlingen analyserer relationelle kontrakter, for at konstatere hvorledes sådan en kontrakt skal udformes, således at der kan etableres et succesfuldt samarbejde.

Ved at skabe et samarbejde er det muligt for parterne sammen at skabe de produkter, som de har behov for. Derfor forsøger afhandlingen at ændre på den nuværende klassiske køb-og-salg situation, til et samarbejde hvor skibsejeren og leverandøren går i dialog omkring produkterne, udviklingen og *product*

performance. Et samarbejde opstår ikke fra dag-til-dag, hvorfor at dette skal til dels opbygges via indledende dialoger, samt selve kontrakten. Kontraktens primære målsætning er at skabe incitamenter for både skibsejeren og leverandøren, således at begge vælger at samarbejde, i og med at de er juridisk bundet af den. Incitaments strukturen i kontrakten er ikke blot den juridiske binding, men også et måde at skabe fælles tillid til hinanden. Nogle af disse incitamenter, der skal indgå i kontrakten, er blandt andet delt risiko; åbenhed omkring regnskaber i forhold til de produkter, der samarbejdes om, således at ingen af parterne vil føle sig snydt; samt en fælles målsætning for samarbejdet.

I forsøget på at etablere et længerevarende samarbejde mellem parterne, da er afhandlingen delt op i fire forskellige dele. Formålet med disse fire dele er at tydeliggøre hvorledes relationelle kontrakter kan skabe værdi og optimere situationen for skibsejeren og leverandøren. Dette er gjort ved at fremstille hvorledes den maritime branche ser ud, i et forsøg på at definere hvilket marked og hvilke regler, som skibsejeren og leverandøren er underlagt. Dette er væsentligt for at forstå hvorledes et samarbejde mellem skibsejeren og leverandøren skal se ud i forhold til branche specifikke elementer. Derudover vil afhandlingen foretage en transaktionsomkostningsanalyse til at eliminere management parten, der på nuværende tidspunkt forekommer som tredjepart i den klassiske køb-og-salg situation mellem skibsejeren og leverandøren. Herefter vil afhandlingen behandle relationelle kontrakter, ved at definere hvad dette indebærer, samt hvilke fordele, der forekommer herved, blandt andet muligheden for at skabe et succesfuldt samarbejde.

Desuden behandles partnering kontrakter, som en form for relationel kontrakt i forhold til hvordan en relationel kontrakt skal udformes i henhold til skibsejeren og leverandøren, og hvorledes deres incitamentsstruktur bør udformes. Afhandlingen vil dernæst belyse hvorledes en relationel kontrakt er en mulighed

set ud fra et spilteoretisk synspunkt. Slutteligt vil afhandlingen runde af med en diskussion af relationelle kontrakter, samt konkludere på afhandlingens formål. Gennem ovenstående dele konkluderer afhandlingen, at relationelle kontrakter vil kunne bidrage til et stærkere samarbejde, og dermed innovation, mellem partnerne. Dermed bidrager denne afhandling til forskningen og besvarer derigennem også formålet. Konklusionen er således understøttet af både økonomiske teorier såsom transaktionsomkostningsanalyse og spilteori, men også fra et juridisk perspektiv, hvor vigtigheden af kontraktudformningen mellem partnerne understreges.

Fremtiden for den maritime industri må derfor – baseret på denne afhandling - unægtelig være relationelle kontrakter mellem de to partnere impliceret.

List of Abbreviations

BIMCO:	The Baltic And International Maritime Council
Dwt:	Deadweight tonnage
GHG:	Green House Gas
GT:	Gross Tonnage
IMCO:	Inter-Governmental Maritime Consultative Organization
IMO:	International Maritime Organization
ILO:	International Labour Organization
LNG:	Liquified Natural Gas
MARPOL:	The International Convention for the Prevention of Pollution From Ships
MLC:	Maritime Labour Convention
OBC:	Outcome based contracting
OBHRM:	Organizational behavior and human resource management
OECD:	Organisation for Economic Co-operation and Development
OPRC:	The International Convention on Oil Pollution Preparedness, Response and Co-operation
PSD:	Parcel size distribution
Ro-ro:	Roll on, roll off
SAJ:	Shipbuilders' Association of Japan
SOLAS:	The International Convention for the Safety of Life at Sea
STCW:	The International Convention on Standards of Training, Certification and Watchkeeping
UN:	United Nations
UNCLOS:	The United Nations Convention on the Law of the Sea
WTO:	World Trade Organization

Glossary

Ballast: Sea water pumped into carefully located ballast tanks, or cargo spaces, when the ship is not carrying cargo, to lower the ship in the water so that the propeller is sufficiently submerged to perform efficiently.

Berths: Designated area of quayside where a ship comes alongside to load or discharge cargo.

Bulk carrier: Single-deck ship which carries dry cargoes such as ore, coal, sugar or cereal. Smaller vessels may have their own cranes, whilst larger ones rely on shore based equipment.

Coffin ships: Term used regarding sunken ships. Which sank, and took the crew to the bottom of the oceans, due to overload or bad construction.

Charterer: Person or company who hires a ship from a shipowner for a period of time (time charter) or who reserves the entire cargo space for a single voyage (voyage charter).

Dry bulk: A commodity of a raw material, which is shipped in large unpacked parcels, such as coal, iron and grain.

Exogenous: Having an external cause or origin.

Flying their flag: Which flag a ship is sailing under, meaning the flag state i.e. nationality of the ship.

Freight rate: Amount of money paid to a shipowner or shipping line for the carriage of each unit of cargo between named ports.

GNT: Gross Net Tonnage.

Gross Ton: Internal measurements of the ship's open spaces. Now calculated from a formula set out in the IMO Tonnage Convention.

Her: Ships are usually always female, thus a common reference to ships.

Laying the keel: The formal recognition of the start of a ship's construction.

LNG: Reference to tankers, that are specially build, to carry Liquefied Natural Gas.

Merchant ships: Is a ship that transport cargo or carries passengers for hire. This in contrast to pleasure craft, which are used for personal recreation.

Newbuildcon: Contract template set out by BIMCO regarding newbuilding of ships.

One-off transaction: Is used as an expression for the sale and purchase of a product.

Overhaul: Expression used for repair.

PPC2000: The Association of Consultant Architects' Standard Form of Contract for Project Partnering.

Promissory Estoppel: Legal principle, that is enforceable by law. When a promisor has made a promise to a promisee who then relies on that promise to his later disadvantage.

Ports: A place where loading and unloading of ships and boats are done. Not necessarily equivalent to a harbour.

Retrofitting: Refers to the addition of new technology or features to older systems.

Scrubbers: A system (e.g. gas scrubbers or air scrubbers) of a diverse group of air pollution control devices, which can be used to remove some particulates and/or gases from industrial exhaust streams.

Tramp shipping: A boat or a ship that does not have a fixed schedule or published ports of call. Tramp ships trade on the spot market with no fixed schedule or itinerary.

Tonnage: A nonlinear measure of ship's overall internal volume. Measurements of a ship's volume. Now calculated from a formula set out in the IMO Tonnage Convention.

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Table 7.8 – Modified prisoner's dilemma, total utility of 7 games example 1

Table 7.9 - Modified prisoner's dilemma, total utility of 7 games example 2

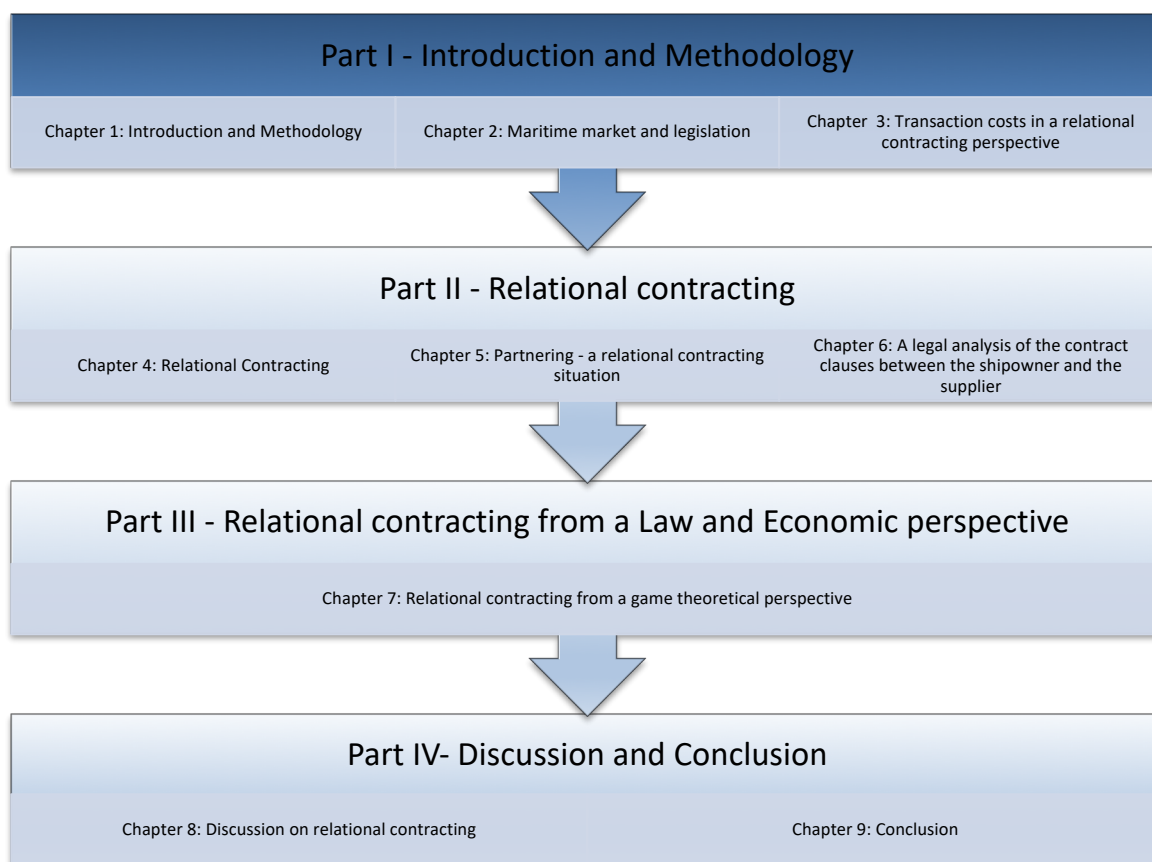
Table 7.10 - Modified prisoner's dilemma, total utility of 7 games example 3

'Whoever commands the sea, commands the trade; whosoever commands the trade of the world commands the riches of the world, and consequently the world itself.'

- Sir Walter Raleigh, early 17th Century¹

¹ Knight Sir Walter Raleigh, British writer and poet. (c. 1552 or 1554 – October 29th, 1618) *Judicious and Select Essays and Observations by the Renowned and Learned Knight, Upon the First Invention of Shipping*, H. Moseley, 1650. See also Stopford, M. (2009). *Maritime economics*. Routledge, p. 655.

Part I: Introduction and Methodology



Part I summary

Part 1 is divided into three chapters which will set the scene of the dissertation. First, chapter 1 will be an introduction to the maritime industry, the case, the specific research question, and the delimitation of the dissertation. Also, chapter 1 will discuss the used methodology both from an economical and a legal perspective. Afterwards, chapter 2 will be defining the maritime industry and maritime contracts by looking into market characteristics as an introduction to how the industry works. Finally, chapter 3 contains a transaction cost analysis which will discuss the parties of the case from a transactional cost perspective. This will be done in order to optimize the parties' situation by eliminating the redundant party to create a stronger foundation for the relational contract between the remaining parties.

Overall, these chapters will create the broad foundation for our understanding for the maritime industry, as it is important to understand the industry in order to be able to comprehend the industry and the case in-depth.

Chapter 1: Introduction and Methodology

1. Introduction

Today, the maritime sector handles more than 80 percent of the global industry trade² and is therefore a very important sector in our globalized world. In connection with Denmark, the national merchant fleet comprises 666 vessels,³ and the vessels account for 15.2 million Gross Tonnage (GT) and 71.4 million GT including both Danish-owned vessels and those chartered or registered under foreign flags.⁴ As a result, this makes Denmark the fifth largest shipping⁵ nation in the world⁶ with 10 percent of the world trade being transported by the Danish shipping companies.⁷

²According to the International Maritime Organization (IMO), the maritime time industry handles more than 80 percent of the global trade. Last visited January 12th 2019. <http://www.imo.org/en/About/Pages/Default.aspx> Although more than 90 percent of global freight is transported by sea, Eddings, G, Chamberlain, A. & Warder, R. (2017). *The shipping law review* (4th ed). Law Business Research, p. vii.

³ As of November 2016 according to 'Danish Shipping Statistics November 2016', Table 2.1., published by the Danish Shipowners' Association. See also Eddings, G, Chamberlain, A. & Warder, R. (2017). *The shipping law review* (4th ed). Law Business Research, p. 157.

⁴ Flag states will be further discussed in chapter 2, section 4.

⁵ Phrases as 'Maritime' and 'Shipping' can be used interchangeably, though shipping is the more common phrase to use, this can also refer to as 'sending goods over seas' – thus this dissertation will use the phrase 'shipping,' as an overall definition equally with the phrase 'maritime' and not as in freight of commodity. source; <https://dictionary.cambridge.org/dictionary/english/shipping> Last visited January 30th 2019.

⁶ 'Danish Shipping Statistics November 2016', published by the Danish Shipowners Association, further information www.Shipowners.dk; Eddings, G., Chamberlain, A. & Warder, R. (2017). *The shipping law review* (4th ed). Law Business Research, p. 157.

⁷ In 2015 the earnings for the shipping industry reached approx. 205 billion DKK and the Danish shipping companies employ approx. 23,000 of the roughly 100,000 employed in the Danish maritime cluster; Report made by The Economic Council of the Labour Movement prepared for the Danish Maritime Authority, www.dma.dk; Eddings, G, Chamberlain, A. & Warder, R. (2017). *The shipping law review* (4th ed). Law Business Research, p. 157.

The maritime sector deals with many and diverse problems in its operations and any imperfections or cost inefficiencies have significant implications on global trade.⁸

The shipping industry is very cost-intensive and currently not very lucrative due to a tight market where ships are expensive, which obviously tie up a lot of capital. Ships are a huge asset for shipowners and are often highly leveraged.⁹ Tankers and container ships can cost up to 150 million USD each, which is approximately the same as a jumbo jet.¹⁰ However, with a cost of 225 million USD¹¹ per ship, the most expensive hereof is the LNG¹² tankers.¹³ Consequently, capital allocated for ship purchases can account for up to 80 percent of the total costs of running a bulk shipping company with a fleet of modern ships.¹⁴ It is therefore important that shipowners are cost-efficient in order to have a profitable business and market.¹⁵

Shipbuilding is a heavy engineering business dealing with large and sophisticated products which are mainly built in facilities located in industrialized markets of Japan, Europe, South Korea, and China. This production requires substantial capital investments and a high level of expertise both technically and managerially in order to design and produce a merchant ship.¹⁶ Although the maritime industry is cost-intensive, additionally, it is an immensely and complex industry, with countless market operators - all with different parts to play in the market and all operating within the different markets. Figure 1.1. below illustrates a simplified supply-chain¹⁷ within the industry, in order to

⁸ Eddings, G., Chamberlain, A. & Warder, R. (2017). *The shipping law review* (4th ed). Law Business Research, p. vii-viii.

⁹ Stopford, M. (2009). *Maritime economics*. Routledge. p. 269.

¹⁰ *Ibid.*

¹¹ These numbers are 2009 level.

¹² Liquefied Natural Gas

¹³ Transportation of liquefied gas. Stopford, M. (2009). *Maritime economics*. Routledge, p. 269.

¹⁴ *Ibid.*

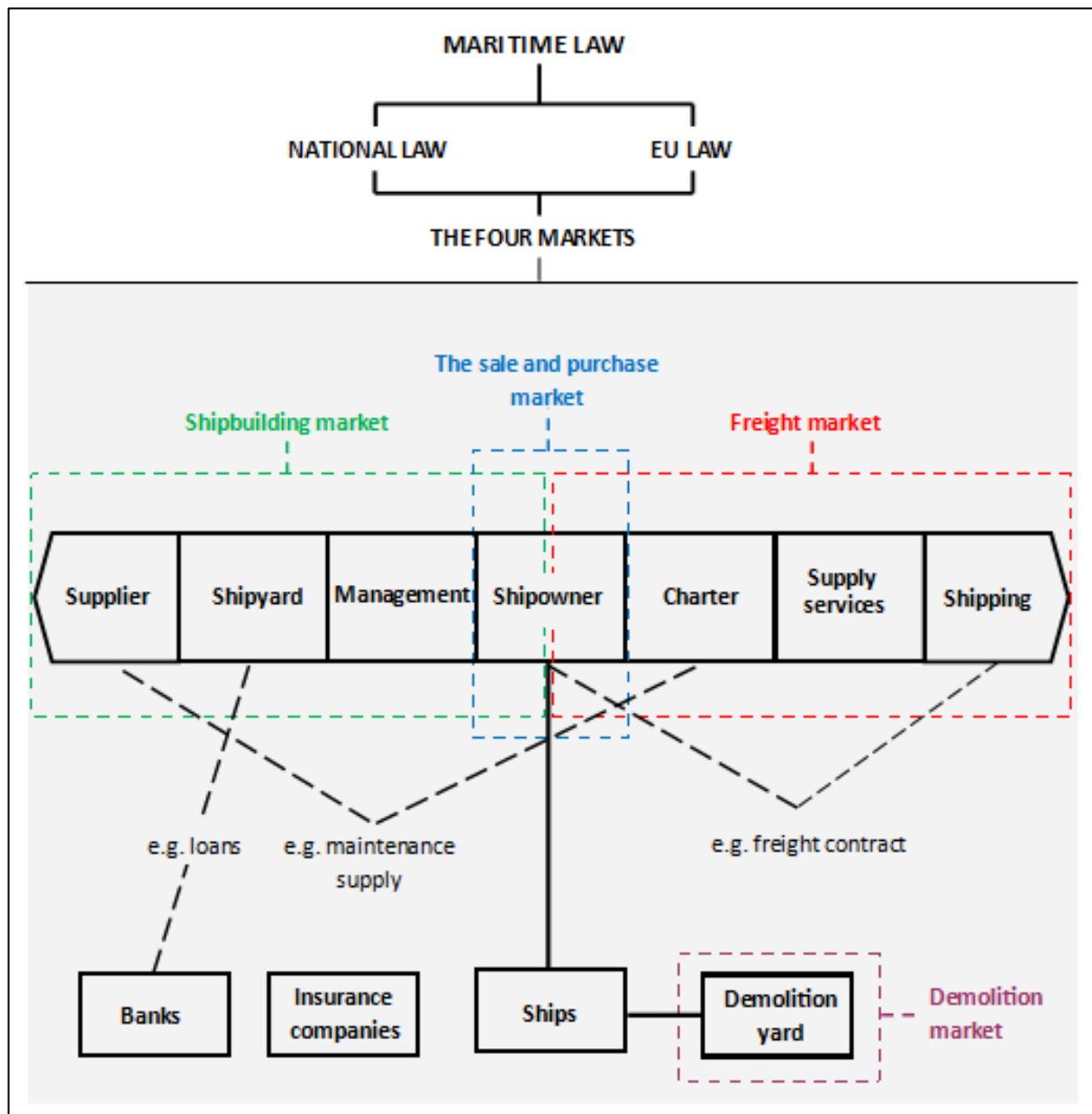
¹⁵ *Ibid.*

¹⁶ *Ibid.*, p. 613.

¹⁷ This is the authors attempt to define the "entire" shipping industry within one single model. Although this model frames the industry, it is worth noting that this is a very simplified version, why it cannot be classified as complete, therefore just a guideline.

present an overview of the complexity of the industry – and, thus, to give a broader understanding of the industry.

Figure 1.1 – Maritime market overview



Source: the author's creation¹⁸

¹⁸ This model is created from information gathered upon the markets, players and legal and economic framework e.g. set out by Stopford in his book *Maritime Economics* and based upon several discussions and inputs made by the maritime industry at closed meetings and BlueINNOship seminars.

The purpose of the figure is to illustrate the complexity of the industry and thus explain why the dissertation will have to introduce terms and concepts that may at first appear less related to relational contracting, but - in a maritime context - it is necessary in order to discuss relational contracting between the shipowner and the supplier.

While being a complex market, with many market players, the maritime business is an old and conservative industry which has led to a lack of innovation and development,¹⁹ as seen in other industries (e.g. the IT business or the aircraft industry).²⁰ Due to the economic pressure, many of the businesses are trying to redefine their role in the industry.²¹ Some of the shipowners are restructuring their business model which has led to new products, more technology, and fewer crew members on the ships²² - while suppliers are competing to keep their market shares.

The aim for the future ship is to be fully technology-based and, thereby, sailed autonomously - thereby no ship crew at all.²³ Although stretching far out in the

¹⁹ Makkonen, T., & Repka, S. (2016) "The innovation inducement impact of environmental regulations on maritime transport: a literature review." *International Journal of Innovation and Sustainable Development*, 10.1: P. 70-72. See also Andersen, J. A. B., McAloone, T. C., & Garcia i Mateu, A. (2013). Industry specific PSS: A study of opportunities and barriers for maritime suppliers. In *DS 75-4: Proceedings of the 19th International Conference on Engineering Design (ICED13), Design for Harmonies, Vol. 4: Product, Service and Systems Design, Seoul, Korea, 19-22.08. 2013.*

²⁰ Smith, D. (2013). "Power-by-the-hour: The role of technology in reshaping business strategy at Rolls-Royce." *Technology Analysis & Strategic Management*, 25(8): 987-1007. Rolls Royce has within the last half-century, revolutionized the air craft industry, with their Power-by-the-Hour®.

²¹ Some of the parties within the supply-chain set out in figure 1.1, needs to redefine their roles in order to become more competitive and for some of them, to keep being in business.

²² This is a way of optimizing, cost cutting and in order for the organizations to optimize the structure and business, some functions may be outsourced to contractors. Komianos, A. (2018). "The Autonomous Shipping Era. Operational, Regulatory, and Quality Challenges." *TransNav: International Journal on Marine Navigation and Safety of Sea Transportation*, 12(2): 335-348.

²³ This is the future of the shipping world and several companies in the industry are developing these improvements. The first "crew-less" ship is about to be do its first test runs. If this succeeds, then the suppliers of the components will have to follow the development, in order to stay in business and aiming at keeping or improving market shares. But it is worth mentioning that this thought is still far out in the future. For more information regarding unmanned ships see also; Komianos, A. (2018). "The Autonomous Shipping Era. Operational, Regulatory, and Quality Challenges." *TransNav: International Journal on Marine Navigation and Safety of Sea Transportation*, 12(2): 335-348. and <https://worldmaritimenews.com/archives/247204/interview-unmanned-ships-are-we-there-yet/> Last visited January 2nd 2019. See also the strategic alliance between Samsung Heavy Industries and Amazons AWS. AWS will be the cloud service provider, in regards to the development of autonomous shipping platforms. Source; Press Release from Amazon, "Samsung Heavy Industries Selects AWS as its preferred Cloud Provider", August 8th 2018. Also Denmark's maritime cluster is called Blue Denmark. The development in digitalization, automation and autonomous technologies is a high priority within Blue Denmark, while this can have great impact on Blue Denmark's competitiveness and their global organization of shipping. Therefore the Danish government – based on recommendations from Blue Denmark, has acknowledged that Blue Denmark needs to be leading in this area. That implies that the framework is in place, without any technical or legislative barriers. Original Language; Danish; Source; Søfartsstyrelsen, rapport, december 2017 - Analyse

future, this development should, from the perspective of the shipowners, create better and more cost-efficient ships and businesses in the future, as the number of employees can be decreased while making product improvements.²⁴ From the perspective of suppliers, there will be more competition and they therefore need to be one step ahead in order to be a part of the development by rethinking their products and how they can be optimized, or how to create new and more efficient products with increased durability and compliance with the actual needs of the customers.²⁵ Hence, as in any other industries, it is important to adapt to the market in which one operates, meaning that the parties of the maritime industry need to rethink their positions and the possibility of optimization. As an example, it is essential that the shipowners are cost-efficient, for instance, in relation to the on-going service and maintenance of the ships, which are provided by the market suppliers.

Based on the above, the importance of economic efficiency and innovation has been stressed, thus the maritime business needs to be economically efficient in order to create or maintain market shares. However, in contemporary society, this economic efficiency has turned out to require collaboration between the parties.²⁶ Through collaboration, the parties will arguably be able to sub-optimize and will therefore gain equal competitive advantages within the

af reguleringsmæssige barrier for anvendelse af autonome skibe – afsluttende rapport. Udarbejdet af Rambøll og Core Advokatfirma p. 1

<https://www.dma.dk/Presse/temaer/DetBlaaDanmark/Sider/default.aspx> - Last visited January 2nd 2019.

²⁴ Søfartsstyrelsen, rapport, december 2017 - Analyse af reguleringsmæssige barrier for anvendelse af autonome skibe – afsluttende rapport. Udarbejdet af Rambøll og Core Advokatfirma, p. 1-2. Link to final report; <https://www.sofartsstyrelsen.dk/Documents/Publikationer/Analyse%20af%20reguleringsm%C3%A6ssige%20barrier%20for%20anvendelse%20af%20autonome%20skibe%20Dec2017.pdf>. Last visited January 2nd 2019. Authors translation.

²⁵ This is basically what Rolls-Royce has succeeded with by their Power-by-the-Hour. Smith, D. (2013). "Power-by-the-hour: The role of technology in reshaping business strategy at Rolls-Royce." *Technology Analysis & Strategic Management*, 25(8): 987-1007 and Baines, T. & Lightfoot, H. (2014). 'Servitization in the Aircraft Industry: Understanding Advanced Services and the Implications of Their Delivery' in *Servitization in Industry* edited by Lay, G. Springer International Publishing, p. 45.

²⁶ Bustinza, O., Bigdeli, A., Baines, T., & Elliot, C. (2015). "Servitization and Competitive Advantage: The Importance of Organizational Structure and Value Chain Position". *Research-Technology Management*, 58(5): 53-60. According to Bustinza et al, in the manufacturing industry, there is a connection between service revenues and profit margins and that this is lead from collaborative elements. For companies to develop their businesses, the companies must address a number of issues, including organizational structure and position on the value chain. By collaboration and innovation, there is a possible competitive advantage.

market. Although collaboration appears to be the optimal solution to decreasing market efficiency, it is important that parties both receive equal gain and have mutual trust, as they may otherwise choose not to share vital information in the pursuit of becoming successful.²⁷ Hence, it is important that collaborations do not provide one party with a substantial advantage or valuable/hurtful knowledge about the other party that can be used against it.²⁸ Consequently, to deal with this potential issue/dispute, the parties need a contract in order to ensure a trustful relation.

Maritime contracts, i.e. a contract between a shipowner and a supplier, refer to contracts directly relating to vessels. They are distinct from general contracts, as they comprise an agreement regarding operation, navigation, maintenance, repairing, and/or provisioning of a vessel.²⁹

Currently, the market is defined by one-off transactions³⁰ which means that shipowners buy a product from a supplier, install it in the ship, and then merely keep doing business as usual. The supplier, on the other hand, would like to change this one-off business structure, by selling a product with a service agreement, which is also known as *servitization*, and thereby achieve new business bonds.³¹

2. Servitization

The concept of servitization is the suppliers “new” proposal to the shipowner, as a way to gain new business. The supplier is expanding its product portfolio by adding services to the products. The aim of this is to become more competitive and gain new market shares, by offering a complete product package. The concept

²⁷ Bagley, C. E., & Tvarno, C. D. (2014). "Pharmaceutical public-private partnerships: Moving from the bench to the bedside." *Harvard Business Law Review*, 4(2): 373-401, p. 383-85.

²⁸ *Ibid.*

²⁹ Eddings, G., Chamberlain, A. & Warder, R. (2017). *The shipping law review* (4th ed). Law Business Research, p. 169.

³⁰ The dissertation uses one-off transactions as a term for a classic purchase-sales situation between the shipowner and the supplier.

³¹ This dissertation is a part of Blue INNOship project# 15 regarding *servitization*, therefore the dissertation will clarify the concept hereof. Participants in this project is Danish Maritime and Copenhagen Business School.

of selling a product with a service agreement is no news to the manufacturing industry, i.e. the aircraft industry and pharmaceutical industry, although, this is not a common concept within the maritime industry. This “new” solution called servitization has become the new “it” word within the maritime industry, however, a clarification of what servitization entails and how this is relevant for the industry is required.

The dissertation will briefly discuss servitization as a way of defining the proposal from the supplier, although, this dissertation will only use the main elements from servitization and incorporate these in connection with relational contracting. The reason is that the dissertation wants to introduce an alternative contract model which suggests a long-term collaborative element - as a contrast to servitization which suggests a fixed product-service system rather than a customized collaboration.

2.1 Servitization – the new “buzzword”

There are several different opinions regarding the exact definition of servitization which makes it difficult to define precisely. Nevertheless, according to the findings of Tim Baines,³² Howard Lightfoot,³³ Ornella Benedettini³⁴ and John Kay³⁵ (hereinafter, referred to as, “Baines et al.”), servitization is:

“The innovation of an organizations capabilities and processes to shift from selling products to selling integrated products and services that deliver value in use. There are a diverse range of servitization examples in the literature. These tend to emphasize the potential to maintain revenue streams and improve profitability.”³⁶

³² Professor at Aston University, is the leading international authority on servitization and advanced services.

³³ Dr. Howard Lightfoot is a British Professor at the Cranfield University. He is a prominent figure within Servitization. Manager of Operations Excellence Institute at Cranfield University, Department of Manufacturing.

³⁴ Academic visitor at University of Cambridge and University Lecturer at Politecnico de bari.

³⁵ Researcher at Cranfield University.

³⁶Baines, Tim S., et al. (2009). "The servitization of manufacturing: A review of literature and reflection on future challenges." *Journal of manufacturing technology management* 20.5, p. 547.

This is a very broad definition, which may easily be simplified. Therefore, in order to comprise it, the dissertation will use the following definition of servitization:

“The delivery of a service component as an added value, when providing products.”³⁷

This definition is considered to be more precise, but still contains the relevant aspects of the dissertation.

From the supplier’s perspective, providing a product with an added value, e.g. a service, is a step further than the classic manufacturing business, and a step towards being increasingly a service provider. Back in the days, the supply service chain was comparatively black and white; suppliers would make the products, while service companies would be handling maintenance – which is not the case anymore. Today, boundaries are blurred as trailblazing manufacturers embark on a transformation – and that is what is known as servitization.³⁸

Tim Baines and Howard Lightfoot (hereinafter, referred to as, “Baines and Lightfoot”) states the following:

“In recent years, more and more manufacturers are competing through a portfolio of integrated products and services. This is a conscious and explicit strategy for manufacturers, with the provision of product-centric services providing a main differentiating factor in the marketplace. And it is this which has become known as the servitization of manufacturing.”³⁹

³⁷ *Ibid.*

³⁸ *Ibid.*

³⁹ Baines, T. S., and H. Lightfoot. (2013). *Made to Serve: How Manufacturers Can Compete through Servitization and Product Service Systems*. John Wiley & Sons, p. 3-5.

This is in reference to the movement mentioned above, where the suppliers are taking a step towards being a service provider rather than a classic manufacturer. This is – as Baines and Lightfoot states – a strategy for the suppliers, as a way of becoming more competitive and gaining more market shares by extending their product portfolio. In connection with this case, it is regarded highly relevant. They also points out that servitization has been primed, due to the fact that academics have been encouraging suppliers to focus on the customer extreme of the supply chain for over two decades.⁴⁰ Transforming from the classic manufacturing business to delivering a product-centered service is not a small shift, by means of transforming the entire organizational operation, thus, this may cause some companies to be slow on the uptake.⁴¹

It is no news that all suppliers offer services along with their products yet some of them use services as the basis of their competitive strategy.⁴² Servitization has become the innovative driving force for capabilities and processes of an organisation. The aspiration is to create mutual value through a shift from selling a product to selling a product-service system.^{43,44}

When discussing a product-service system or selling a product with a service agreement, there are different “levels” of services, which means that it ranges from simple to advanced and it depends on the level hereof. The advanced services are considered special in connection with servitization.⁴⁵ They provide the customer with the capabilities which arise from the use of the products of the

⁴⁰ *Ibid.*, See also Baines, Tim S., et al. (2009). "The servitization of manufacturing: A review of literature and reflection on future challenges." *Journal of manufacturing technology management* 20.5, p. 547-549.

⁴¹ *Ibid.*, See also Bustinza, O., Bigdeli, A., Baines, T., & Elliot, C. (2015). "Servitization and Competitive Advantage: The Importance of Organizational Structure and Value Chain Position". *Research-Technology Management*, 58(5): 53-60.

⁴² Lee, S., Yoo, S., & Kim, D. (2016) "When Is Servitization a Profitable Competitive Strategy?" *International Journal of Production Economics* 173: 43-53.

⁴³ Baines, T. & Lightfoot, H. (2014). 'Servitization in the Aircraft Industry: Understanding Advanced Services and the Implications of Their Delivery' in *Servitization in Industry* edited by Lay, G. Springer International Publishing, p. 45.

⁴⁴ Product-Service-System is an actual concept, whereas selling a product with a service agreement is the same idea, though not considered a concept.

⁴⁵ Baines, T. S., and H. Lightfoot. (2013). *Made to Serve: How Manufacturers Can Compete through Servitization and Product Service Systems*. John Wiley & Sons, p. 5.

supplier, and demand that the supplier extends itself significantly beyond design and production based competences.⁴⁶

The fact is that, in many cases, it is the supplier who is moving into the territory of activities which was previously carried out by the customers (e.g. shipowners) themselves, and is therefore delivering capabilities that are a major component of the primary business processes of the customer.⁴⁷ For instance, when a supplier is engaged in selling a product with a service agreement to a shipowner, this service is the way in which a supplier enters a territory which formerly belonged to the shipowner who carried out the service in question. Furthermore, advanced services are commonly combined with additional features. Contract life-cycles tend to be long-term (common practice is 5-15 years),⁴⁸ where the supplier takes the responsibility and risks for ensuring that the capability performs as expected, and revenue payments are often coupled to usage.⁴⁹ These features are so prominent that advanced services are frequently referred to in these terms. Performance contracting, availability contracts, and risk and revenue sharing contracts are all terms that are commonly used to describe advanced services.

2.2 The success of the supplier – servitization in the aircraft industry

In order to succeed with the delivery of advanced services, a supplier is likely to need some new and alternative organizational principles, structures, and processes,⁵⁰ which differ from those associated with traditional product

⁴⁶ Baines, T. & Lightfoot, H. (2014). 'Servitization in the Aircraft Industry: Understanding Advanced Services and the Implications of Their Delivery' in *Servitization in Industry* edited by Lay, G. Springer International Publishing, p. 45.

⁴⁷ *Ibid.*, See also Chase, R., & Garvin, D. (1989). The service factory. *Harvard Business Review*, 67(4): 61–69.

⁴⁸ Baines, T. & Lightfoot, H. (2014). 'Servitization in the Aircraft Industry: Understanding Advanced Services and the Implications of Their Delivery' in *Servitization in Industry* edited by Lay, G. Springer International Publishing, p. 46.

⁴⁹ *Ibid.*,

⁵⁰ Oliva, R. and Kallenberg, R. (2003). "Managing the transition from products to services." *Int. J. Service Industry Mgmt*, 14(2): 160–172.

manufacture.⁵¹ Richard B. Chase (hereinafter, referred to as, “Chase”)⁵² and David A. Garvin (hereinafter, referred to as, “Garvin”)⁵³ have suggested for some time that there is a subtle mix of organizational structures that are appropriate to a servitized supplier.⁵⁴ These are distinct and different from those associated with either a more traditional product manufacturer, or a pure service provider – although, the actual challenge for the suppliers are not yet widely appreciated. As previously mentioned, servitization is not a common concept in the maritime industry, but it has become best-practice within the aircraft industry, which means that the aircraft industry offers an excellent opportunity to gain an insight into the implications of servitization for a supplier.⁵⁵ Components and products for ships are usually classified as advanced, although, it depends on the specific component. Therefore, the long-term collaboration between the shipowner and the supplier - which will be discussed in this dissertation - is based upon a complex process regarding advanced products and services. This element will be considered in connection with the relational contracting situation.

Many cases of servitization occur in the aircraft industry, which can also be categorized as one of the advanced industries such as the maritime. It seems inevitable not to compare it to the aircraft industry, and thus, in the upcoming parts of the dissertation, elements from this will be applied in discussion of the relational collaboration between the shipowner and the supplier.

Servitization in the aircraft industry caught on in the late 1990’s with the engine manufacturer Rolls-Royce which structured a “TotalCare” package for its

⁵¹ For instance, it might be insufficient to simply attempt to replicate the lean principles of Toyota.

⁵² Professor Emeritus of Operations Management Marshall School of Business, University of Southern California. Specialized in service operations management.

⁵³ Former Professor of Business Administration at Harvard Business School.

⁵⁴ For further information see Chase, R., & Garvin, D. (1989). “The service factory”. *Harvard Business Review*, 67(4): 61–69.

⁵⁵ Baines, T. & Lightfoot, H. (2014). ‘Servitization in the Aircraft Industry: Understanding Advanced Services and the Implications of Their Delivery’ in *Servitization in Industry* edited by Lay, G. Springer International Publishing, p. 46.

customer, American Airlines.⁵⁶ Here, the customer simply paid for hours flown by the engine. This type of contract was initially risky and potentially loss-making. However, over time, three fundamental elements were introduced to mitigate the associated risks in delivering this servitized business model. These are: the development of Engine Health Management (EHM) systems and data analysis software; the establishment of a joint venture between Maintenance Overhaul and Repair facilities at the operational hubs of the customer (in Texas, Singapore, Hong Kong); and the operations control center in Derby, England.⁵⁷

These technologies and facilities have been major facilitators of the effective and efficient delivery of the service offering. Today, Rolls-Royce makes over 50 percent of its revenues from advanced and intermediate services.⁵⁸

2.3 From servitization to relational contracting

As stated above, the maritime industry is a complex and costly industry and the suppliers are trying to change the game of the market, although, the suppliers need to comply with the market and create new product ideas - like Rolls-Royce did in the 1990's. The suppliers are proposing servitization to the shipowners, as the new thing – meaning that the maritime industry has reached a level of possible outsourcing situations. Servitization is an approach for the suppliers to move into the territory of activities carried out by the shipowners, thus servitization is characterised as similar to outsourcing.

However, other industries e.g. the pharmaceutical industry and construction industry have - due to their development - moved even further and past the

⁵⁶ Smith, D. (2013). "Power-by-the-hour: The role of technology in reshaping business strategy at Rolls-Royce." *Technology Analysis & Strategic Management*, 25(8): 987-1007. Bustinza, O., Bigdeli, A., Baines, T., & Elliot, C. (2015). "Servitization and Competitive Advantage: The Importance of Organizational Structure and Value Chain Position". *Research-Technology Management*, 58(5): 53-60.

⁵⁷ Baines, T. & Lightfoot, H. (2014). 'Servitization in the Aircraft Industry: Understanding Advanced Services and the Implications of Their Delivery' in *Servitization in Industry* edited by Lay, G. Springer International Publishing, p. 46.

⁵⁸ *Ibid.*

outsourcing element to strategic alliances i.e. relational contracting. Therefore, the dissertation will discuss relational contracting and how other industries have used these, in order to clarify how moving even further to relational contracting could be beneficial to the maritime industry.

Therefore dissertation will be based on a collaboration of customized services and products, rather than a fixed product with a service agreement. The collaboration element of the dissertation, will be set out on a long term. This long-term relational aspect, is the key element to the discussion in the dissertation, thus a long-term collaboration may be beneficial for both the shipowner and the supplier.

One of the main difficulties in this situation is the fact that shipowners are mainly experts on shipping (i.e. not the ship itself) and seek to minimize the costs while at the same time strive to find quick solutions that meet the statutory requirements. Nevertheless, shipowners are not necessarily experts on the long-term cost-effective maintenance of the ship. Within a newbuilding situation or if they are retrofitting, the shipowners have imperfect knowledge⁵⁹ and their decisions are based on limited information. Hence, the shipowners may prefer short-term and cheap solutions due to imperfect knowledge. In contrast, the market suppliers are experts on long-term cost-effective maintenance of ships. However, the short-term and cheap solutions are rarely the most cost-effective in the long run which creates an imperfect market with unexploited potential, where relational contracts may be the solution.

Therefore, as an alternative to servitization, the dissertation will analyze relational contracting between the shipowner and supplier. By using relational

⁵⁹ Green transition with respect to shipping is not just about new ships. The global fleet is historically high, and when it is also relatively young, it is especially necessary for retrofitting existing ships. Retrofitting installation of equipment, components, systems and subsystems on board existing ships. When talking about retrofitting today, it's largely about to make climate and environmentally friendly updates of ships, not least because of new requirements and regulations.

contracts as an alternative to servitization there is a possibility for joint optimization through the collaboration element, beneficial for both parties.

3. Purpose statement

The purpose of the dissertation is to analyze how relational contracts can optimize the situation for the shipowner and the supplier in regards to the current market situation and lack of innovation in the maritime industry.

Despite the generally fast-growing technology developments, the increasing amount of regulations and the increasing competition, the maritime industry lacks innovation. Accordingly, the industry has a huge potential for more efficient business strategies. This dissertation will analyze relational contracting as a possible business strategy, in order to optimize the situation between the shipowner and the supplier.

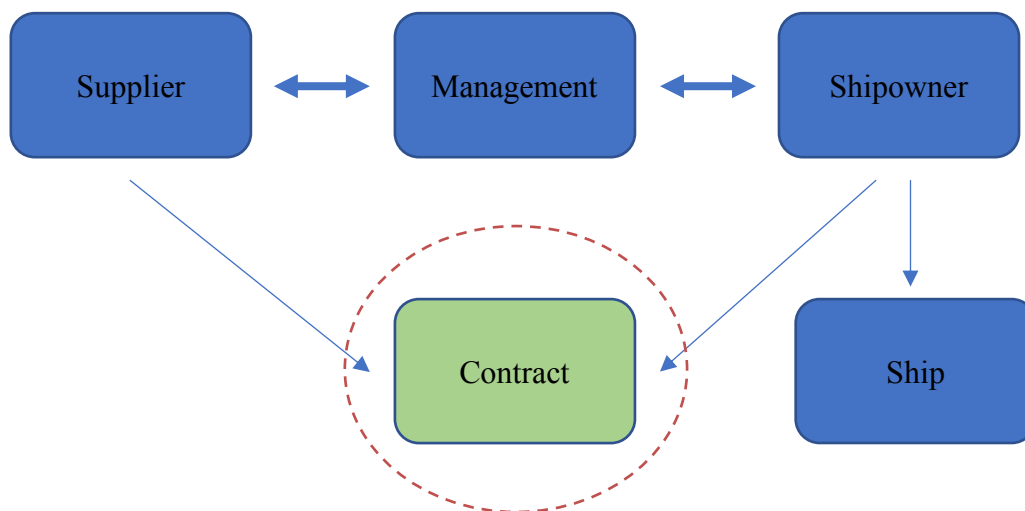
The aim of using relational contracting is to create value by creating a collaboration between the parties and thereby develop improved and more innovative products. In this regard, the dissertation will analyze a part of the contractual aspects relevant to relational contracts. Hence, the dissertation will discuss relational contracting in general and analyse specific parts of relational contracts in specific and in relation to the shipping industry.

Furthermore, the purpose of the dissertation is to analyze how relational contracts might create value for the parties and how the collaboration between the parties should be established in order to create a contractual relationship between the parties that will increase the competitive advantages of parties.

4. Case study and the contract parties

In order to conduct an analysis in order to answer the research question, the dissertation will be based upon a case. Figure 1.1 illustrates the supply chain within the maritime industry, and the case is therefore set out from this supply chain. Although, the dissertation has simplified it in order to make a complex situation less complicated. Figure 1.2 below illustrates the updated and simplified supply chain which the dissertation will use as a case study. In practice, there would be far more parties involved in a supply chain relating to a market as the maritime industry,⁶⁰ which is why this case study mirrors a simplification of the supply chain.

Figure 1.2 - Case overview



Source: the author's creation

⁶⁰ As illustrated in figure 1.1.

4.1 The parties involved

Even though the illustration above outlines the scenario, the maritime industry is an enormous and complex industry.⁶¹ As a consequence, it is relevant to further investigate the parties involved in order to provide a precise definition hereof.

According to Martin Stopford⁶² (hereinafter, referred to as, “Stopford”), the maritime market has over time developed into three separate - yet closely related - segments:

- Bulk shipping
- Specialized shipping
- Liner shipping.

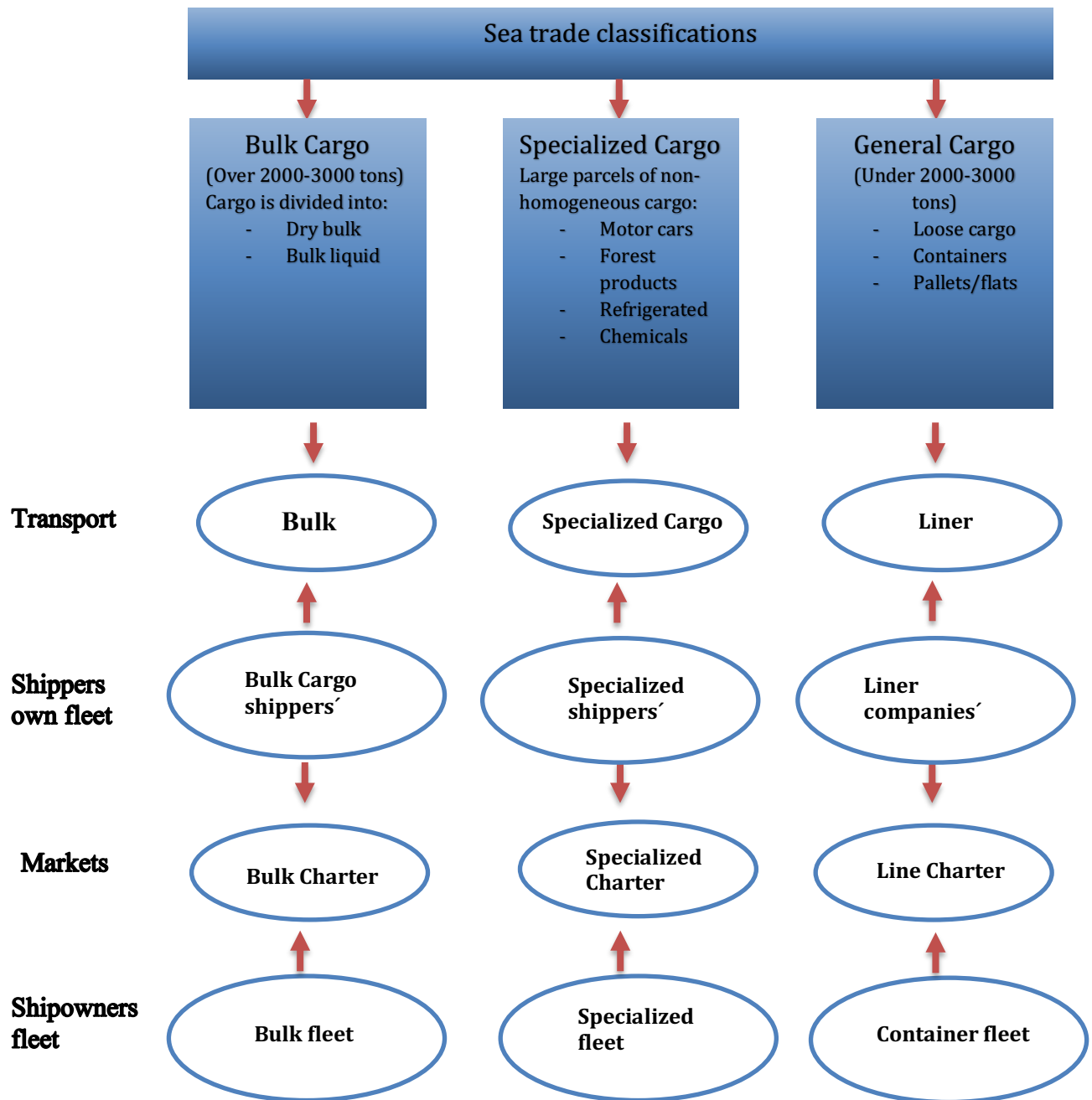
Although they are part of the same industry, each of the three carry out different tasks and have distinct characters. Figure 1.3 summarizes how the world trade is divided into these three streams.⁶³

⁶¹ Figure 1.1 is illustrating the industry, though due to several markets, the different market players can have different purposes i.e. a shipowner is not just a shipowner, but can be several things, therefore a definition of the parties is a necessity.

⁶² Martin Stopford. British Economist, graduate of Oxford University and has a PhD in International Economics from London University. Director of Business Development at British Shipholders; Global Shipping Economist with Chase Manhattan Bank; Chief Executive of Lloyds Maritime Information; non-executive President of Clarkson Research Limited CRSL and Director of MarEcon Ltd. Dr Stopford is too a visiting Professor at Cass Business School in London, Dalian Maritime University in China and Newcastle University. He has an honorary Doctorate from Solent University and has received a lifetime achievement award at the 2010 Lloyds List Global Shipping Awards. In 2013 he was appointed Shipping Personality of the Year at the Sea trade Global Awards Dinner in London and in 2015 was awarded the Onassis Prize for Shipping.

⁶³ Stopford, M. (2009). *Maritime economics*. Routledge, p. 61.

Figure 1.3 - The three segments of the maritime industry



Source: the author's creation⁶⁴

⁶⁴ Although based upon Stopford, M. (2009). *Maritime economics*. Routledge, p. 62. In regards to the supply structure, the primary fleet is owned by the primary service operators shown in the *shippers own fleet* row. Additionally capacity is hired from independent shipowners who buy ships to charter out. The arrows in the *market* row are pointing both ways, because shippers may charter their ships out as well as they may charter ships from other owners as well. Therefore the shipowner and the shipper may both own a fleet, although the difference lies within their business, as the shipowners primary business may be to charter their ships out, whereas the shipper also performs transportation.

As the figure illustrates, the maritime market is divided into bulk parcels, specialized parcels, and general cargo parcels (depending on the PSD⁶⁵ function for the commodity, as well as the service requirements of each cargo parcel). Iron ore, coal, and grain (which are characterized as large homogeneous parcels) are usually carried by the bulk shipping industry; the smaller parcels of general cargo are carried by the liner shipping industry; and the specialized cargoes, which are shipped in larger volumes, are transported by the specialized shipping industry.⁶⁶ The three cargo streams create a demand for bulk transport, specialized transport, and liner transport.⁶⁷ An important remark on the organization of the supply of ships, which can be seen in the lower part of the figure, is that there are drawn a major distinction between the fleets of ships owned by companies shipping their own cargo,⁶⁸ in their own ships, and the ships owned by independent shipowners,⁶⁹ chartered to the cargo owners.⁷⁰ The charter markets, which is the place where rates for transport is being negotiated, lie between the companies' own fleet and the chartering fleet.⁷¹ According to Stopford, this structure is remarkably flexible, which he exemplifies by an oil company which might decide to buy its own fleet of tankers to cover half of its needs in terms of transportation of oil. Chartering tankers from shipowners would cover the other half.⁷²

The illustration in figure 1.3 provides an indication of the shipping market and how the market is divided. One part that is not stressed in the figure, though, is the different players within the market. Figure 1.3 revolves around the transport

⁶⁵ Parcel size distribution. Commonly used to explain the complex mix of cargoes. The PSD function describes the range of parcel sizes in which that commodity is transported. Stopford, M. (2009). *Maritime economics*. Routledge, p. 58-59.

⁶⁶ *Ibid.*, p. 61.

⁶⁷ This is illustrated in *the transport row*. This is in reference to what kind of transport each is conducting.

⁶⁸ Illustrated in *the shippers own fleet row*.

⁶⁹ Illustrated in *the shipowners fleet row*.

⁷⁰ *Ibid.*

⁷¹ Illustrated in *the market row*, where the markets are divided into Bulk Charter, Specialized Charter and Line Charter. *Ibid.*

⁷² *Ibid.*, p. 63.

and demands of which, and does not involve all the other markets and players which arise from of the primary market of shipping.⁷³

As a result, a broad definition of the parties leaves the dissertation with an obstacle, as this actually calls for a clear and precise characterization of the parties - especially the shipowner, the supplier, and the management.

4.1.1 The shipowner

In the maritime industry, the terms “shipowner” and “shipping company” are used vividly. Therefore, a precise definition of which is highly relevant to identify. A shipowner can be defined in multiple ways which may depend on the kind of industry in which it is operating.⁷⁴

However, first of all, a shipowner can be defined as an individual who owns a controlling interest in one or more ships.⁷⁵ According to Stopford, the ships are usually registered as one-ship companies, where the owner has the controlling interest. Within this industry, there is a distinction between the different ownership perspectives. The research of the dissertation within relational and long-term contracting might not be relevant for all the players in the maritime industry. Thus, in order to narrow down and specify the term shipowner, it is relevant to dig deeper into the world of the maritime players to clarify who could benefit from these contract types. Long-term contracting might be difficult or not particularly relevant for the parties, who are/engaged in:

- asset players
- short contracting, e.g. tramp,⁷⁶ dry bulk, or tankers

⁷³ Examples could be, for instance, the shipbuilding or the scrapping industry which - due to diversified markets and players - make it difficult to distinguish between the specific parties, as they have different roles, yet, also similarities in the terms used to describe the different parties. As an example, plenty of terms concerning the parties involved are used interchangeably.

⁷⁴ This is in reference to which market/industry the shipowner is operating e.g. whether it is a specialized or bulk market, or whether the party is involved in shipping or not, if the shipowner is involved in tramp shipping, asset players, dry bulk etc.

⁷⁵ Stopford, M. (2009). *Maritime economics*. Routledge, p. 63.

⁷⁶ A boat or ship engaged in the tramp trade is one which does not have a fixed schedule or published ports of call. As opposed to freight liners, tramp ships trade on the spot market with no fixed schedule or itinerary/ports-of-call(s). Chartering is done chiefly on London, New York, Singapore shipbroking exchanges. The Baltic Exchange serves as a type of stock market index

- and/or ships operated with third party ship management.⁷⁷

On the other hand, there are some players where long-term contracting can be of great benefit. These are:

- owners with long owner perspective
- specialized vessel segment
- owners with long-term contracts (+5 years)
- and/or vessels in fixed trades, e.g. container, ferries, LNG etc.⁷⁸

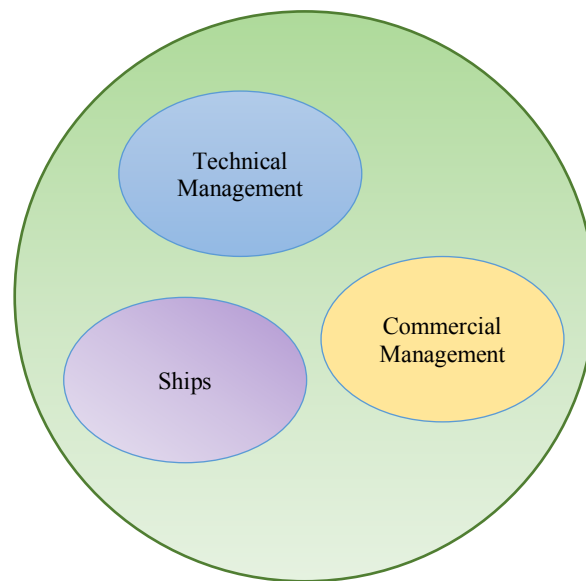
The definition of a shipowner is (simplified) a party who is the beneficial owner of a ship with a long owner perspective and is operating with a technical management and commercial management. Accordingly, this will be the definition that the dissertation will use, and this is illustrated in figure 1.4 which concerns the dissertation's view upon the shipowner.

for the trade. The tramp ship is a contract carrier. Unlike a liner, often called a common carrier, which has a fixed schedule and a published tariff, the ideal tramp can carry anything to anywhere, and are influenced by supply and demand.[3] To generate business, a contract to lease the vessel known as a charter party is drawn up between the ship owner and the charterer. There are three types of charters, voyage, time and demise. Stopford, M. (2009). Maritime economics. Routledge, p. 23-35.

⁷⁷ It might not be interesting for those players as their business model, is different. Asset players are buying ships as cheap as possible and sell them at a higher price. They are not interested in investing more money in the ship, than the selling price. Short contracting is more of a chartering situation, whereas the business are not interested in performing maintenance on a ship, which they have on a short term lease. Ships whom are operated by third parties, is a chartering situation, where it depends on the charter contract between the shipowner and the charter party in regards to whom has the responsibility for performing maintenance. However, they are not interested in adding more money to the ship, as it does not create further value for them. See also Stopford, M. (2009). *Maritime economics*. Routledge, pp. 275-276;176; 185-88; 590-94.

⁷⁸ Contrary to the other parties, these parties are in for the long run, meaning that is value creating for them to invest in the ship, as the ship is an investment for them. Therefore a joint collaboration with the supplier, is a possibility, thus, the shipowner can benefit from this.

Figure 1.4 - The shipowner's portfolio



Source: the author's creation

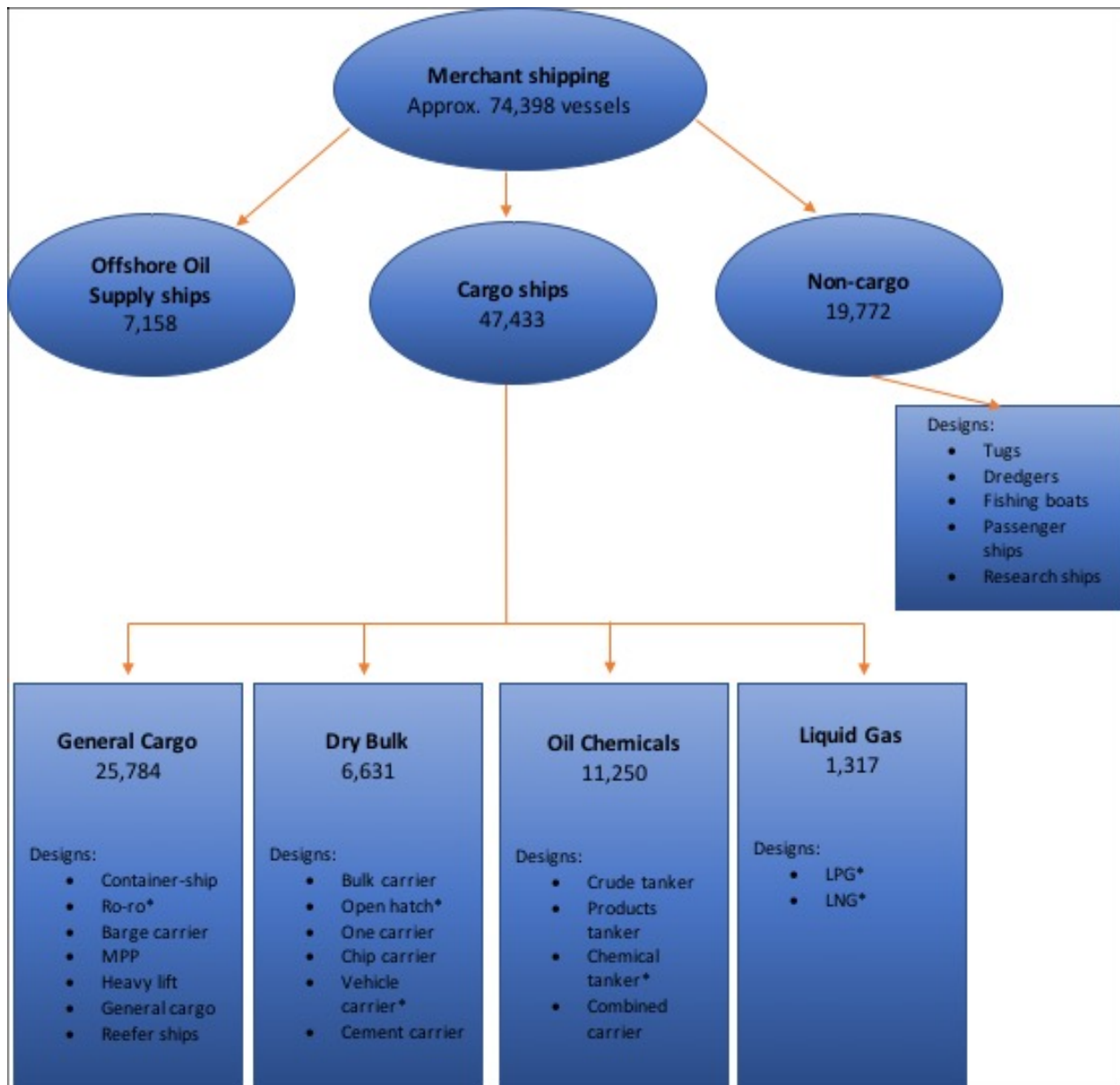
The definition of a shipowner can be very broad, and even though the dissertation has specified a definition to *owning a ship*, the need for further clarification still remains.

Being the beneficial owner of a ship can mean plenty of things, due to the diversity of the maritime market. Although, when being a shipowner, the operational market is not given by that single term. On a worldwide basis, in 2007, there were approximately 74,398 maritime vessels.⁷⁹ This commercial fleet can be divided into different ship types which all separates into different markets. According to Stopford, the industry is divided into three groups – illustrated by figure 1.5 - which are further divided into four different sectors, and finally are divided into 19 different ship types based upon the physical design of the hull.⁸⁰

⁷⁹ Stopford, M. (2009). *Maritime economics*. Routledge, p. 69, based upon The Clarkson Register July 2007, CRSL, London. Which also indicates that this number is just a guideline, due to the 12th year gap.

⁸⁰ Stopford, M. (2009). *Maritime economics*. Routledge, 2013, p. 569.

Figure 1.5 - The allocation of ship types



Source: Stopford⁸¹

Figure 1.5 illustrates the allocation of ships and the different types of ships a shipowner can be the beneficial owner of. Thus, a shipowner will in the dissertation be defined as a party which is the beneficial owner of a commercial ship.

⁸¹ Stopford, M. (2009). *Maritime economics*. Routledge, p. 569.

4.1.2 The management

The management party can both be in-house or an external party which may be separated from the shipowner. According to Stopford, the management can be defined as a: *“Day-to-Day Management of the ships which is carried out by another company established for this purpose. Usually these companies are located in a convenient shipping centre e.g. London or Hong Kong.”*⁸²

As a consequence of Stopford’s definition, this dissertation defines the management company as an independent party, whose main function is to conduct day-to-day management to the shipowners.

4.1.3 The supplier

The dissertation will use the term “supplier” as an expression of a manufacturing party. More specifically, a manufacturer of components to ships, for example engines, scrubbers, or oil pumps. The dissertation will not narrow it down to a specific component, as it is deemed irrelevant. The solution to the problem handled in this dissertation does not rely on the product itself, but, rather, on an overall function within the market.

With the parties well defined, the case – which is illustrated in figure 1.2 – can be specified further.

In this dissertation, the current market is defined by one-off transactions and a desire for economic efficiency. Each of the three parties play their part in the purchasing situation. The supplier is the selling part; the shipowner is the buying part; and the management is the intermediary part. In other industries, which use one-off transactions, the classic scenario contains two parties, although in the maritime market, the management takes part as a third party and can be an

⁸² Stopford, M. (2009). *Maritime economics*. Routledge, p. 674. (authors emphasis)

enormous market player, since it usually represents the buyer. Accordingly, often when the shipowner needs a product, it will hire a management which will engage in the purchase on behalf of the shipowner. The management receives a product specification and a price range, and then buys a product. In the buying process, the shipowner and the supplier do not interact at any point, which is quite unusual in a classic purchasing situation.⁸³ The dissertation is centered around the current situation where the parties are performing one-off transactions. However, the aim of the dissertation is to clarify a redefinition of this situation by moving from one-off transactions to a relational contract based on long-term collaboration between the two parties i.e. shipowner and supplier. The purpose of doing so is rooted in the hypothesis stating that both the parties and the market will increase value, and promote further innovation.

With the definition of the case in place, the methodology of the research will be set out.

5. Methodology

To approach the relational contracts, the dissertation will identify which legal methodology that will be applicable, and - most importantly - how this research will build upon it.

5.1 Philosophy of law

Several legal schools or philosophies of law has defined legal research since the middle-aged, starting with the natural law theory.⁸⁴ This theory considers law to

⁸³ This is merely based on how a traditional set up would be like e.g. a car dealer wants to order ten new Ford cars, then he contacts the retailer directly and not hires an intermediary part, to fix the purchase for him.

⁸⁴ The history of the law of nature stretches back at least 2,000 years. See Hervey, T., et al. (2011). *Research methodologies in EU and international law*. Bloomsbury Publishing, p. 35.

draw its authority from certain immutable principles that are inherent in nature and/or reason - whether or not by virtue of God.⁸⁵ Legal positivism replaced the natural law when the rule of law and deviation of powers was introduced after the French revolution.⁸⁶ Natural law and legal positivism are counterparts in regards to answering the question of what is the law? In answering hereto, the natural law emphasizes an evaluation of the content of the legal rule before it is considered binding and valid.

Legal positivism, on the other hand, is based on the actual existing legal order in a particular geographical area, at a certain time and in the legal rules that are enacted and enforced by the authorities. Natural law is concerned with how law *should* be,⁸⁷ however, legal positivism is concerned with how the law *is*, and not how it should be. Hence, legal positivism is a legal theory, which separates law and morality.⁸⁸ Legal positivism strives for confident (positive) knowledge (truth). This knowledge is created from positivism either in the form of abstract calculations in regards to size or numbers or empirical surveys of facts.^{89,90} Legal positivism sees the law as an observable phenomenon of legislation, custom, adjudication by Courts and other legal institutions.⁹¹ Legal positivism is, therefore, suited to research questions concerning the description and explanation of law as it is.⁹²

⁸⁵ Hervey, T., et al. (2011). *Research methodologies in EU and international law*. Bloomsbury Publishing, p. 35.

⁸⁶ Tvarnø, C. D. & Nielsen, R. (2017). *Retskilder og retsteorier*. Djøf/Jurist-og Økonomforbundet, p. 311.

⁸⁷ Tvarnø, C. D. & Nielsen, R. (2017). *Retskilder og retsteorier*. Djøf/Jurist-og Økonomforbundet, p. 299.

⁸⁸ Based upon a legal positivistic view, the law does not depend on morality in order to be valid, whether the law or a legal rule contravenes one's morality, ethics or religion, the law is binding and must be obeyed. Tvarnø, C. D. & Nielsen, R. (2017). *Retskilder og retsteorier*. Djøf/Jurist-og Økonomforbundet, p. 333 and see also Schaumburg-Müller, S., and Evald, J. (2004). *Retsfilosofi, retsvidenskab & retskildelære*. Djøf/Jurist-og Økonomforbundet.

⁸⁹ The positivistic theory is founded by David Hume, whom was a Scottish philosopher. Tvarnø, C. D. & Nielsen, R. (2017). *Retskilder og retsteorier*. Djøf/Jurist-og Økonomforbundet, p. 333.

⁹⁰ The importance of this is to find out what the truth is – not relate to whether it is bad or good. The search of the truth is either through the logic truth or the empirical recognition. Schaumburg-Müller, S., and Evald, J. (2004). *Retsfilosofi, retsvidenskab & retskildelære*. Djøf/Jurist-og Økonomforbundet.

⁹¹ Hervey, T., et al. (2011). *Research methodologies in EU and international law*. Bloomsbury Publishing, p. 38.

⁹² This does also include analysis of complex legal texts to determine their meaning. Hervey, T., et al. (2011). *Research methodologies in EU and international law*. Bloomsbury Publishing, p. 38.

Additionally, multiple philosophies of law have derived from these two founding philosophies of law - either reacting against them or using them as a springboard.⁹³ One of these philosophies of law is Scandinavian legal realism, which is closely tied to legal positivism. Likewise, Scandinavian legal realism should be perceived as a response to natural law.⁹⁴

The philosophy of law applied in this dissertation is legal positivism. This dissertation concerns national, EU and international law - thereby not dealing exclusively with Scandinavian law. Legal positivism has been the prevailing legal theory in Europe since the 18th century.⁹⁵ Thus, the approach adopted here is that law is something which has been validly made and articulated by a recognized law-making body/bodies.

A prominent figure in modern legal positivism is Hans Kelsen⁹⁶ (hereinafter, referred to as, “Kelsen”).⁹⁷ In 1934, he developed the *Pure Theory of Law* which since then has been both the object of admiration and torment.⁹⁸ The *Pure Theory of Law* extricates legal science from any moral or political ideology, and from sociology.⁹⁹ According to Kelsen, legal science is a specific dogmatic theory.¹⁰⁰ He perceived legal norms as being part of a greater hierarchy of norms. Consequently, in order to determine the validity of a legal norm, it is necessary to trace the norm through higher legal norms back to the basic norm,¹⁰¹ which

⁹³ *Ibid.*, p. 42

⁹⁴ Today, it is the philosophy of law that prevails in Denmark. Although the Scandinavian legal realism prevail in Denmark, this is not the philosophy used in this dissertation due to, the international perspective of the dissertation. If the dissertation were to only discuss Danish law, the Scandinavian legal realism would be the chosen philosophy in that case.

⁹⁵ See Nielsen, R. & Neergaard, U. (2010). *EU ret* (6th ed.). Thomson Reuters Professional A/S, p. 81.

⁹⁶ Austrian lawyer, legal philosopher and political philosopher. Author of the *Pure theory of law* (Orig. *Reine Rechtslehre*).

⁹⁷ The positivistic theory is founded by David Hume, whom was a Scottish philosopher. Tvarnø, C. D. & Nielsen, R. (2017). *Retskilder og retsteorier*. Djøf/Jurist-og Økonomforbundet, p. 336-40.

⁹⁸ See the introduction by Paulsen in Kelsen, p. xvii, where the criticism put forward by mainly American and English legal philosophies to the *Pure Theory* is quoted. The criticism called the *Pure Theory* “barren”, “utterly sterile” and amounting to an “exercise in logic and not in life”.

⁹⁹ Kelsen, H., Paulson, B. and Paulson, S. (1992). *Introduction to the problems of legal theory*. Clarendon Press, pp. 35-36.

¹⁰⁰ *Ibid.*

¹⁰¹ Original language; Grundnorm.

was the first constitution of a nation state and the will of its framers as expressed in the constitution.¹⁰² As distinct from natural law, Kelsen did not justify the validity of law as being based on certain immutable principles that are inherent in nature and/or reason- whether or not by virtue of a deity. He explained that the validity of law is derived from a hierarchy of norms ending at the basic norm tied to a nation state. Therefore, according to him, a legal norm is valid if it has been created in accordance with the procedures laid down in higher norms.¹⁰³

According to Kelsen, a state is a coercive order which is identical with a legal system.¹⁰⁴ He perceived public international law as being based on the generally accepted principle of *pacta sunt servanda* between states.¹⁰⁵ In his view, public international law and the laws of states are unified system of norms.¹⁰⁶ Consequently, Kelsen had a monistic approach to public international law.¹⁰⁷

Originally, legal positivism linked law to a nation state as explained above in connection with Kelsen's approach to law. This approach is understandable when considering the time when this legal theory was conceived, where neither the EU nor the globalization of law had the same impact as it has today. Today, it is to a considerable extent accepted that public international law and EU law have to function without direct support from a state.¹⁰⁸ Consequently, law should be understood as a phenomenon that functions beyond states.¹⁰⁹

Therefore, the sources of law identified and applied in the dissertation are those that are validly made and articulated by a recognized law-making body/bodies

¹⁰² *Ibid.*, pp. 57-58.

¹⁰³ *Ibid.*, p. 64.

¹⁰⁴ *Ibid.*, p. 99.

¹⁰⁵ *Ibid.*, p. 107.

¹⁰⁶ *Ibid.*, pp. 111-112.

¹⁰⁷ *Ibid.*, pp. 113-122.

¹⁰⁸ Tvarnø, C. D. & Nielsen, R. (2017). *Retskilder og retsteorier*. Djøf/Jurist-og Økonomforbundet, p. 467-69.

¹⁰⁹ *Ibid.*, p. 470

whether it is national, or internationally, which once again highlights that law is seen as a phenomenon that functions beyond states. In this dissertation, it is considered that both international law, EU law, and national laws form part of an overarching, interlinked, and interactive system of laws that cannot be treated as distinct fields of law independent from each other.¹¹⁰

6. Method

The philosophy of law has been outlined above through which valid law is identified. This section will describe the legal dogmatic method applied in this dissertation.

The legal dogmatic (doctrinal) method will be applied in this dissertation, where relevant sources of law will be applied and analyzed. In order to determine the contractual relations between the shipowner and the supplier, it is necessary to make a legal dogmatic analysis of the contractual regulations applicable to this subject.

The legal dogmatic method is used to systematize, describe, and analyze the applicable law from an interpretation of the sources of law¹¹¹ and identifies the sources of law according to the chosen philosophy of law, thereby balancing them against each other in accordance with the doctrine of the sources of law, and interpretations of them.¹¹²

By being critical of the current law, the method is used to solve the specific legal issues posed in the dissertation. When applying the applicable rules, it is attempted to clarify what the law is, how it should be defined and interpreted in

¹¹⁰ Tvarnø, C. D. & Nielsen, R. (2017). *Retskilder og retsteorier*. Djøf/Jurist-og Økonomforbundet, p. 471. Here they argue that EU law can be defined as "One Big system" where EU law, the European part of public international law and EU Member State's national systems are in some sense sub-systems of one single European legal system.

¹¹¹ *Ibid.*

¹¹² Nielsen, R. & Neergaard, U. (2010). *EU ret* (6th ed.). Thomson Reuters Professional A/S, p. 77.

the relevant question. This is done to clarify how relational contracting can create value for the shipowner and the supplier. The legal dogmatic method is closely tied to legal positivism as the dogmatic method is concerned with the description of law as adopted by a recognized law-making body/bodies.

The legal positivism looks at what law is and thus recognizes the written sources - namely the law.

This dissertation is therefore based on the contract, as this is the most important element in order to answer the research question. In Europe the principle of autonomy in contracts is a fundamental legal foundation, which is why it will be an underlying fundamental principle. In addition, the thesis will be based on the PPC2000 contract and BIMCO contracts, which, according to the Common Law standard, is a legally recognized contract, which is why this view is valid from a legal positional argument.

In order to analyze the contract between the shipowner and the supplier, not only will the contract be essential, but also the maritime legislation set out by the International Maritime Organization, will be applied in order to clarify how the contract should be set out.

7. Overview of maritime law subjects

Maritime law has been variously described and defined in ways that reflect subjective perception, as well as semantics. One view is that *"maritime law provides the legal framework for maritime transport"*. Another is that maritime law comprises a *"body of legal rules and concepts concerning the business of*

carrying goods and passengers by water".¹¹³ Both are narrow in scope, although, the first is more general and could be interpreted as embracing maritime matters which extend beyond the purely private domain of maritime business and commerce into areas of public concern.¹¹⁴

Those who subscribe to these characterizations would distinguish maritime law from another body of law, namely, the law of the sea. They would identify this as a branch of public international law dealing with the oceans and its multifarious uses and resources in terms of broad fundamental principles.¹¹⁵ Others would submit to the distinction as artificial and deviant, and in support of their proposition would also point to the etymological root of the word "maritime" which derived from Latin means "*of pertaining to the sea*".¹¹⁶ In this broad sense, the term maritime law comprises "*the entire body of laws, rules, legal concepts and processes that relate to the use of marine resources, ocean commerce, and navigation*."¹¹⁷

In contrast, the term "shipping law" is used to describe the law relating to ships and shipping. It is mostly used interchangeably with the term "maritime law" and encompasses all aspects of ships, shipping, and maritime transportation. It is both private and regulatory in scope and includes commercial maritime law, maritime safety, pollution prevention, labour law, as well as admiralty law¹¹⁸ in

¹¹³ Schoenbaum, T. J. and Yiannopolous, A.N. (1984) *Admiralty and Maritime Law, Cases and Materials, Contemporary legal education series*. Michie Co., p. 1., Mukherjee, P.K. (2005). "An introduction to maritime law". *World Maritime University, Malmö Sweden*, p. 1.

¹¹⁴ *Ibid.*

¹¹⁵ *Ibid.*

¹¹⁶ Schoenbaum, T. J. (1994) *Admiralty and maritime law*, (2nd ed., Vol. 1.) West publishing Co., at p. 1.

¹¹⁷ *Ibid.*, at p. 2 Schoenbaum, T. J. (1994) *Admiralty and maritime law*, (2nd ed., Vol. 1.) West publishing Co. p. 1.

¹¹⁸ The expression "admiralty law," used in many countries with Anglo Saxon legal traditions, adds to the terminology debate. 'Admiralty law' refers to the body of law which include procedural rules, as developed by the English Courts of Admiralty in their exercise of jurisdiction over matters pertaining to the sea. This jurisdiction was distinctively different from that of the common law courts. Thus, admiralty law originally encompassed those subject matters over which the admiralty courts possessed inherent jurisdiction inspired through a process of evolution. Subsequently, these subject matters which had a maritime character were codified and enumerated by statute. Originally, in the English language, the word "admiralty" has its roots from the office of the Lord Admiral, even though its original meaning is derived from Arabic. See also Supra, footnote 2 at p. 1 and in particular, footnotes 1 and 2 on that page (Guide-lines for Maritime Legislation, Third edition, (guidelines Vol. 1); United nations Publication, Economic and Social Commission for Asia and the Pacific (ESCAP), Bangkok, Thailand, (ST/ESCAP/1076), p.1; Schoenbaum, T. J. and Yiannopolous, A.N. (1984) *Admiralty and Maritime Law, Cases and Materials, Contemporary legal education series*. Michie Co., p. 1.

common law jurisdictions. However, it does not extend to public international law relating to “wet” matters - e.g. those involving ships at sea - which is distinguished from “dry” matters also involving ships, but pertaining only to commercial aspects that are essentially land-based issues.

While maritime law consists of two broad elements which has been divided into two neat compartments, to label them “public” and “private” is rather an oversimplification.¹¹⁹ The maritime industry is involved in many matters of general law and non-maritime legal transactions which are not part of the *lex maritima*.¹²⁰ It is well-acknowledged that many aspects of commercial maritime law are in fact derived from the *lex mercatoria*.¹²¹ The bifurcation may attribute to perceptions that are politically tinged.

As Edgar Gold¹²² (hereinafter, referred to as, “Gold”) states:

*“(...) the new law of the sea has in the past decade addressed itself to almost all areas of the ocean use except the one that since before the dawn of history, has been preeminent – the use of the ocean as a means to transport people and their goods from place to place on this planet, so much more of which is water than land. Marine transport has been discussed in an almost abstract manner, as if it did not really fit or belong within the public domain but needed to be confined to the more “private” region of international commerce, which was considered to be outside the scope of the law of the sea.”*¹²³

¹¹⁹ *Ibid.*

¹²⁰ Schoenbaum, T. J. and Yiannopolous, A.N. (1984) *Admiralty and Maritime Law, Cases and Materials, Contemporary legal education series*. Michie Co., p. 1. See also Gilmore, G. & Black, C. (1975). *The Law of Admiralty* (2nd ed.), Foundation Press, p.1. See also Mukherjee, P. K. (2012). "Maritime law and admiralty jurisdiction: Historical evolution and emerging trends." *The Admiral VI. Ghana Shippers' Council*. 42: 1-36, p. 2.

¹²¹ See Tetley, W. (1985). *Maritime liens and Claims*, (1st ed.). London Business Law Communications Ltd., p. 1.

¹²² Australian-Canadian Professor and lawyer. One of the leading experts in maritime law and a member of both the Order of Canada and Order of Australia.

¹²³ Mukherjee, P. K. (2012). "Maritime law and admiralty jurisdiction: Historical evolution and emerging trends." *The Admiral VI. Ghana Shippers' Council*. 42: 1-36, p. 2. See also Tetley, W. (1985). *Maritime liens and Claims*, (1st ed.). London Business Law Communications Ltd., p. 1.)

In contrast, Frederic Rockwell Sanborn¹²⁴ (hereinafter, referred to as, “Sanborn”) presents his opinion by saying:

*“The words ‘maritime law’, as commonly used today, denote that part of the whole law which deals chiefly with the legal relations arising from the sue of ships. But in the earlier period, of which this work treats, the law maritime had a considerably wider scope. It dealt not merely with the modern Admiralty law, but also with the primitive ancestors of some branches of our modern commercial law, dealt, too, with the germs of that public law which we today style international law.”*¹²⁵

Undoubtedly, there are numerous subject matters that fall within the scope of maritime law, although not all of which are compatible with the categorization of “public” or “private”.¹²⁶

Against the foregoing backdrop, an overview of specific subjects of maritime law is presented here. Maritime law subject matters encompass regulatory and private law aspects, as well as the hybrid areas of maritime law. It will be observed that the non-private law subject matters, inevitably, flow from corresponding framework provisions in the United Nations Convention on the Law of the Sea, 1982 (UNCLOS III), which is largely considered to be a codification of the customary international law of the sea, and, therefore, this is often referred to as the constitution of the oceans.¹²⁷

Ships are usually acquired either through purchase or lease - better known as demise or bareboat charter. Indeed, lease is a term used more in the context of ship financing. Ships can be built based on an order by a prospective owner, or

¹²⁴ American lawyer and expert within International Law and a former member of the Supreme Restitution Court of Berlin after World War II. Obtained a law degree from Columbia University and received a doctorate from Oxford University.

¹²⁵ Sanborn, F.R. (1989) “Origins of the early English Maritime and Commercial law”. *Professional Books Ltd., Milton Park, Abingdon, Oxon, Reprint*, p. xvi.; Cited in: Mukherjee, P.K. (2005). “An introduction to maritime law”. *World Maritime University, Malmö Sweden*, p. 3.

¹²⁶ Mukherjee, P.K. (2005). “An introduction to maritime law”. *World Maritime University, Malmö Sweden*, p. 3.

¹²⁷ *Ibid.*, p. 9.

they can be built and sold completely new by a shipbuilder or a buyer (i.e. a shipowner) respectively. All of these means of ship acquisition are carried out under highly specialized and complex contractual agreements which fall squarely within the domain of private maritime law.¹²⁸

Almost inevitably, the contracts involved are of standard form suitably modified to the needs of the parties involved.¹²⁹ Consequently, there is almost always a financing aspect to ship acquisition and the financing agreements involve not only specialized lenders, but also specialized contracts. In contemporary terms, a rather uncommon way through which a ship can be acquired is as a prize. In times of war, this takes place when a ship of an opponent is captured and a court invested with prize jurisdiction conducts condemnation proceedings, which is followed by the possibility of the claimant acquiring title to the captured vessel.¹³⁰ After a ship is acquired by one of the procedures, it needs to be registered if it is a registrable vessel.¹³¹

Whether it is open, closed, or partially open/closed, the nature of a ship registry is a matter of national maritime policy. In line with UNCLOS, there must be a genuine link between the ship and its flag state as will be discussed later on. The absence of any definitive judicial pronouncement on what exactly is meant by a genuine link has left flag states free to interpret the term according to their individual national interests and aspirations.¹³²

¹²⁸ *Ibid.*

¹²⁹ A ship can also be acquired through a judicial sale following an arrest of the ship.

¹³⁰ Mukherjee, P.K. (2005). "An introduction to maritime law". *World Maritime University, Malmö Sweden*, p. 10.

¹³¹ National maritime legislation may provide that vessels below a specified size threshold are not registrable because they are not sea-going; or registration may be optional, or there may be a licensing regime. Ships under construction are usually not registrable because they are not ships by statutory definition. D Mukherjee, P.K. (2005). "An introduction to maritime law". *World Maritime University, Malmö Sweden*, p. 10.

¹³² Mukherjee, P.K. (2005). "An introduction to maritime law". *World Maritime University, Malmö Sweden*, p. 10.

8. Law and Economics

The dissertation will include economic theory as a supplement to the legal analyses and as an explanation to the relational contract clauses. Below, the different economic perspectives used in the dissertation will be presented.

Law and economics is a method dedicated to appraising rather than finding the law.¹³³ Law and economics is a pure economic discipline, although one could easily be confused by the thought of it being an interdisciplinary research field.¹³⁴ However, law and economics should be understood as an economic research field, that seeks to explain the law as it exists, or as it ought to be,¹³⁵ by reference to economic analysis.¹³⁶ The Law and economics approach had its starting point in the US, in particular the law school at the University of Chicago.¹³⁷

“For the Rational study of the law the black-letter man may be the man of the present, but the man of the future is the man of statistics and the master of economics.”

-Oliver Wendell Holmes¹³⁸ (hereinafter, referred to as, “Holmes”)

Therefore the dissertation is conducting an economic analysis to support the legal analysis as a result to optimize the contract between the shipowner and the supplier.

¹³³ Hervey, T., et al. (2011). *Research methodologies in EU and international law*. Bloomsbury Publishing, p. 83.

¹³⁴ See also Tvarnø, C. D. & Nielsen, R. (2017). *Retskilder og retsteorier*. Djøf/Jurist-og Økonomforbundet, p. 431.

¹³⁵ In regards to analysis on *de lege de ferenda*, then often law and economics is used as a foundation or explanation to how and why the law ought to be changed.

¹³⁶ Hervey, T., et al. (2011). *Research methodologies in EU and international law*. Bloomsbury Publishing, p. 84.

¹³⁷ According to Tvarnø and Nielsen, Law and economics had a breaking point with Ronald Coase in his , *The problem of the social Cost* from 1960. Law and economics also has the last 30 years become more common in Europe and Scandinavia. The Law and economic movements is considered younger than other approaches i.e. Marxism, which also looked at the law in terms of economic processes. Although Marxists see law as a means of oppression through the creation and continuation of markets, and the maintenance of formal equality as a means of hiding substantive in equality. Hervey, T., et al. (2011). *Research methodologies in EU and international law*. Bloomsbury Publishing, p. 84. See also Tvarnø, Christina D. and Ruth Nielsen. *Retskilder og retsteorier*. Djøf/Jurist-og Økonomforbundet, 2017, p. 430-31.

¹³⁸ American Legal Scholar, Professor of Law at Harvard Law School and Associate Justice of the Supreme Court of the United States. The Path of the law, Harvard Law review, 1897, p. 469. See also Tvarnø, C. D. & Nielsen, R. (2017). *Retskilder og retsteorier*. Djøf/Jurist-og Økonomforbundet, p. 429.

According to Thomas Miceli¹³⁹ (hereinafter, referred to as, "Miceli");

*"The economic approach to law assumes that rational individuals view legal sanctions (monetary damages, prison) as implicit prices for certain kinds of behavior, and that these prices can be set to guide these behaviors in a socially desirable direction."*¹⁴⁰

By this he is referring to Holmes famous example of the bad man;

*"If you want to know what the law is and nothing else, you must look at it as a bad man, who cares only for the material consequences which such knowledge enables him to predict"*¹⁴¹

According to Miceli the bad man¹⁴² have much in common with the rational decision maker of economic theory.¹⁴³ In regards to economic theory, the assumptions is that everybody is amoral, therefore the economic model of law does not focus on the *bad man*. Although many people might comply with the law out of a sense of authority, thus are not directly affected by the legal rules. However, in order to examine the incentives effects of law, meaning the effect on behavior, then it is necessary to look further into the binding constraints.¹⁴⁴

As a supplement to the legal dogmatic method, which seeks to derive what the law is, the purpose of the law and economic method is to identify the effects of the law through the use of economic theory and analysis. In this case, the law and economic method will be used to analyze the relational contract between the shipowner and the supplier, the effects hereof and how to optimize the situation between them.

¹³⁹ An American economist and Professor of Economics at University of Connecticut.

¹⁴⁰ Miceli, T. J. (2017). *The economic approach to law*. Stanford University Press, p. 1.

¹⁴¹ Holmes, O. W. (1997) "*The Path of the Law*." Harvard Law Review, 110(5): 991-1009., p. 459.

¹⁴² It is worth noting that this term does not imply a bad man in a bad sense e.g. law breaker rather a rational calculator who seeks to stretch its limits and will break it without compunction if the perceived gain exceeds the cost. Therefore the bad man has a strong interest in knowing what the law is and the consequences of not complying with the law are. Miceli, T. J. (2017). *The economic approach to law*. Stanford University Press, p. 1-2.

¹⁴³ Miceli, T. J. (2017). *The economic approach to law*. Stanford University Press, p. 2.

¹⁴⁴ Miceli, T. J. (2017). *The economic approach to law*. Stanford University Press, p. 2.

8.1 The economic method

The economic analysis has its roots in the deductive method. This entails reaching a reasoning or an inference from something generally accepted and apply it to the particular situation - or something universally true applied to the individual. The deductive method draw new conclusions from fundamental assumptions or from what is considered eternal truths as established by other methods.¹⁴⁵ It involves the process of reasoning from certain presumably true laws or principles, to the analysis of facts.¹⁴⁶

Classical economic theory is built on Adam Smith's (hereinafter, referred to as, "Smith") article "The Wealth of Nations."¹⁴⁷ Smith's article postulates self-interest as the principal motivation of economic activity and demonstrates how a free market place enhances economic exchange among self-interested traders.¹⁴⁸

¹⁴⁵ The deductive method has four characteristic steps: (1) Selecting the problem. (2) The formulation of assumptions on the basis of which the problem is to be explored. (3) The formulation of hypothesis through the process of logical reasoning whereby inferences are drawn. (4) Verifying the hypothesis.

¹⁴⁶ Subsequently, the inferences verified against observed facts are drawn. Bacon described deduction as a 'descending process', in which a general principle is succeeded by its consequences. Mill characterized it as a priori method while others called it abstract and analytical. Theories can be developed on the basis of empirical, social, or ontological criteria. Empirical criteria can be static or dynamic, inductive or deductive, and it can focus on the nature of, for example, empirical evidence. However, the common element in all of these criteria is that the resulting theories have to be confronted with empirical evidence. The economic method differs from the legal method, and it is based upon the law and economic perspective, the economic method can be a positive supplement in order to outline *de lege de ferenda* and clarify the effects of *de lege lata*. However, social criteria may reflect the interests of the groups or scientists to which they are affiliated (e.g. current or traditional theories, or social or moral norms). The common denominator is that the scientific theories have social aspects and that they play a role in the choice and development of a scientific theory. Finally, ontological criteria are the third class of criteria for the choice and development of scientific theories. They involve fundamental notions about human nature which empirically cannot be directly tested. Examples are concepts regarding the cognitive capacities of decisions-makers, the driving force behind behavior (idealistic vs. opportunistic), social causation (individual vs. environment), and social patterns (individualistic vs. collectivistic). The common element among the three conceptions is the perception of the way the world serve as criteria for the choice and development of theory.¹⁴⁶ See also Knudsen, C. (2014). *Erhvervsøkonomi: Virksomheden i organisatorisk, økonomisk og strategisk belysning*. Samfundslitteratur., Hendrikse, G. (2003). *Economics and management of organizations: co-ordination, motivation and strategy*. McGraw-Hill, p. 18.

¹⁴⁷ This article is from 1776 and Smith was the most important representative of the eighteenth-century Scottish enlightenment. The Wealth of Nations is a classic of Western economic theory. Smith, Adam. "The Wealth of Nations [1776]." (1937).

¹⁴⁸ Smith, Adam. "The Wealth of Nations [1776]." (1937), see also Tvarnø, C. D. & Nielsen, R. (2017). *Retskilder og retsteorier*. Djøf/Jurist-og Økonomforbundet, p. 432-33.

Neoclassical theory is built upon the classical economic theory, although it is a further development hereof. The neoclassical theory is the standard theory within economics, and defines the company as a production function. Within the neoclassical theory the company is seen as a complete rational individual with the aim of maximize the utility.¹⁴⁹

The main assumptions in the neoclassical theory is that the agents are rational and have complete information, resources are limited and the needs of the agents are limitless.¹⁵⁰

The law and economic analysis will have its starting point within the neoclassical field, however, the analysis will move towards the field of behavioral economics – a further development of the neoclassical theory. The neoclassical theory is assuming that the market is perfect and the parties within the market act rational, whereas the behavioral theory is assuming that the parties are imperfect due to bounded rationality. Therefore, in order to clarify how the relational contract can optimize the situation between the shipowner and the supplier, it is relevant to use behavioral economics. This will be discussed further in chapter 3.

The neoclassical theory and behavioral theory is used to create a framework for the economic analysis' and the dissertation will be using two different economic theories in order to answer the objectives of the dissertation.¹⁵¹ These two theories are; *Transaction cost theory* and *Game theory*.

¹⁴⁹ Knudsen, C. (2014). *Erhvervsøkonomi: Virksomheden i organisatorisk, økonomisk og strategisk belysning*. Samfundslitteratur, p. 407 and see also Tvarnø, C. D. & Nielsen, R. (2017). *Retskilder og retsteorier*. Djøf/Jurist-og Økonomiforbundet p. 433.

¹⁵⁰ *Ibid.*

¹⁵¹ Which were set out in section 3. Purpose statement.

8.1.1 Transaction cost theory

Within the current one-off situation – as mentioned in the introduction - the management displays opportunistic behavior and will buy the product that the shipowner requested (product and price), even if the supplier presents a better and more expensive product with a service agreement, the management may lack the incentives to choose this product, as it is not the specific production which was requested initially. The single goal for the management is to get the correct product at the right price. However, one obstacle is the fact that the management and the supplier do not negotiate in the buying situation which may lead to an insufficient deal for the shipowner without being aware. This may not necessarily be due to a potential lack of interest, but may come down to its knowledge regarding the product. If the parties were to negotiate the deal, they would be more likely to get a more efficient contract where risks would be divided between them. The theory is used to analyse the current one-off transaction situation between the shipowner, the supplier, and the management (i.e. the supply chain illustrated in figure 1.2) and the relational contract situation between the shipowner and the supplier. The analysis of the two situations is used to identify the transaction costs that occur and the purpose of the management – and eventually eliminate the management party as a part of the relational contracting situation – which will arguably optimize the situation between the shipowner and the supplier.

8.1.2 Game theory

The dissertation applies game theory in connection with relational contracting between the shipowner and the supplier. The analysis is used to clarify from an economic perspective whether relational contracting is a solution.

The dissertation uses the “classical” prisoner’s dilemma, to analyse the relational contracting situation by defining the different strategies and the payoffs in the

different strategies. The game is used to discuss which strategies the shipowner and the supplier will choose and thereby their payoffs. Further the dissertation discusses repeated games and modified prisoners dilemma, thus, to clarify the strategies in these games and the different payoffs and to see whether a change occur, due to the change in the games. All three game situations – the classical prisoners dilemma, repeated games and the modified prisoners dilemma – is used to test the hypothesis of whether a relational contracting between the shipowner and the supplier can optimize the situation for the parties from an economic perspective.

9. Delimitation

The maritime industry is a global and massive industry. Therefore, there are plenty of factors that have an impact on the market and the market players i.e. as illustrated in figure 1.1. However this dissertation will solely focus on the shipowner, the management and the supplier. All other parties in the market might be mentioned in order to explain the market, but will not be analyzed further.

The dissertation will briefly discuss the maritime markets, however the dissertation will be based upon a newbuilding situation, therefore the dissertation will not take the other markets into account.

This dissertation will solely focus on relational contracting between the shipowner and the supplier, thus the parties' choices of law and arbitration will not be taken into consideration.

It is not the aim of the dissertation to present a complete contractual analysis. Hence, the dissertation discuss partnering contracting in general and discuss

some of the specific content a relational contract between the shipowner and the supplier should entail to ensure a competitive advantage in the shipping sector. The dissertation will not discuss Competition law consequences of a relational contract, as it is assumed that the contract will not be a violation of the competition law in either the US or the EU. However, a violation could occur if the parties are delimiting the market through a strategic alliance.

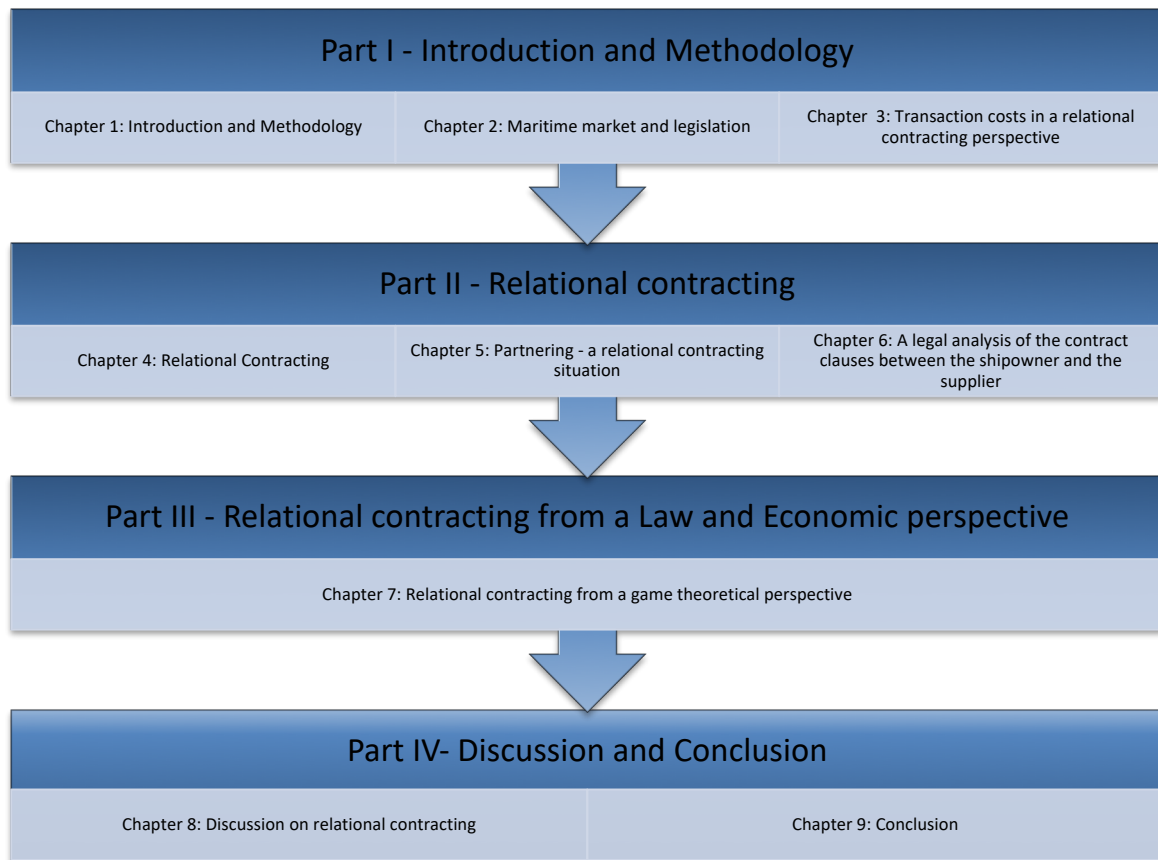
The dissertation is limited to a legal and economic analysis of the contractual collaboration between the parties. Hence, the dissertation will not consider nor discuss any technical specifications in regards to products etc.

The dissertation is based on the principle of autonomy in contracts. However, the dissertation will discuss the IMO and the conventions which the IMO has set out. This is done in order to give an broad overview of the maritime industry and which legislation the parties should be aware of in a partnership. Therefore, the maritime legislation will be used explanatory, but the dissertation will not conduct further analysis or apply maritime law. Although the dissertation discuss IMO guidelines, the dissertation will not include the guidelines regarding safety and other of the IMO conventions in the analysis.

Lastly while the dissertation will apply the BIMCO Newbuildcon contract as inspiration, the dissertation will not apply any other of BIMCO's contract templates.

10. Structure

The dissertation will be divided into four parts:



Part I – Introduction and Methodology

The first part is divided into three chapters; Chapter 1: Introduction and Methodology; Chapter 2: Legal framework and Chapter 3: Transaction cost in a relational contracting perspective.

The first chapter sets out the scope of the dissertation by introducing the case and the research question. The delimitation of the subject is defined followed by a further elaboration on the used methodology. The second chapter defines the legal framework and thereby the contractual framework by looking further into the maritime background and, thus, maritime contracts and the third chapter conducts a transaction cost analysis on the current situation between the

shipowner, the supplier and the management. This is compared to an analysis on the relational contracting situation in order to eliminate the management party.

Part II – Relational contracts

The second part is be divided into three chapters; Chapter 4: Relational contracting, chapter 5: Partnering – a relational contract and chapter 6: A legal analysis of relational contracting, which takes a deeper look on relational contracting.

Chapter four addresses relational contracting in general, as a way to define the concept. The fifth chapter addresses partnering agreements and relational contracting by defining the theory of which and applying this to the case of the dissertation. The sixth chapter conducts a legal analysis where the dissertation applies the findings of the previous chapters. The aim of this chapter is to address a partnering agreement between shipowner and supplier, where the dissertation is concerned with specific contract clauses between the parties, and based on this conduct an analysis.

Part III – Relational contracting from a law and economic perspective

This part consists of one chapter; Chapter 7: Relational contracting from a game theoretical perspective. This chapter addresses relational contracting between the shipowner and the supplier from an economic perspective. The analysis hereof, is to clarify whether relational contracting is a realistic solution for the parties and how the partnering contract should be formed based on the law and economic perspective.

Part IV – Discussion and Conclusion

The fourth and final part consists of two chapters; Chapter 8: Discussion and chapter 9: Conclusion. This final part summarizes the project and, in the end,

recommendations are outlined in order to answer the purposes of the dissertation as to how relational contracts can optimize and create value for shipowners and suppliers. Furthermore, this part provides reflections upon the case and the management party in order to redefine their market position.

Chapter 2: Maritime market and legislation

1. Introduction

In this chapter, the focus will be on the maritime law which surrounds the maritime industry. Approximately 30 countries¹⁵² have a significant merchant shipbuilding industry and this is a long-cycle business. Ships take several years to deliver; once ships are built, they remain in service for 25-30 years. Since ships trickle in and out of the merchant fleet at only a few percent a year, the pace of change in shipbuilding demand is slow. Trends develop over decades rather than years, and in order to comprehend them, a step back is necessary in order to get a clearer view.¹⁵³ Therefore, the industry is known to be relatively easy to enter and leave in terms of market boundaries, but it is difficult to navigate in.¹⁵⁴ This may be a consequence of the fact that geographical territory does not prevail in this industry and, thus, makes the national legislation inapplicable. Rather, the shipowners can register their ships at any *flag state* and will only have to adhere to the legislation and conventions which have been ratified in the given state. A substantive part of maritime law has been made uniform in international treaties. However, not every state act as a party to all conventions and the existing conventions do not always cover all questions regarding a specific subject. In those cases, conflict of law rules is necessary to decide which national

¹⁵² Top three in 2017 was, China, South Korea and Japan. This is based on completion in gross tonnage.

¹⁵³ Jin, Di. (1993). "Supply and demand of new oil tankers." *Maritime Policy and Management* 20.3: 215-227. See also Stopford, M. (2009). *Maritime economics*. Routledge.

¹⁵⁴ Even though the market is easy to enter, it requires a great amount of capital – all depending on what business, one wants to perform.

law applies. These conflicts of law rules can either be found in a treaty or - in most cases - in national law.

Therefore, this chapter will provide an overview of the classical characteristics of the maritime industry in terms of the long production time, the expensive aspect of financing a ship, market development, lifespan of the goods, and, consequently, the lack of innovation. This will be followed by an analysis of the International Maritime Organization (hereinafter referred to as “IMO”) and its conventions, as well as how the conventions influence the industry. In this connection, it will be discussed whether the IMO and its conventions are strong enough in an industry where the conventions are not binding, but are optional,¹⁵⁵ and where the shipowners themselves can choose a flag state depending on which legislation they would want to adhere to. Consequently, the parties’ individual choice of flag state influences the maritime contracts in-between. However, the IMO and the NGO’s are attempting through their conventions to influence the environmental focus of the shipowners. Most of the IMO’s current conventions involve the green development within the industry which is – without a doubt – the future of the shipping industry.

Hence, the complexity and the different aspects of the maritime industry result in the need for this overview and thereby understand the aspects that – potentially – influence the relational contract . Therefore, this chapter will end with a discussion on how the economists perceive the IMO and its conventions influence on the maritime economy.

¹⁵⁵ Meaning that this depends on which conventions a country in question has ratified.

2. Market characteristics of the maritime industry

Approximately 3,000 ports serve deep-sea trade and cargo carried by the maritime industry consisting of millions of separate consignments of different sizes and physical characteristics. When attempting to provide an efficient transport service between ports for a wide range of cargo parcels,¹⁵⁶ it calls for a complex logistics operation which the shipping industry has developed to handle. Given the complexity of the cargo flows to be transported, this difficult task is tightly controlled by market forces.¹⁵⁷

The maritime industry is not similar to any other industry, both in terms of the purpose of the industry, but also because of the market characteristics, namely the expensive products that are very slow in production and the lack of boundaries in the market.¹⁵⁸ This makes supply and demand very dependent on the market's lifecycle and tendencies within both economics and legislation.¹⁵⁹ Both characteristics will be described below.

2.1 The financing and production of goods

The ships are very expensive and some GNT ships may cost over 300 million USD each with an economic lifespan of 20+ years.¹⁶⁰ This makes earnings highly volatile and, as a result, the investment process in shipping both risky and complex.¹⁶¹ The shipbuilding process is long and complex, where the expected

¹⁵⁶ See also figure 1.3 for an overview of the different cargo parcels.

¹⁵⁷ ESCA. (March 2015). The Tramp Shipping Market an update of a report prepared for the European Community Shipowners' Association (ECSA), by Clarkson Research Services Limited (CRSL), p. 4. See also Panayides, P. M., and Wiedmer, R. (2011). "Strategic alliances in container liner shipping." *Research in Transportation Economics*, 32.1: 25-38.

¹⁵⁸ Arguably, the aircraft industry might be the closest comparison to the maritime industry, due to their similar geographical factors, although the aircraft industry is a highly technological industry that - might not be - as complex and they operate within different markets – both cargo and civil aviation.

¹⁵⁹ For further information see Stopford, M. (2009). *Maritime economics*. Routledge, chapter 1 and 2.

¹⁶⁰ Some shipowners buy a new ship and replace this ship after 10-15 years, by selling it on the second-hand market. Stopford, M. (2009). "Maritime Economics", 3rd edition, p. 207.

¹⁶¹ "The Tramp Shipping Market an update of a report prepared for the European Community Shipowners' Association (ECSA)", by Clarkson Research Services Limited (CRSL), March 2015, p. 4.

time of delivery may vary from 1-4 years from the order of the ship and until the ship is actually delivered (depending on the ship).¹⁶²

Consequently, one of the primary functions of the shipowner is to manage this investment process.¹⁶³ The trade growth of the industry is influenced by the global business cycle and is very volatile and unpredictable. Keeping an adequate supply of ships at all times is essential for the free flow of world trade and one of the principal roles of the maritime industry is to invest in anticipation of future growth.¹⁶⁴

Therefore, as the maritime industry is limited due to the slow production time, there is slow development possibilities, as it is difficult to anticipate the future; e.g. both in terms of legislation and industry tendencies. As a result, the maritime industry is not known for its innovation possibilities.

2.2 Supply and demand

The commercial structure is very fluid, which thus allows free entry and exit of companies. As an example, in February 2015, the deep-sea merchant fleet – which includes bulk, specialized, and liner - was owned by 14,122 companies.¹⁶⁵ When entering the market, bulk shipping has relatively few entry barriers. New investors require equity though commercial shipping banks will provide loans to acceptable credits against a first mortgage in the ship. Private equity has also

¹⁶² Stopford, M. (2009). "Maritime Economics", 3rd edition, p.157. The 4 year gap depends on the ship type but also the size of the orderbook held by the shipbuilders. With such a long product delivery it is very important that the shipbuilder and the shipowner have leveraged their expectations upon the contract signing, since conditions may have changed over the time of the building of the ship.

¹⁶³ "The Tramp Shipping Market an update of a report prepared for the European Community Shipowners' Association (ECSA)", by Clarkson Research Services Limited (CRSL), March 2015, p. 4.

¹⁶⁴ *Ibid.*

¹⁶⁵ "The Tramp Shipping Market an update of a report prepared for the European Community Shipowners' Association (ECSA)", by Clarkson Research Services Limited (CRSL), March 2015, p. 6. Approximately 48 of these companies owned more than 100 ships with a combined of 26 percent of the total fleet in terms of GT. On average, a shipowner company was accountable for 4 ships. See also figure 1.5 for an overview of the allocation of ship types.

invested heavily in recent years along with export credit agencies and a growing number of Asian banks.¹⁶⁶ There is a comprehensive network of support services to which new investors can subcontract most business functions. Ship management companies manage the ships for a fee; chartering brokers arrange employment, collecting the revenues and dealing with claims; sale and purchase brokers buy and sell ships; maritime lawyers and accountants undertake legal and administrative functions; classification societies; and technical consultants provide technical support. These services make it easy for new investors to enter segments of the bulk shipping markets during profitable periods.¹⁶⁷

Also, information systems in the bulk shipping business are very open, giving operators, buyers and sellers of ships, and charterers a timely flow of commercial data. The ship broking business and information publishers publish information about revenues and asset prices daily and widely circulated in the industry to both shipowners and charterers. Online digital systems track the positions of the ships. As a result, these information services ensure a high degree of transparency. In addition, the costs of operating different types of ships are well known which makes it easy for potential investors to estimate prevailing profit levels.¹⁶⁸

Therefore, it is relatively easy to enter and leave the shipping industry in terms of boundaries and transparency, but competitors may be restricted due to the slow production time and development of the products. These market characteristics are essential in regards to a relational contract between the shipowner and the supplier.

¹⁶⁶ *Ibid.*, p. 7.

¹⁶⁷ *Ibid.*, p. 7. E.g. Two of the largest tanker companies operating today, were established in 1997. See also figure 1.1. for an overview of the maritime industry.

¹⁶⁸ "The Tramp Shipping Market an update of a report prepared for the European Community Shipowners' Association (ECSA)", by Clarkson Research Services Limited (CRSL), March 2015, p. 7.

As the slow pace in the development of products can be addressed and optimized between the parties - by collaborating. Arguably, the slow pace in production is more challenging to address.

2.3 How regulations affect maritime economics

The legislative area regarding the maritime industry is complex, due to different jurisdictions - which will be discussed below.

According to Stopford, most shipowners find it, that regulation often conflicts with the efforts to earn a reasonable return on their investment.¹⁶⁹ When Samuel Plimsoll (hereinafter, referred to as, "Plimsoll")¹⁷⁰ first started his campaign against the infamous 'coffin ships'¹⁷¹ in the 1870s,¹⁷² British shipowners argued that the imposition of load lines would put them at an unfair competitive advantage.¹⁷³

In the 1930s, Ernest Fayle (hereinafter, referred to as, "Fayle")¹⁷⁴ observed that:

"In their efforts to raise both the standard of safety and the standard of working conditions afloat, the Board of Trade frequently found themselves, during the last quarter of the nineteenth century, at loggerheads with the shipowners. They were accused of cramping the development of the industry by laying down hard-and-fast rules which in effect punished the whole of the industry for the sins of a small minority, and hampering British shipping in international

¹⁶⁹ Stopford, M. (2009). *Maritime economics*. Routledge, p. 654.

¹⁷⁰ British politician and social reformer, especially known for the *Plimsoll line*. Merchant ships have a marking on their hulls also known as the Plimsoll line/mark. This line indicates the limit until which a ship can be loaded with enough cargo. Every type of ships have a different level of floating, therefore the Plimsoll line on the vessels varies from one another. Postel, S. (1994) "Carrying capacity: Earth's bottom line." *Challenge* 37.2: 4-12, p. 11. See also figure 1.5 for an overview of the different ship types.

¹⁷¹ In the nineteenth century, the maritime industry were not as regulated as today, thereby very few rules – especially in regards to safety and construction on merchant ships. As a consequence ships were sent to sea badly built, overloaded and ill found, which often resulted in these "coffin" sank and took their unfortunate crew to the bottom of the oceans of the world. Gold, Edgar. *Maritime transport: the evolution of international marine policy and shipping law*. DC Heath & Co, 1981, p. 119. See also Stopford, M. (2009). *Maritime economics*. Routledge, p. 675.

¹⁷² The "Plimsoll Act" became a law in 1876 and the Board of Trade was established, as the responsible government department, responsible for the performing controls with the ships and make sure that the shipowners would comply with safety standards. Stopford, M. (2009). *Maritime economics*. Routledge, p. 676.

¹⁷³ *Ibid.*, p. 654.

¹⁷⁴ Charles Ernest Fayle (born in 1881). British author of several books on Maritime trade and history.

competition, by imposing restrictions from which foreign ships were free, even in British ports.”¹⁷⁵

The same - sometimes legitimate - resistance to regulation is found in most industries, but - due to the choices of flag states¹⁷⁶ - the oceans provide the shipping industry with an unsurpassed opportunity to bypass the clutches of regulators and gain an economic advantage.¹⁷⁷ The goal of the maritime regulators is to create minimum standards, thus ensure that shipping companies operate within the same standards of safety and environmental responsibility which apply on land.¹⁷⁸ As a result, in the last half a century, the regulatory regime has played a significant part in the economics of the shipping market. However, it would be wrong to think that the regulatory process is only concerned with pursuing criminals. As a few of the regulations are made in response to particular incidents, the purpose of these measurements are precautions e.g. “Coffin ships”.¹⁷⁹

Over the last century, the shipping industry and the maritime states have gradually evolved a regulatory system, also known as IMO- which will be discussed below - which covers all aspects of the shipping business: ship design; maintenance standards; crewing costs; employment conditions; operating systems; company overheads; taxation; oil pollution liability; environmental emissions; and cartels. However, the emphasis changes and, during the last decade, the environment, emissions by ships, ballast water, and ship recycling

¹⁷⁵ Fayle, C. (2010). *A short history of the world's shipping industry (Economic history)*. Routledge, p. 285. See also Stopford, M. (2009). *Maritime economics*. Routledge.

¹⁷⁶ This will be further discussed in section 4. The choice of flag state – the ultimate decision.

¹⁷⁷ *Ibid.*

¹⁷⁸ This will be further discussed in section 3. International Maritime Law.

¹⁷⁹ Beside Coffin ships, which were the starting point, Stopford also refers to the *Titanic*, the *Torrey Canyon*, the *Herald of Free Enterprise*, the *Exxon Valdez*, the *Erica* and the *Prestige*, which all provoked a public outcry which all led to new regulations. The common element here was that all could agree, based on the previous events, that common rulings in regards to safety at sea was important. These are also mentioned in section 3.1.1 The four pillars of International Maritime Law, where the examples are Ro-Ro ferries. For further information see Stopford, M. (2009). *Maritime economics*. Routledge, p. 656.

have all received more attention than before. All of this has economic consequences and, according to Stopford, knowledge of maritime regulation is an essential part of the toolkit of maritime economists.¹⁸⁰

The maritime regulations are a complex “system” and there is a great deal of compliance in regards to a ship which needs to transport goods from one point to another, thus the regulation affects the economic decisions in the market.¹⁸¹ Especially the choice of flag state influences the economics of the shipowner. Thus, the various forms of registration options, can be beneficial to the shipowner, since these can have an impact on the taxation, crewing, construction of the ship and company law, in which the shipowner needs to comply with.¹⁸² Therefore, in order to use relational contracting as a solution to optimize the situation for the shipowner and the supplier, it is highly relevant to be aware of the maritime regulations.

The examination of the IMO is highly relevant in order to understand how the maritime legislative area is put together.

3. The International Maritime Organization (IMO)

For centuries, the necessity for international co-operation in the shipping industry has been recognized because of the improved safety at sea, and the maritime traditions. This necessity has been manifested by ships taken in capture in foreign ports because of bad weather.¹⁸³ In 1889, an international Maritime Conference in Washington D.C., the United States,¹⁸⁴ discussed a

¹⁸⁰ Stopford, M. (2009). *Maritime economics*. Routledge, p. 655-56.

¹⁸¹ *Ibid.*, p. 666.

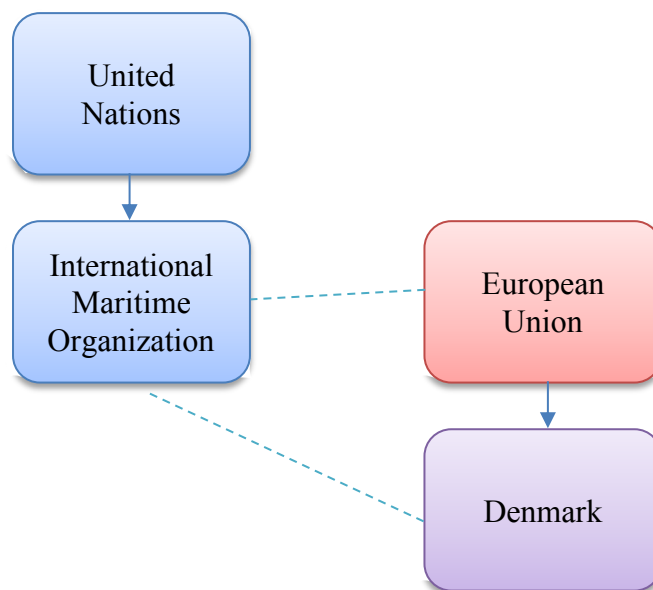
¹⁸² *Ibid.*, 671. Flag states will be discussed in section 4. The choice of flag state – the ultimate decision and the registration possibilities will be mentioned briefly, although will not be further discussed.

¹⁸³ El Ashmawy, M. (2012). "The maritime industry and the human element phenomenon." *Proc. The 13th Annual General Assembly of the IAMU*, p. 282-83. This could be because of bad seafaring or poor management on shore.

¹⁸⁴ Protocols of the Proceedings of the International Maritime Conference, Washington DC, 16. October-31 December 1889. (Government Printing Office Washington DC 1890) Vol. 2, p. 984 ff. The objectives of the conference were to “revise and

proposal to set up a permanent international body to cater for the needs of shipping. This followed the establishment of other maritime organizations, but the establishment of the shipping body was discarded, as the shipping industry feared any attempts to control its activities.¹⁸⁵ Despite the recognition of the need for co-operation with international regulations at sea (which were approved by all shipping nations), it was not until World War II, that a maritime cooperation were adopted.¹⁸⁶ Again, several countries proposed to establish a permanent international co-operation to promote maritime safety more effectively,¹⁸⁷ however, it was not until the establishment of the United Nations (hereinafter, referred to as, “UN”) that these hopes were realized.¹⁸⁸

Figure 2.1 – Legal overview



Source: the author's creation

amend the rules, regulations and practice concerning vessels at sea and navigation generally; to adopt a uniform system of marine signals, especially with reference to signaling in fog; to compare and discuss the various systems employed for the saving of life and property from shipwreck; to devise methods of reporting, marking, and removing dangerous wrecks and obstructions to navigation, and to establish uniform means of conveying to mariners warnings of storms and other information.”

¹⁸⁵ Rothwell, D., et al. (2015) *The Oxford handbook of the law of the sea*. Oxford Handbooks in Law, p. 417.

¹⁸⁶ *Ibid.*, During World War II a United Maritime Authority were established by the allied powers to consider and advise on shipping matters. This authority went through various institutional mutations until the convening of the United Nations Maritime Conference, where a permanent establishment on international maritime matters were taken.

¹⁸⁷ This is in reference to the “Coffin ships” and previous casualties.

¹⁸⁸ *Ibid.* 418.

The UN was established in 1945 and, during this decade, a number of international organizations were formed.¹⁸⁹ In February 1948, the Geneva conference opened and less than a month after, on March 6th, the Convention formally established the Inter-Governmental Maritime Consultative Organization (IMCO). In 1982, it changed its name to the International Maritime Organization (IMO),¹⁹⁰ where the main focus was to regulate the international maritime relations.¹⁹¹

The IMO consists of 174 member states¹⁹² and three associate members.¹⁹³ In addition, there are 65 intergovernmental organizations with observer status - the European Commission being one of them - and 77 international non-governmental organizations with consultative status.¹⁹⁴ The Convention on the IMO entered into force in March 1958¹⁹⁵ and the new organization met the following year for the first time.¹⁹⁶

¹⁸⁹ The International Civil Aviation Organization (ICAO) was founded in 1944, the Food and Agriculture Organization (FAO) was created in 1945, the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 1945 and the World Health Organization (WHO) in 1947. All were members of the United Nations system. Source: <http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/Convention-on-the-International-Maritime-Organization.aspx>. Last visited January 14th 2019. See also Rothwell, D., et al. (2015) *The Oxford handbook of the law of the sea*. Oxford Handbooks in Law, p. 417.

¹⁹⁰ *Ibid.*, see also

<http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/Convention-on-the-International-Maritime-Organization.aspx>; Last visited January 17th 2019.

¹⁹¹ *Ibid.* See also Karim, M. S. (2016). "Prevention of Pollution of the Marine Environment from Vessels." Springer International Publishing, p. 21. IMO consist of six main bodies concerned with the implementation of conventions. The Assembly and the Council are the main organs, and the Committees involved are the following:¹⁹¹ *the Maritime Safety Committee; the Marine Environment Protection Committee; the Legal Committee; the Facilitation Committee*. Developments in the shipping industry and other related industries are discussed by the member states in these bodies, and if there is a need for a new convention, or amendment to existing conventions, this can be raised in any of them. Initially, IMO consisted of four organs: the Assembly, Council, Maritime Safety Committee and Secretariat. The other committees have gradually emerged to deal with growing issues and complexities' surrounding international shipping.

¹⁹² 2018 level. See appendix V for the full list of members.

¹⁹³ The Faroe Islands; Hong Kong, China; and Macao, China.

¹⁹⁴ The EU is not a full member, since the IMO's founding Convention only allows for the membership of states. For further information see European Parliament Briefing, from February 2016 "The IMO – for "safe, secure and efficient shipping on clean oceans."

http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/577964/EPRS_BRI%282016%29577964_EN.pdf
Last visited January 17th 2019.

¹⁹⁵ The Convention was adopted the 6th of March 1948 and entered into force March 17th 1958. The Convention has had several amendments; amended September 15th 1964 and in force June 6th 1967; September 28th 1965, in force November 3rd 1968; October 17th 1974, in force April 1st 1978; November 14th 1975, in force May 22nd 1982; November 17th 1977, in force November 10th 1984; November 15th 1979, in force November 10th 1984; November 7th 1991, in force December 7th 2008 and November 4th 1993, in force November 7th 2002. During the amendments in 1975, the name changed to IMO.

¹⁹⁶ Rothwell, D., et al. (2015) *The Oxford handbook of the law of the sea*. Oxford Handbooks in Law, p. 417-18.

The purposes of the IMO (besides the legal matters related to this¹⁹⁷), as summarized by Article 1(a) of the Convention on the International Maritime Organization, are:

*"(...)to provide machinery for cooperation among Governments in the field of governmental regulation and practices relating to technical matters of all kinds affecting shipping engaged in international trade; to encourage and facilitate the general adoption of the highest practicable standards in matters concerning maritime safety, efficiency of navigation and prevention and control of marine pollution from ships."*¹⁹⁸

The key aspect to observe is that the mission of the IMO is global in scope, thereby considering the global nature of maritime trade. Another important output of the IMO is the various international conventions which has to be negotiated, adopted, and ratified by the member states.¹⁹⁹ Moreover, the IMO has also supplemented and elaborated on some of the conventions, and has thus adopted a number of 'codes' which typically deal with a specific technical area.²⁰⁰

Therefore, irrespective of flag, – nationality of the ship - the IMO regulations apply to all ships.²⁰¹ These common rules ensure a high level of health, safety and

¹⁹⁷ See the Convention on the International Maritime Organization.

¹⁹⁸ In 1948 marine pollution was not among IMO's concerns, why the original article 1, never stated that the purpose of IMO included marine pollution, why the article was amended in 1977.

¹⁹⁹ In the IMO, member states negotiate and implement international rules in order to improve safety and protect environment at sea, and facilitate maritime transportation. The IMO is not limited to this, as it also handles regulations in connection to liability, compensation, and insurance duties as a consequence of pollution damage caused by oil spillages, removal of wrecks, and other areas.

²⁰⁰ Rothwell, D., et al. (2015) *The Oxford handbook of the law of the sea*. Oxford Handbooks in Law, p. 419. For further information see also the Danish Maritime Authority <http://www.dma.dk/Vaekst/IMO/InternationaleKonventioner/Sider/default.aspx>. Last visited January 18th 2019.

²⁰¹ The territorial aspect is therefore regulated by the IMO and according to UNCLOS Article 2 and 3, "...have added sea areas up to 12 nautical miles from coastal base lines, called territorial waters, into the sovereignty of coastal states. It also stipulates that ships in territorial waters of a coastal state are also subject to its laws. Sea areas outside the territorial waters are international waters... Articles 17, 18 and 19 of UNCLOS limit this sovereignty in territorial waters of a coastal state and provide that ships of all states enjoy the right of innocent passage through this strip of coastal waters, and define the meaning of innocent passage i.e. these ships should not prejudice peace, good order or security of the coastal state during this passage, regardless of flag of the ship and nationality of her crew." Another thing is that UNCLOS makes it optional on coastal states,

social conditions for seafarers, and it is a guarantee for shipping companies to have a broad playing field to maintain competition all over the world.²⁰²

By the time the IMO came into existence in 1958, several important international conventions had already been developed, including the International Convention for the Safety of Life at Sea of 1948 (SOLAS)– which is one of the four pillars discussed below - the International Convention for the Prevention of Pollution of the Sea by Oil of 1954, as well as treaties dealing with load lines and the prevention of collisions at sea. The IMO was given the responsibility for ensuring that the majority of these conventions were kept up-to-date. Also, it was given the task of developing new conventions if necessary. The creation of the IMO coincided with a period of tremendous change in the shipping world and the IMO was thus busy from the start, as it had to both develop new conventions and ensure that the existing instruments kept pace with changes in the shipping technology. It is now responsible for more than 50 international conventions and agreements, and has adopted numerous protocols and amendments.²⁰³ Of these, Denmark has ratified 49 of the IMO conventions and denounced two.²⁰⁴

3.1 The IMO conventions – the four pillars of International Maritime Law

UNCLOS is – as mentioned previously - often referred to as the constitution of the oceans. Therefore, UNCLOS forms the legal umbrella which overarches the work of all the UN organs dealing with sea related matters.²⁰⁵ Since the IMO is an

to exercise their criminal jurisdiction within their territorial waters. Bansal, A. K. (2006). "THE FOUR PILLARS OF INTERNATIONAL MARITIME LAW AND BILLS OF LADING." *Journal of the Indian Law Institute* 48(4): 527-539, p. 527.

²⁰²For further information see the Danish Maritime Authority <https://www.dma.dk/Vaekst/IMO/Sider/default.aspx>. Last visited January 18th 2019. See also Karim, M. S. (2016). "Prevention of Pollution of the Marine Environment from Vessels." Springer International Publishing, p. 19-20.

²⁰³Rothwell, D., et al. (2015) *The Oxford handbook of the law of the sea*. Oxford Handbooks in Law, p. 418. For a full overview of the Conventions

see;<http://www.imo.org/en/About/Conventions/StatusOfConventions/Documents/List%20of%20the%20Conventions%20and%20their%20amendments.pdf> Last visited January 18th 2019.

²⁰⁴ See appendix VI for the full list of conventions which Denmark has ratified.

²⁰⁵ Mukherjee, P.K. (2005). "An introduction to maritime law". *World Maritime University, Malmö Sweden*, p. 9.

organization set out by the UN, its conventions does not have direct effect on each member state, as each member state will have to ratify each convention individually.²⁰⁶ Of the IMO's conventions, the four pillars of International Maritime Law are the foundation of the conventions which the ratified member states have to adhere to.

The majority of conventions adopted under the auspices of the IMO or for which the organization is otherwise responsible fall into three main categories. The first group is concerned with *maritime safety*; the second with the *prevention of marine pollution*; and the third with *liability and compensation* - especially in relation to damage caused by pollution.²⁰⁷ Outside these major groupings, there are a number of other conventions dealing with facilitation, tonnage measurement, unlawful acts against shipping and salvage, etc.²⁰⁸

However, looking further into the legislative area of International Maritime Law, the four pillars of maritime law occur, thus a clarification hereof is relevant. Maritime law is commonly known to be built upon four pillars, which is illustrated in figure 2.2 below.

²⁰⁶ *Ibid.* Under the terms of the 1969 Convention Relating to Intervention on the High Seas, contracting states are empowered to act against ships of other countries which have been involved in an accident or have been damaged on the high seas if there is a legitimate risk of oil pollution occurring.

The way in which these powers may be used are very carefully defined and, in most conventions, the flag state is primarily responsible for enforcing conventions as far as its own ships and personnel are concerned. The IMO itself has no powers to enforce the conventions.

However, the IMO has been given the authority to vet the training, the examination, and the certification procedures of contracting parties to the International Convention on Standards of Training, Certification and Watch keeping for Seafarers (STCW) of 1978. Governments have to provide the relevant information to the Maritime Safety Committee of the IMO which will judge whether or not the member state in question meets the requirements of the convention. See also Mukherjee, P. K. (2012). "Maritime law and admiralty jurisdiction: Historical evolution and emerging trends." *The Admiral VI. Ghana Shippers' Council*. 42: 1-36, p. 9-11.

²⁰⁷ <http://www.imo.org/en/About/Conventions/Pages/Home.aspx>. Last visited January 20th 2019. See also Mihneva-Natova, Anna. "the relationship between United Nations convention on the law of the sea and the IMO conventions." *The United Nations And The Nippon Foundation Of Japan Fellow* (2005), p. 10-11.

²⁰⁸ *Ibid.*

Figure 2.2 – The four pillars of Maritime Law



Source: the author's creation

Since 2006 – where the journey of last pillar (MLC) began - these four conventions are considered the pillars of IMO.²⁰⁹

The SOLAS Convention constitutes the first pillar, while under it, ships flagged by signatory-states comply the minimum safety standards concerning construction, equipment and operation of ships referring to subjects such as subdivision and stability, machinery and electrical installations, fire protection, life-saving appliances etc. Regulations provide for surveys of various ship types and are issuing the documents certifying that the ships meet the required conditions and the obligations to carry adequate

²⁰⁹ Mukherjee, P. K. (2012). "Maritime law and admiralty jurisdiction: Historical evolution and emerging trends." *The Admiral VI. Ghana Shippers' Council*. 42: 1-36, p. 12-14. See also Lillie, N. (2008) 'The ILO maritime labour convention, 2006: A new paradigm for global labour rights implementation.' In *Cross border social dialogue and agreements: An emerging global industrial relations framework?* edited by K. Papadakis. International Labour Office, p. 191-92.

equipment. The Convention has been amended several times, most extensively by protocols of 1978 and 1988. Although due to the development in technology and recent major shipping casualties,²¹⁰ there has been more frequent amendments.²¹¹

The STCW Convention is the second pillar and the main purpose is to promote safety of life and property at sea and the protection of the marine environment by establishing in common agreement, international standards of training, certification and watchkeeping for seafarers i.e. setting the standards for masters, officers and watch personnel, on seagoing merchant ships.²¹²

The MARPOL Convention is the third pillar and the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. The Convention includes regulations aimed at preventing and minimizing pollution from ships. It covers not only accidental and operational pollution but also pollution by chemicals, goods in packaged form, sewage, garbage and air pollution. MARPOL also includes regulations relating to the inspection of foreign ships voluntarily in port to ensure that they comply with antipollution rules and

²¹⁰ Among these casualties; Herald of Free Enterprise (1987), Estonia (1994), MV Joola (2002) and MS al-Salam Boccaccio 98 (2006) – all roll-on, roll-off (ro-ro) ferries. The previous “Coffin ships” has been the starting point, set out by Plimsoll. Mihneva-Natova, Anna. "the relationship between United Nations convention on the law of the sea and the IMO conventions." The United Nations And The Nippon Foundation Of Japan Fellow (2005), p. 11. See also Mukherjee, P.K. (2005). "An introduction to maritime law". *World Maritime University, Malmö Sweden*, p. 13.

²¹¹ International Convention for the Safety of Life at Sea (SOLAS), 1974, Adopted November 1st 1974 and entered into force May 25th 1980. See also Mihneva-Natova, Anna. "the relationship between United Nations convention on the law of the sea and the IMO conventions." The United Nations And The Nippon Foundation Of Japan Fellow (2005), p. 11. See also [http://www.imo.org/en/About/conventions/listofconventions/pages/international-convention-for-the-safety-of-life-at-sea-\(solas\)-1974.aspx](http://www.imo.org/en/About/conventions/listofconventions/pages/international-convention-for-the-safety-of-life-at-sea-(solas)-1974.aspx). Last visited January 21st 2019.

²¹² International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978. Adopted July 7th 1978 and entered into force on April 28th 1984. For further information see <http://www.imo.org/en/OurWork/HumanElement/TrainingCertification/Pages/STCW-Convention.aspx>. Last visited January 21st 2019. See also Mukherjee, P. K. (2012). "Maritime law and admiralty jurisdiction: Historical evolution and emerging trends." *The Admiral VI. Ghana Shippers' Council*. 42: 1-36, p. 11.

standards and prevent the ships from sailing if these requirements are not met.²¹³

The MLC Convention is the fourth pillar, which focus on the basic rights of the seafarers. MLC is a collaboration between the IMO and the International Labour Organization (hereinafter, referred to as, "ILO"), whereas the three previous pillars are set out by the IMO. The MLC is a conglomerate of key principles within past Maritime Labor Conventions and more than 68 existing ILO's. The key focus within the MLC is primarily seafarers themselves. The key focus, includes issues relating to socio-economic, employment conditions, minimum working ages, anti-discrimination, medical, equal rights and general concerns of all seafarers on board domestic and international vessels.²¹⁴

Therefore, the purpose of the four pillars is to create minimum standards regarding the ships, pollution and the handling hereof on a global basis. These four conventions are applicable to all ships navigating on high seas.²¹⁵

²¹³ International Convention for the Prevention of Pollution from Ships (MARPOL). Adopted in 1973 (Convention), 1978 (1978 Protocol), 1997 (Protocol – Annex VI; Entry into force: October 2nd 1983 (Annexes I and II). The Protocol from 1997, entered into force May 19th 2005.

For further information see also [http://www.imo.org/en/about/conventions/listofconventions/pages/international-convention-for-the-prevention-of-pollution-from-ships-\(marpol\).aspx](http://www.imo.org/en/about/conventions/listofconventions/pages/international-convention-for-the-prevention-of-pollution-from-ships-(marpol).aspx). Last visited January 21st 2019. See also Mihneva-Natova, Anna. "the relationship between United Nations convention on the law of the sea and the IMO conventions." *The United Nations And The Nippon Foundation Of Japan Fellow* (2005), p. 16. See also Mukherjee, P. K. (2012). "Maritime law and admiralty jurisdiction: Historical evolution and emerging trends." *The Admiral VI. Ghana Shippers' Council*. 42: 1-36, p. 19-21.

²¹⁴ For further information see

https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---normes/documents/questionnaire/wcms_556070.pdf. Last visited January 21st 2019. See also Mukherjee, P.K. (2005). "An introduction to maritime law". *World Maritime University, Malmö Sweden*, p. 23.

²¹⁵ Even though these four pillars is commonly known, some might disagree. According to A.K. Bansal the four pillars are; *the sovereignty of nations; freedom of the high seas; freedom of contract and that a ship has a legal personality of her own in addition to being property of the owner*. Bansal refers to these principles as upheld in various articles of UNCLOS. However, if UNCLOS is to be characterised as the legal umbrella i.e. the Constitution of Maritime Law, arguably these four principles are basic rights within Maritime Law. However, according to Tvarnø and Nielsen, the sovereignty of nations and contractual freedom are basic principles within the European realistic legal positivism, therefore these are basic principles which takes effect either way. For further information see Bansal, A. K. (2006). "THE FOUR PILLARS OF INTERNATIONAL MARITIME LAW AND BILLS OF LADING." *Journal of the Indian Law Institute* 48(4): 527-539, p. 527-532 and Tvarnø, C. D. & Nielsen, R. (2017). *Retskilder og retsteorier*. Djøf/Jurist-og Økonomforbundet, p. 480-89.

4. The choice of flag state - the ultimate decision

One of the main areas in which the maritime industry differs from any other industries is the fact that this is about business transacted on navigable waters, meaning the geographical aspect of the business. Thus, the ships are operating in international waters and are sailing in and out of different jurisdictions, which makes it necessary to have aligned legislation on a worldwide basis.

Therefore, one of the main difficulties in the maritime industry, is the different jurisdictions.

UNCLOS has outlined the areas of jurisdiction – the geographical division. According to article 2 and 3 of UNCLOS, a sovereignty of a coastal state extends, beyond its land territory and internal waters. Thus, have the rights to sea areas up to 12 nautical miles²¹⁶ from coastal baseline, called territorial sea.²¹⁷ Ships within the territorial waters of a coastal state are also subject to its laws.²¹⁸ Sea

²¹⁶ In regards to the definition of the territory at sea and the coastal states right to exercise their criminal jurisdiction. Under article 33 of UNCLOS, a coastal state has limited rights in sea areas up to 24 miles from coastal base lines – the contiguous zone. Within this zone a coastal state has the right to exercise controls necessary to prevent infringement of its customs, fiscal, immigration or sanitary laws and regulations within its territory or territorial sea; Punish infringement of the above laws and regulations committed within its territory or territorial sea. The contiguous zone may not extend beyond the 24 nautical miles from the baselines of the coastal state. Article 57 and other provisions in part V of UNCLOS, coastal states has exclusive rights to riches of the seas up to 200 miles from coastal base lines, which include riches of the seabed. This is also known as the exclusive economic zone. Yet sea areas outside the 12 miles limit of territorial waters are international waters for most purposes. For further information see

The Convention: http://www.un.org/Depts/los/convention_agreements/texts/unclos/unclos_e.pdf. Last visited January 21st 2019.

²¹⁷ *Ibid.* UNCLOS Article 2 and 3. UNCLOS article 3 to 16 is in regards to the limits of the territorial sea.

²¹⁸ The enforcement of the IMO conventions depends on the governments of the member states. Contracting governments enforce the provisions of the IMO conventions as far as their own ships are concerned while also setting penalties for infringements where applicable.

Furthermore, the member states may have certain limited powers in respect of the ships of other governments. In some conventions, certificates are required to be carried on board ships to show that they have been inspected and have met the required standards. These certificates are normally accepted as proof by authorities from other states that the vessel concerned has reached the required standard but, in some cases, further action can be taken.

For example, the 1974 SOLAS Convention states that "the officer carrying out the control shall take such steps as will ensure that the ship shall not sail until it can proceed to sea without danger to the passengers or the crew." This can be done if "there are clear grounds for believing that the condition of the ship and its equipment does not correspond substantially with the particulars of that certificate." An inspection of this nature takes place within the jurisdiction of the port state. For further information see Mihneva-Natova, Anna. "the relationship between United Nations convention on the law of the sea and the IMO conventions." *The United Nations And The Nippon Foundation Of Japan Fellow* (2005), p. 11 and Rothwell, D., et al. (2015) *The Oxford handbook of the law of the sea*. Oxford Handbooks in Law, chapter 13 and 14.

areas outside the territorial waters are international waters.²¹⁹ Articles 17, 18 and 19 of the convention limit this sovereignty in territorial waters of a coastal state and provide that ships of all states enjoy the right of innocent passage, through this strip of coastal waters. Innocent passage means that a ship should exhibit peace, good order, or security, regardless of both the flag of the ship and the nationality of her crew.²²⁰ According to UNCLOS it is optional for a coastal state, to exercise their criminal jurisdiction within their territorial waters.²²¹

The flag of the ship is another area of jurisdiction. Flag state jurisdiction provides one of the principle ways of maintaining legal order over activities at sea, although its significance has lessened as a consequence of extensions in coastal state jurisdictions over ocean space.²²² According to article 90 of UNCLOS any state may grant a ship the right to sail under its flag, therefore when a shipowner registers a new ship, the choice of flag state is optional.²²³ The flag state enjoys the primary legislative and enforcement jurisdiction over its ships on the high seas, although there are some limitations e.g. there has to be a “genuine link”²²⁴ between the ship and the state.²²⁵ However, since it is

²¹⁹ Bansal, A. K. (2006). "THE FOUR PILLARS OF INTERNATIONAL MARITIME LAW AND BILLS OF LADING." *Journal of the Indian Law Institute* 48(4): 527-539, p. 527.

²²⁰ UNCLOS Article 17, 18 and 19. For further information see

The Convention: http://www.un.org/Depts/los/convention_agreements/texts/unclos/unclos_e.pdf. Last visited January 21st 2019

²²¹ *Ibid.* This depends on whether a crime has been committed within their territorial waters, disturbs the peace and good order of the coastal state or its territorial sea. There has been previous cases of coastal states exercising their criminal rights e.g. A seafarer on a ship, once threw a fishing line over side – in his spare time on the ship – from the stern rail of his foreign flagship. The ship was anchored, waiting to enter US harbor. But to fish in US waters requires a license. So, the US coast guard promptly boarded the ship and arrested not only the seaman because he was fishing contrary to US law, but also the master because he personified the ship that contravened US law. Another example where a 2nd officer of a foreign flag vessel got down from his ship onto the quay, just after she berthed in Kuwait, to read the ship's draft. He was shot dead by the policeman on duty, because the ship had not yet been cleared by immigration. The policeman claimed it a right to shoot any foreigner dead who stepped on Kuwaiti soil without permission. Bansal, A. K. (2006). "THE FOUR PILLARS OF INTERNATIONAL MARITIME LAW AND BILLS OF LADING." *Journal of the Indian Law Institute* 48(4): 527-539, p. 528.

²²² Rothwell, D., et al. (2015) *The Oxford handbook of the law of the sea*. Oxford Handbooks in Law, p. 304.

²²³ *Ibid.*

²²⁴ *Ibid.*, p. 306-07. This genuine link emerged as a means of tackling the use of “flags of convenience”. Article 49 of the Treaty on the Functioning of the European Union, which allows nationals from one Member State to pursue economic activities in other Member States. This has extended the right to register ships in other Member States.

²²⁵ *Ibid.*, UNCLOS art. 94-111 has set out some minimum standards which the flag states need to comply with.

the flag state that can define the nature of this link, in practice, it can register any ship it chooses.²²⁶

A general concern in regards to the choice of flag state, is the flag states ability and willingness to exercise effective control over ships flying their flag.²²⁷ This concern has resulted in attempts to secure better flag state compliance with their responsibilities, as well as provoking the development of alternative models of control e.g. port state control.²²⁸

As discussed above, the IMO has set out guidelines, meaning that only when the countries have ratified and implemented the given convention, it becomes applicable law, as – otherwise - the IMO has no legal effect. However, for the shipowner to choose its jurisdiction, there can be put quite some thoughts into this decision, as it may be beneficial to the shipowner if the ship is registered in one state rather than another. There are three types of registry: *National registers*, *International registers* and *Open registers (also flags of convenience)*. Not all flag states offer all three types of registry and the type of registry defines – in a broad sense - how and what the shipowners needs to comply with in current the flag state.²²⁹ Thus, the type of registry is in connection to the choice of flag state.

For the shipowner to choose a flag state, Stopford has highlighted four principal consequences of choosing to register a ship:

²²⁶ Stopford, M. (2009). *Maritime economics*. Routledge, p. 664.

²²⁷ According to article 92 of UNCLOS, when an offence occurs in international waters, the responsibility for imposing a penalty rests with the flag state. However, should an offence occur within the jurisdiction of another state, that state can either cause proceedings to be taken in accordance with its own law or give details of the offence to the flag state so that the latter can take appropriate action.

²²⁸ *Ibid.*, p. 304-5. These factors is necessary in order to pull towards more sophisticated models of regulation.

²²⁹ *National registers; International registers and Open registers*. The national register treat the shipowner in the same way as other businesses registered in the country. The international register were set up by some national flag administrations to offer their national shipowners an alternative to registering under open registries. They treat the shipowners almost like the open register, generally charging a fixed tax on the tonnage of the ship rather than taxing corporate profits. Examples; Singapore; Hong Kong, Marshall Islands and the Isle of Man are some of the biggest states, that provides the register. Open registers (flags of convenience) offer shipowners a commercial alternative to registering under their national flag, and they charge a fee for this service. The terms and conditions depend on the policy of the country concerned. I 2005 there were 12 open registries. Panama, Malta, Liberia, Bahamas and Cyprus where the largest ones. Stopford, M. (2009). *Maritime economics*. Routledge, p. 669.

1. *Tax, company law and financial law*

A shipowner that registers a ship in a particular state, is subject to the commercial laws of the given state. This is relevant in regards to the shipowner's liabilities to pay tax and may impose regulations in such areas as the shipowner's organization, auditing of accounts, employment of staff and limitation of liability. This affect the economics of the shipowner's business.²³⁰

2. *Compliance with maritime safety conventions*

The ship is subject to any safety regulations the state has laid down for the construction and operations of ships. Registration under a flag state, that have ratified and rigidly enforces SOLAS Convention means complying with these standards. Contrary, for a ship that is registered at a flag state, that has not ratified SOLAS, or does not mean to enforce it, allows shipowners to set their own standards on equipment and maintenance. However, these are still subject to port state regulation.²³¹

3. *Crewing and terms of employment*

The shipowner is subject to flag state regulations concerning the selection of the crew, the terms of employment and working conditions. For example, some flag states insist on employment of nationals.²³²

4. *Naval protection and political acceptability*

Another reason for choosing a flag state is to benefit from the protection and acceptability of the flag state. Even though this might not seem important today, during war times, this could be relevant.²³³

²³⁰ *Ibid.*, p. 666-67. The flag state issue has become crucial for maritime economics because it provides shipowners with a way of reducing costs.

²³¹ *Ibid.*

²³² *Ibid.*

²³³ *Ibid.*, During the war between Iran and Iraq in 1980s, some shipowner changed to US flag to gain protection of US naval forces in the Gulf.

Based on the four principles, the shipowner can benefit greatly from choosing one flag state rather than another.

As mentioned previously, Denmark is the fifth largest²³⁴ shipping nation in the world, although when examining the largest flag states, Denmark is no way near the largest. Panama is and has been the largest flag state for years.²³⁵

It is remarkable that one of the largest shipping nations in the world, is not a large flag state, although, arguably, this could be explained by the chartering of ships and the choices of flag states.²³⁶

When examining the largest flag states and the IMO conventions, which they have ratified, then some of them has ratified less conventions than Denmark.²³⁷

Therefore, as an example, it could potentially be more beneficial for a shipowner to register a ship – provided that there is a genuine link - in Panama²³⁸ instead of Denmark. Arguably, the reason is that Panama may have ratified other/less IMO conventions which means that it may be less expensive to port there, as well as the shipowner may have to adhere to less strict legislation.²³⁹ Hence, the level of compliance in regards to the ship would not be as high in Panama as it would be in Denmark, which could be very favorable

²³⁴ 'Danish Shipping Statistics November 2016', published by the Danish Shipowners Association, further information www.Shipowners.dk; Eddings, G., Chamberlain, A. & Warder, R. (2017). *The shipping law review* (4th ed). Law Business Research, p. 157.

²³⁵ According to Lloyd's list, in 2018 Panama was the largest flag state and has been for some years. The numbers are based upon gross tonnage registered. Thus Denmark is one of the largest shipping nations worldwide, Denmark, Great Britain and United States are no way near the 10 largest flags states. Top ten flag states: 1. Panama; 2. Marshall Islands; 3. Liberian; 4. Hong Kong; 5. Singapore; 6. Malta; 7. Bahamas; 8. China; 9. Greece and 10. Japan. Source; <https://lloydslist.maritimeintelligence.informa.com/LL1125024/Top-10-flag-states-2018>. Last visited January 22nd 2019.

²³⁶ As mentioned in chapter 1, Danish shipping companies is accountable for 15.2 M GT regarding Danish owned vessels and 71.4 M GT including foreign flag chartered ships. Also it could be more lucrative to register a ship elsewhere but in Denmark. For further information see Eddings, G., Chamberlain, A. & Warder, R. (2017). *The shipping law review* (4th ed). Law Business Research, p. 157 and <https://lloydslist.maritimeintelligence.informa.com/LL1125024/Top-10-flag-states-2018>. Last visited January 22nd 2019. It could also be explained by the types of registry.

²³⁷ See appendix VII of overview of the largest flag states and the IMO conventions which they have ratified.

²³⁸ *Ibid.*, According to Lloyd's List, in 2018 Panama was the largest flag state.

²³⁹ See appendix VII for overview of the conventions which Panama has ratified. Panama has ratified 32 IMO conventions and Denmark has ratified 49.

for the shipowner. Conversely, there could potentially be upsides by registering your ship under the Danish flag. The Danish Maritime Authority has tried to eliminate certain special rules, to make it easier for the shipowners to be flying the Danish flag.²⁴⁰

However, as research shows that the top team flag states do not completely correspond to the size of the maritime industry in the given member state.²⁴¹ This means that a member state like Panama may gain economically within the shipping industry if it does not ratify the strict legislation and conventions from the IMO.²⁴²

The choice of flag state can be a cost saving decision and less strict legislation to comply with for the shipowner. In regards to a relational contract between the shipowner and the supplier, the shipowner's choice of flag state is not entirely unrelated. Based on the four principles set out by Stopford, a choice of flag state has an impact on the business of the shipowner. Especially whether the chosen flag state, may or may not have ratified SOLAS, as this influences the minimum standards of the construction and maintenance of the ship. In regards to a relational contract between the shipowner and the supplier, it is relevant to know the flag states legislation in which the relational contract needs to comply with.²⁴³

The dissertation argues that a relational contract between a shipowner and a supplier is likely to result in a more value creating industry - and thereby a

²⁴⁰ This is done, in order to provide the shipowners with more lucrative conditions than before. For further information see: <https://www.dma.dk/SynRegistrering/Flagskifte/Sider/default.aspx>. Last visited January 20th 2019.

²⁴¹ See Appendix VII overview over the largest flag states and see Stopford, M. (2009). *Maritime economics*. Routledge, p. 670.

²⁴² *Ibid.*, p. 671. Although this might be stretching it a bit, but it is connected to the economic role of open registry and compliance.

²⁴³ Meaning that if the chosen flag state has ratified SOLAS or any other relevant conventions regarding construction of the ship, the suppliers product portfolio needs to comply with these rules.

more innovative. Depending on the parties preferences, it is a possibility that the choice of flag state becomes less important as the relation contract to a higher extend will set the standard instead of the flag state.

5. Go Green – an environmental necessity

Global warming is a key subject of discussion in today's world, due to changes in the environment. In the contemporary maritime world, the subject of marine pollution is also of key importance.

Currently, there is a whole body of law on the subject of ship-source marine pollution governed largely by international conventions e.g. MARPOL.²⁴⁴

The international law framework for the regime of vessel source pollution is contained in Article 211 of UNCLOS. The essence is that the article requires flag states to adopt laws for the prevention, reduction and control of marine pollution applicable to their ships, and the laws must be consistent with generally accepted international rules and standards established through the IMO or general diplomatic conference.²⁴⁵

²⁴⁴ The Oil Pollution Act 1990 of the United States is a domestic statutory regime of liability and compensation which has international implications. Canada has a statutory compensation fund known as the Ship-Source Oil Pollution Fund (SSOPF) which supplements the international compensation regime. There is also the common law regime of civil liability for pollution damage based on strict liability jurisprudence and the tort laws of negligence and public and private nuisance. See also D Mukherjee, P.K. (2005). "An introduction to maritime law". *World Maritime University, Malmö Sweden*, p. 19, for further elaboration.

²⁴⁵ All the international instruments on marine pollution, except the London Convention of 1972 are IMO Conventions. Another area of public international law is the Intervention Convention of 1969 and Protocol of 1973. It allows a coastal state to intervene on the high seas in cases of imminent pollution threat to its coast or coastal interest. The International Convention on Prevention of Pollution from Ships from 1973 and the Protocol of 1978 (MARPOL 73/78) is the regulatory convention dealing with ship-generated pollution caused by operational discharges. The measures prescribed are preventive in character. There are six annexes that address six distinct kinds of pollutants, namely, oil, noxious liquid substances, packed harmful substances, sewage, garbage, and air pollution. The first two annexes are compulsory while the others are optional. All except Annexes IV and VI are in force. The Oil Pollution Preparedness, Response and Co-operation Convention from 1990 (OPRC) is also a regulatory convention; it has both a preventive as well as remedial element. The regulation of dumping of wastes at sea is governed by the London Convention of 1972 which has been revised by the Protocol of 1996. International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, 1969 and Protocol Relating to Intervention on the High Seas in Cases of Pollution by Substances other than oil, 1973. Mukherjee, P.K. (2005). "An introduction to maritime law". *World Maritime University, Malmö Sweden*, p. 20, for further elaboration.

Sewerage and other garbage have – for centuries - been thrown into the seas from coastal habitations and ships. The increase in world shipping over the last half a century has also resulted in an increase in waste.²⁴⁶ Thus, pollutants from ships e.g. sewerage, garbage and oil tank washings have intensified. The growth in the human population has too resulted in more human waste from coastal habitations. These factors have an impact on earth's environment and ecology.

For example, merchant ships are carrying approximately 10 billion tons of salt water from one environment to another – thousands of miles apart - each year.²⁴⁷ Merchant ships transport live microorganisms with it, which pass through the water pipes of the ships. Hence, when pumped out, live mechanisms are injected into a different environment apart from its natural habitat.²⁴⁸ This can cause great harm to local fisheries and the local environment and ecology.²⁴⁹ Thus, it has become essential to regulate – among others - the quantities of salt-water ballast across oceans.²⁵⁰

According to article 92 of UNCLOS, all ships on the high sea, are subject to the jurisdiction of the flag state. So, control (e.g. ballast water) and enforcement of MARPOL – to reduce pollution of the high seas²⁵¹ - rely on the flag states. However, flag states and especially flags of convenience states, does not necessarily have the infrastructure nor will enforce the regulations upon their vessels.²⁵²

²⁴⁶ Bansal, A. K. (2006). "THE FOUR PILLARS OF INTERNATIONAL MARITIME LAW AND BILLS OF LADING." *Journal of the Indian Law Institute* 48(4): 527-539, p. 529.

²⁴⁷ *Ibid.*

²⁴⁸ Hughes, K. A., and Thompson, A. (2004). "Distribution of sewage pollution around a maritime Antarctic research station indicated by faecal coliforms, *Clostridium perfringens* and faecal sterol markers." *Environmental Pollution*, 127.3: 317.

²⁴⁹ Endresen, Ø. et al. (2004) "Challenges in global ballast water management." *Marine pollution bulletin* 48.7-8: 615.

²⁵⁰ Rothwell, D., et al. (2015) *The Oxford handbook of the law of the sea*. Oxford Handbooks in Law, p. 531-32.

²⁵¹ Meaning international seas outside the territorial sea.

²⁵² *Ibid.*, p. 304-5.

In the attempt to deal with this problem, several branch specific organizations²⁵³ joined a collaboration, that issued basic guidelines concerning the use of oily water separators. These guidelines emphasized the vital importance of strict adherence to IMO requirements. The joint organization are committed to a zero-tolerance to any non-compliance with MARPOL and encourage that no one should take part in illegal conduct.²⁵⁴ Furthermore, severe legal consequences have been outlined – both for the company and the seafarers – of even minor violations of environmental rules. Ship operators have the responsibility to be compliant within their companies. Even a minor violation of MARPOL will be detected by the authorities and are fined for misconduct.²⁵⁵

The problems relating to pollution of the seas are on-going as evidenced by frequent disasters of large proportions, and the law appears to be constantly developing to cope with the consequences hereof. Due to the continuing development within the legislative area, the parties (i.e. the shipowner and supplier) are forced to be one step ahead of the legislation and needs to take precautions in regards to complying with future environmental legislation when doing business. As mentioned previously, ships can take up to four years to build. Therefore - as an example - if the legislation changes within the construction period and the shipowner has not taken the necessary precautions, possibly at the delivery of the product, the given product might not comply with the current legislation.

²⁵³ BIMCO, Intercargo, International Chamber of Shipping, International Shipping Federation, Intertanko and Oil Companies International Marine Forum. They have also made several proposals to IMO regarding amendments of Protocols. For further information see proposals and guidelines <http://www.ics-shipping.org/submissions/imo>. Last visited January 23rd 2019.

²⁵⁴ Bansal, A. K. (2006). "THE FOUR PILLARS OF INTERNATIONAL MARITIME LAW AND BILLS OF LADING." *Journal of the Indian Law Institute* 48(4): 527-539, p. 529.

²⁵⁵ *Ibid.*, These fines are in the large scale area and can be millions of dollars. These can be imposed on both the seafarer and the company. Furthermore, they can also be liable to criminal prosecution and imprisonment for any deliberate violation of MARPOL or falsification of records.

The IMO has over the last few years been keener on adopting a more environmentally friendly legislation and, thus, the green wave has become the new black. This is highly relevant in regards to the shipowner and supplier that global warming is a hot potato, as in the future, the world will only be stricter in terms of pollution, and therefore, it makes sense for the parties to be foresighted and take the necessary measurements.

Furthermore, the shipping industry is accountable for approximately 2.5 percent of Global Greenhouse Gas (GHG) emissions,²⁵⁶ which is why IMO has improved their focus on environmental strategies,²⁵⁷ hence, the shipowner needs to constantly be aware of their compliance and somehow try to take further measurements towards complying with future legislation.²⁵⁸

The dissertation is aiming at optimizing the situation for both the shipowner and the supplier. Thus, the environmental compliance and the problem of the parties within this, is necessary to address. This environmental approach will be used as a key output to the optimization of the situation between the parties.

6. Maritime contracts

This chapter has discussed the maritime industry and the legal aspects that influence the market. However, this dissertation is analyzing relational contracting between the shipowner and the supplier, thus a clarification of maritime contracts is in order.

²⁵⁶ According to the OECD

http://oecdobserver.org/news/fullstory.php/aid/6014/Climate_change:_Is_shipping_finally_on_board_.html. Last visited January 24th 2019.

²⁵⁷ See also Mukherjee, P. K. (2012). "Maritime law and admiralty jurisdiction: Historical evolution and emerging trends." *The Admiral VI. Ghana Shippers' Council*. 42: 1-36, p. 19-21, see also Rothwell, D., et al. (2015) *The Oxford handbook of the law of the sea*. Oxford Handbooks in Law, p. 531-35.

²⁵⁸ This was also discussed in section 6. Go green – an environmental necessity. Here it was also discussed how progressive IMO and NGO's are towards the environmental legislation. Which means they push for more strict rules and for the member states to comply with the law.

In order to address the situation, there are some basic industry characteristics that need to be outlined in connection with maritime contracting in order to be able to understand the specific case analyzed in the dissertation.

A maritime contract is defined as:

“(...) a contract directly relating to the navigation, business, or commerce of the high seas or other navigable waters and falling within the jurisdiction of the admiralty court.”²⁵⁹

In other words, the maritime contracts involve a product or a service, which has to be handled or is in regards to business on navigable waters between a shipowner and supplier.

However, according to Steven F. Friedell (hereinafter, referred to as, “Friedell”):²⁶⁰

“A contract is not considered maritime merely because the services to be performed under the contract have reference to a ship or its business, or because the ship is the object of such services or that it has reference to navigable waters. In order to be considered maritime, there must be a direct and substantial link between the contract and the operation of the ship, its navigation, or its management afloat, considering the needs of the shipping industry, for the very basis of the constitutional grant of admiralty jurisdiction was to ensure a national uniformity of approach to world shipping.”²⁶¹

²⁵⁹ “Maritime contract.” *Merriam-Webster.com*. 2019, <https://www.merriam-webster.com/dictionary/contract#legalDictionary>. Last visited January 23rd 2019.

²⁶⁰ Professor of Law at Rutgers University (Camden) with expertise within Maritime Law.

²⁶¹ Friedell, S. F. (1999). *Benedict on Admiralty on Jurisdiction* (7th rev. ed.). LexisNexis. See also Force, R. (2004). *Admiralty and maritime law*. Federal Judicial Center, p. 9-10.

Friedell argues that there is a distinct line between when a contract can be characterized as maritime. However, according to Robert Force (hereinafter, referred to as, "Force"):²⁶²

*"However, some contract cases have formulated jurisdictional distinctions that defy logic. Consider the following contracts that have been held to lie within admiralty jurisdiction."*²⁶³

Then Force refers to Grant Gilmore²⁶⁴ and Charles Black²⁶⁵ (hereinafter, referred to as, "Gilmore & Black"):

*"Suits on contracts for the carriage of goods and passengers; for the chartering of ships (charter parties); for repairs, supplies, etc., furnished to vessels, and for services such as towage, pilotage, wharfage; for the services of seaman and officers; for recovery of indemnity or premiums on marine insurance policies."*²⁶⁶

Furthermore, Force states that:

*"(...)it appears that contracts that obligate a person to provide services directly to a vessel may be maritime contracts."*²⁶⁷

Based on the statements from above, there are a difference of opinion, regarding when is it a maritime contract or not. Although, Force states that as long as the contract is in regards to a vessel, then it can be characterized as a maritime contract. Therefore, maritime contracts refer to a contract relating to a vessel and is distinct from general contracts. It is an agreement pertaining to the operation,

²⁶² Lawyer and Niels F. Johnson Chair of Maritime Law, Director Emeritus, Maritime Law Center. Specialized in Admiralty Law.

²⁶³ See also Force, R. (2004). *Admiralty and maritime law*. Federal Judicial Center, p. 9.

²⁶⁴ Professor of Law at Yale Law School. Was a scholar of Commercial Law.

²⁶⁵ Professor of Law at Yale Law School. Was a scholar of Constitutional Law.

²⁶⁶ Gilmore, G. & Black, C. (1975). *The Law of Admiralty* (2nd ed.), Foundation Press, p. 22. See also Force, R. (2004). *Admiralty and maritime law*. Federal Judicial Center, p. 10.

²⁶⁷ See also Force, R. (2004). *Admiralty and maritime law*. Federal Judicial Center, p. 10.

navigation, maintenance, and repair or provisioning of a vessel. An action on maritime contract falls within the ambit of the admiralty jurisdiction.²⁶⁸

The point of discussion in this dissertation is relational contracting between the shipowner and the supplier. The aim of this contract form – which will be further discussed – is to create a collaboration between the shipowner and the supplier in regards to current and new products. Therefore, the dissertation argues, that there is a substantial link between the relational contract and the vessel – thus, the relational contract can be characterized as a maritime contract.

Due to the size and complexity of the maritime market, a variety of contracts can be found and each with a different purpose. Figure 1.1 illustrated an overview of the maritime industry and the different markets that exists. Therefore, in order to discuss relational contracting between the shipowner and the supplier, an examination of the market, in which they are operating is relevant.

7. The four market places within maritime law

As previously stated, the shipbuilding industry is a construction heavy business and therefore the volatility of the industry states itself. The market mechanism uses the volatility to balance supply and demand for ships whilst at the same time drawing in new low-cost shipbuilders and driving out high-cost capacity.²⁶⁹ This mechanism is basically unstable²⁷⁰ which is reinforced by two other

²⁶⁸ *Ibid.* The admiralty court can make a legal interpretation of the maritime contract when the language is ambiguous. However, under federal maritime law, a court may not look beyond the written language of the document to determine the intent of the parties - unless the disputed contract provision is ambiguous. In reviewing maritime contracts to see if their written language is ambiguous, the court interprets their meaning with respect to their normal and everyday meaning. In the absence of any evidence or argument from the parties as to how to resolve the ambiguity, the court adheres to the principle that an ambiguous provision in a maritime contract is to be constructed against the drafter.

²⁶⁹ Stopford, M. (2009). *Maritime economics*. Routledge, p. 629.

²⁷⁰ *Ibid.*, This can be illustrated as follows: If the merchant fleet is 1,000 million dwt and sea trade grows by 5%, an extra 50 million dwt of ships are needed. If, in addition, 20 million dwt of ships are scrapped, the total shipbuilding demand is 70 million dwt. But if the sea trade does not grow, no extra ships are needed and shipbuilding demand falls to 20 million dwt. So a 5% change in trade produces a 70% change in shipbuilding demand.

characteristics of the shipbuilding market. New ships are not delivered until several years later upon ordering,²⁷¹ and as a result, investors are not able to know whether the ships will be needed or not, which leads to the market sentiment often taking over in the absence of credible forecasts.²⁷² Consequently, the ordering of ships primarily peaks at the top of the market's lifecycle, and by the time of the delivery of ships, the demand is already decreasing, but arguably, the flood of new ships increases the surplus, which extends the downturn. This process is reinforced by the inflexibility of modern shipyard capacity. Since the ability of shipyards to adjust the output is considered difficult, they subsequently often drop the prices to encourage speculative 'counter-cyclical' orders leading to liquid investors often taking advantage of the bargains.²⁷³

The sea transport service is divided into the following four market places:

- I. *The freight market trades in sea transport*
- II. *The sale and purchase market trades second-hand ships*
- III. *The newbuilding market trades new ships*
- IV. *The demolition market deals in ships for scrapping*²⁷⁴

The four market places operate individually and have specific market parameters that influence the market. Despite being in separate market structures, the four markets influence one another.²⁷⁵ In order to conduct the research, it is fundamental to identify in which market the shipowner and supplier are operating and if or how the other markets will influence the current market. As this dissertation covers the possibility of creating a relational contact

²⁷¹ *Ibid.*, p. 157. This was also mentioned in Section 2.1 The financing and production, where it was stated that it takes approximately 1-4 years from the order of a ship to delivery.

²⁷² *Ibid.*, p. 629.

²⁷³ *Ibid.*

²⁷⁴ Stopford, M. (2009). *Maritime Economics*. Routledge, p. 177. See also figure 1.1 for a maritime market overview.

²⁷⁵ *Ibid.*

between two parties, both option I (the freight market trade) and option IV (demolition) can be discarded.²⁷⁶ In terms of option II (sales and purchase of second-hand ships), this market mainly deals with the sales and purchases of ships, and not on spare parts or individual parts. A further definition states that the biggest difference between the two markets is that the sales and purchasing market only deals with existing ships, whereas the newbuilding market only deals non-existing ships.²⁷⁷ Hence, in the situation where a shipowner may wish to purchase only an engine, it does not make sense to purchase an entire ship second-hand, and therefore, this dissertation will focus on option III (the newbuilding market) solely.

In contrast to these four markets, Stopford suggests - from an economic point of view - that the market players operate within only two different ship industries, namely *shipbuilding* and *shipbreakers*.²⁷⁸ However, it can also be argued that the maritime industry is operating with three different industries with the last industry being *second-hand ships*. Arguably, the shipbuilding industry supplies new ships, shipbreakers²⁷⁹ are the last-resort buyers of old ships, which cannot be operated profitably in the shipping market.²⁸⁰ The shipbreaking industry is typically located at the other end of the world – geographically - which is mainly in low-cost countries - particularly the Indian subcontinent - and is one of the most labor-intensive industries. For example, in some countries, the scrapping takes place on the beach with labor equipped with only the most primitive of hand tools and cutting equipment.²⁸¹ Lastly, the second-hand ships industry is

²⁷⁶ This is done, since the demolition market considers scrapping or recycling of ships and the freight market considers transport of goods.

²⁷⁷ *Ibid.*, p. 207.

²⁷⁸ *Ibid.*, p. 648.

²⁷⁹ Also known as recycling or demolition.

²⁸⁰ This second-hand market is, arguably, a diverse market. A ship has a lifespan of 25-30 years. Some shipowners order new ships, operate them for approx. 10-15 years and then they replace them with new ones and sell the old ones second-hand. Stopford, M. (2009). *Maritime economics*. Routledge, p. 207.

²⁸¹ *Ibid.*, p. 614.

merely trading used ships, which still can be operated profitably in the shipping market.²⁸²

The market characteristics of the newbuilding market will be described below.

7.1 The newbuilding market

Although the shipbuilding market is closely related to the sale and purchase market, it is characterized quite differently. This leads to several complications:

First, the specification of the ship must be determined. Whenever possible, shipyards will press the buyer to choose a standard design of a yard. Consequently, it accelerates the negotiation process, reduces the pressure on design, and estimates resources.²⁸³ Additionally, it is generally cheaper to build something alternative to a bespoke design. Brand new designs are therefore tricky as the costs have to be estimated early in the negotiation process which involves a significant risk.²⁸⁴ Shipowners (i.e. buyers) can make modifications to the yard design though the shipowner will generally be subject to an extra charge.²⁸⁵ For the same reason, shipyards prefer series orders.

Second, the contractual process for such a major undertaking is more complex. Hence, to construct a contract which encompasses all aspects of an undertaking in a size like this, i.e. for the contract to comprehend, not only the liabilities regarding the ship and the construction hereof, but also to grasp all the components, performance, resources and special requirements, it is quite a complicated contractual situation, due to the majority of the task.²⁸⁶

²⁸² *Ibid.*

²⁸³ *Ibid.*

²⁸⁴ *Ibid.*

²⁸⁵ As stated the shipyards often try to sell a standard design to the shipowners and if the shipowners want to make changes to the standard design, this will be at an extra cost.

²⁸⁶ Stopford, M. (2009). *Maritime economics*. Routledge, p. 207.

Third, the ship will not be available for the following 2-3 years (depending on the ship) from the contract date by which time conditions may have changed – which also were discussed previously in regards to the compliance in regards to the legislation - which emphasizes that expectations are important.²⁸⁷ Hence, due to the prolonged delivery on a ship, plenty of things can change within the construction period. As mentioned earlier, shipowners often purchase ships at the top of the cycle, meaning in the market's upswings.²⁸⁸

Thus, by the time of the delivery, the shipowner might not need the ship, due to a decrease in the freight demand or another significant market implicative, e.g. the legislation.

7.1.1 Shipowners and shipyards in the newbuilding market

The shipowner who enters the newbuilding market may have several different motives. For example, the shipowner may need a vessel of a certain size and specification, and cannot find a suitable ship on the second-hand market. This often happens when market conditions are firm and the supply of quality ships is restricted, which can lead to second-hand prices being even higher than new prices – it is worth noting that buying a second-hand ship, the shipowner can basically operate it tomorrow, since the ship is already built, whereas purchasing a new ship, requires construction time up to several years. Another possibility is that the ships are needed for an industrial project.²⁸⁹

The negotiation of newbuilding is complex. Often, shipowners appoint a broker, e.g. management, to handle the newbuilding, but may also deal directly with a

²⁸⁷ Ibid.

²⁸⁸ Ibid.

²⁸⁹ Stopford, M. (2009). *Maritime economics*. Routledge, p. 207.

shipyard if they have an existing relationship which would exclude some time-consuming expert resources. According to Stopford, the shipowner may approach the shipbuilding market from several different directions depending on their circumstances and the state of the market. One common procedure is to invite offers from a selection of yards.²⁹⁰

However, the documentation of the offer is often very extensive, setting out a precise specification for the ship. Once the offers have been received, the most competitive offers i.e. yards, are selected. Hereafter a final selection is made following a detailed discussion of the design, specification, and terms.²⁹¹ This process may take from six to 12 months.

In a sellers' market, however, the procedure - collection offers - may not be possible. Shipowners compete viciously for the few available berths, and thus shipyards are able to set their own terms and conditions. Often, shipyards take advantage of a firm market in order to insist upon the sale of a standard design.²⁹² During the process i.e. of finding the suitable offer and design of the ship, the chosen shipyard and shipowner need to clarify the contractual paperwork. The contract negotiation can be divided into four areas in which negotiations focus upon: *price, specification of the vessel, terms and conditions of the contract, and newbuilding finance offered by the shipyard.*²⁹³ The maritime market is highly influenced by the global economy, which is why there are differences between a weak and a strong market. In a weak market, shipowners will seek to extract maximum benefits from their negotiation position in each area. Conversely, in a strong market, shipbuilders will negotiate for the maximum price possible on a standard vessel - with favorable stage payments - which will be discussed below.²⁹⁴

²⁹⁰ *Ibid.*, p. 208.

²⁹¹ *Ibid.*

²⁹² *Ibid.*

²⁹³ *Ibid.*

²⁹⁴ *Ibid.*

The shipbuilding market is highly competitive. Thus, as mentioned previously, the shipowners compete fiercely for the berths. Therefore, the price at which a ship is sold depends on the trade-off between the demand for new ships and the availability of supply of new building berths for that particular ship type. If there are more potential orders than berths, the price rises until some investors drop out, and if there are more berths than orders, prices fall until new buyers are tempted into the market.²⁹⁵

As stated above, the financing of a ship is a tricky part, due to the amount of capital needed and, thus, the banks play an important part in the financing and the financial construction hereof. Due to distinctive characteristics, the financing of the shipping industry varies from other asset-based industries, e.g. real estate and aircraft. According to Stopford, the bankers are keener on predictable earnings, clear corporate structures, high levels of disclosure, and well-defined ownership. Conversely, the investors look for consistent growth and high yields. However, the problem is that not many shipowner companies are fulfilling these criteria. As the ships are internationally mobile and there is a free choice of legal jurisdiction i.e. choice of flag state, by the shipowners, the companies are able to adopt a less formal corporate structure than other industries employing such large amounts of capital. In addition, revenue flows and asset value are highly volatile.²⁹⁶

²⁹⁵ *Ibid.*, p. 630.

²⁹⁶ *Ibid.*, p. 269.

7.1.2 Newbuilding contracts

The relational contract between the shipowner and the supplier, concerns products for the vessel, thus, arguably, can be classified as shipbuilding i.e. newbuilding. Shipbuilding is a complex and vast construction project, therefore most of the content of a shipbuilding contract is directed towards the regulation of the construction, where each party assumes long-term obligations to the other and bears significant commercial risks.²⁹⁷

Shipbuilding contracts are generally considered as sale of goods contracts regulated by the Sale of Goods Act (SGA).²⁹⁸

However, the SGA only applies to the extent that parties have not departed from its provisions in their contract. Given the detailed nature of most shipbuilding contracts, the SGA will most often not be applied.²⁹⁹

In the maritime industry there are a number of standard shipbuilding contracts. There are many NGO's and private Associations worldwide, which has fashioned their own templates. The most widely used remains the Shipbuilders' Association of Japan Form (hereinafter, referred to as, "SAJ"), which is not only used in Japan, but also throughout Asia, including Korea and China. It is frequently adapted, and the versions used by Chinese shipyards are developing a particular character. Amended SAJs are still used by Chinese shipyards despite the publication of the Chinese Maritime Arbitration Commission Form in 2011.³⁰⁰

The SAJ form was drafted by an influential trade association for shipbuilders, so it is hardly surprising that it is thought to favor the shipyard in this unlamented

²⁹⁷ Curtis, S. (2014) *The law of shipbuilding contracts*. Informa Law from Routledge, p. 1. According to Curtis, however, up until the millennium, shipbuilding contracts could quite safely be regarded as contracts for the sale of goods. Thus, according to Diplock J in *McDougall v. Aeromarine of Emsworth Ltd.* "... it seems well settled by authority that, although a shipbuilding contract is, in form, a contract for the construction of the vessel, it is in law a contract for the sale of goods..."

²⁹⁸ Consolidated Act. No. 140 of 17 February 2014.

²⁹⁹ Eddings, G., Chamberlain, A. & Warder, R. (2017). *The shipping law review* (4th ed). Law Business Research p. 159.

³⁰⁰ *Ibid.*, p. 48.

form. Many of the amendments that are most frequently seen are made by buyers to redress this perceived imbalance.³⁰¹ However, the SAJ form is not common use in Denmark.³⁰²

The Baltic and International Maritime Council (hereinafter, referred to as, “BIMCO”)³⁰³ have – like SAJ - produced its own form of shipbuilding contract called the Newbuildcon.³⁰⁴ The Newbuildcon was seeking to address the perceived imbalances in SAJ.³⁰⁵ The BIMCO is a shipping industry trade association with many shipowner members. It is therefore perhaps unsurprising that the Newbuildcon is a much more buyer-friendly contract. Although it is a more modern contract, the Newbuildcon does not seem to have caught on and it is not often encountered in practice.³⁰⁶

However, within Danish law, shipbuilding contracts are subject to the general principle of contractual freedom.³⁰⁷ Consequently, parties to a shipbuilding contract will have considerable latitude to enter into a contract on individually negotiated terms. Often, this will be based on a standard form of a shipbuilding contract such as BIMCO’s Newbuildcon or alternatively the parties’ own templates.³⁰⁸

Although the principle of contractual freedom will be applied in the dissertation, the Newbuildcon will be used to analyze relational contracting. The content of

³⁰¹ *Ibid.*

³⁰² Eddings, G., Chamberlain, A. & Warder, R. (2017). *The shipping law review* (4th ed). Law Business Research, p. 159.

³⁰³ BIMCO is the largest international shipping association representing shipowners globally. BIMCO has developed over 300 contracts and clauses, which covers the full lifecycle of ship related operation and activities. For the full list of contracts and clauses see <https://www.bimco.org/contracts-and-clauses/bimco-contracts>. Last visited January 25th 2019.

³⁰⁴ BIMCO published the Newbuildcon in 2007. Curtis, S. (2014) *The law of shipbuilding contracts*. Informa Law from Routledge, p. 159.

³⁰⁵ *Ibid.*

³⁰⁶ Eddings, G., Chamberlain, A. & Warder, R. (2017). *The shipping law review* (4th ed). Law Business Research, p. 48. For high-value and complex projects in the off-shore industry, such as for FPSOs and FSOs, Engineering, Procurement and Construction³⁰⁶ contract forms are increasingly seen - often but not invariably with the shipyard acting as the EPC contractor. These types of contracts originate from the engineering industry rather than shipbuilding and differ in a number of respects from the mainstream shipbuilding contract forms.

³⁰⁷ Eddings, G., Chamberlain, A. & Warder, R. (2017). *The shipping law review* (4th ed). Law Business Research, p. 48.

³⁰⁸ Eddings, G., Chamberlain, A. & Warder, R. (2017). *The shipping law review* (4th ed). Law Business Research p. 159.

the Newbuildcon combined to the PPC2000 contract – which will be discussed later, - will be used for inspiration to define the relational contract between the shipowner and the supplier. Therefore, these contracts are used, as point of discussions, in order to secure that the relational contract, entails the necessary elements set out from Newbuildcon.

7.1.3 Newbuilding prices

Even though a shipbuilding agreement is very similar to contracts for sale of existing or second-hand ships, another factor is the predominant contracting term; *the price*.³⁰⁹ In a newbuilding scenario, the price is arguably the most important step. As mentioned above, ships are contracted for a fixed price payable in stages, which spreads the payment for the construction of the vessel. The aim of a shipbuilder is to be paid while the ship is being build - therefore the shipbuilder does need working capital and these stage payments are usually as shown in table 2.3.

³⁰⁹ Stopford, M. (2009). *Maritime economics*. Routledge, p. 209.

Table 2.3 – Stage payments

Typical pattern of shipyard stage payments	
<i>Stage in production</i>	<i>Payment due</i>
Signing of contract	10 percent
Steel cutting	22.5 percent
Keel laying	22.5 percent
Launching	22.5 percent
Delivery	22.5 percent

*Source; M. Stopford*³¹⁰

According to Stopford price is the most important factor. Usually ships are contracted for a fixed price dispersed in a series of 'stage payments' for the construction of the vessel. Therefore, it is very important for the shipyard that the payments are transferred according to plan, to ensure capital during the construction period of the vessel. As mentioned previously, the financing of a ship is a great deal of money which is why the shipyard needs ongoing liquidity to uphold the building of the ship and to lower the risk of potential lack of payment.³¹¹

The payment pattern varies enormously according to the market, even though the current tendency will seldom be divided into more than five or six payments.³¹² In a seller's market, a shipyard may demand 50 percent on a contract signing, whilst low interest rates and a weak market results e.g. in contracts with 10 percent payable at contract for laying keel and launch, thus the remaining 70 percent for delivery.³¹³

³¹⁰ *Ibid.*, p. 208.

³¹¹ *Ibid.*

³¹² *Ibid.*

³¹³ See table 2.3-Stage payments.

Even though the price is considered the most important, so is the specification of the vessel. In a buying process, it is relevant to outline the exact components and design in order to set the price of the subject because if the parties have not specified it properly, then there might be modifications to the design, which may add to the cost.³¹⁴

8. Concluding remarks

In this chapter, the focus was on the market and maritime law and how it surrounds the maritime industry. This overview was important and necessary, as the maritime industry is very significant in production pace, expensive financing, and complex conventions and laws to navigate in. In order to create a common set of rules at sea, the IMO was created as part of the UN in 1958. The original purpose was to ensure safety at sea, but the conventions also came to influence the environmental aspect of the maritime industry.

At sea, the shipowners are not limited to a national territory, but can choose any flag state for their ships. Although there are both pros and cons to every choice, it means that the shipowners are free to choose a nationality (or flag) which has ratified less of IMO's strict conventions and laws for their ship. Currently, this means that the flag states of the ships determine much of the collaborations, instead of e.g. considerations for the environment.

Hence, this chapter suggests that a relational contract between a supplier and a shipowner may result in innovation in more than one aspect. In connection with this chapter, the hypothesis is that a strong collaboration between a supplier and a shipowner may influence the choice of flag state or the compliance hereof, which then may become more aware of the environmental consequences of the

³¹⁴ Stopford, M. (2009). *Maritime economics*. Routledge, p. 208-9.

decision and, thereby, choose a more environmentally conscious flag state or at least become more environmentally friendly.

This will be followed by an analysis of the IMO and its conventions, as well as how the conventions influence the industry. In this connection, it will be discussed whether the IMO and its conventions are strong enough in an industry where the conventions are not binding, but are optional, and where the shipowners themselves can choose a flag state depending on which legislation they would want to adhere to. Consequently, the parties' individual choice of flag state influences the maritime contracts in-between. However, the IMO and the NGO's are attempting through their conventions to influence the environmental focus of the shipowners. Most of the IMO's current conventions involve the green development within the industry which is – without a doubt – the future of the shipping industry.

Chapter 3: Transaction costs in a relational contracting perspective

1. Introduction

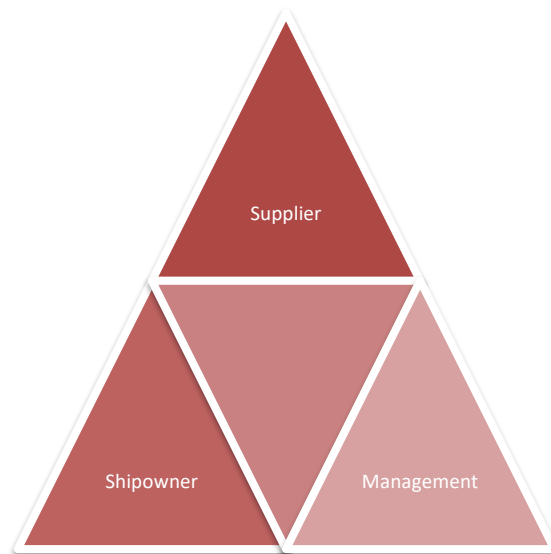
The previous chapters have focused on the methodology and the maritime industry. Also, the parties within the market. The case of this dissertation - as illustrated in figure 1.2 – has its starting point in the current market situation, where there are three parties i.e. the shipowner, the supplier and the management. Chapter 2 discussed the market and players, from where the management plays an important role in regards to the shipowner especially within the newbuilding of a ship.³¹⁵

In order to establish a relational contract between the shipowner and the supplier, the current three-party situation needs to be addressed from a transaction cost perspective. In this chapter, the management will be introduced as a party within the contract, where the management's potential role within the relational contract will be discussed.³¹⁶ To obtain a broader understanding of relational contracting - from an economic perspective, a further definition of all three of the parties will be addressed.

³¹⁵ Stopford, M. (2009). *Maritime economics*. Routledge, p. 208.

³¹⁶ The point of this chapter is to clarify the transaction costs within the current one-off transaction and compare these to the relational contracting situation, in order to eliminate the management party from the situation. Therefore the transactions cost theory will be applied to highlight these costs, thus to optimize the situation between the shipowner and the supplier. Hence, the analysis of this chapter will solely focus on the transactions between the parties and use the transaction cost theory as a tool to define these costs.

Figure 3.1 – The relational triangle



Source: the author's creation

The figure above illustrates the relationship *inter partes*. The dissertation will refer to this figure as the “*relational triangle*”. The purpose of the *relational triangle* is to illustrate the relationship between the parties in order to define the different constellations and interactions. Within the triangle, three different relations occur:

- *The shipowner and the supplier*
- *The shipowner and the management*
- *The supplier and the management*

Each of the relations are affected by several economic factors which impact each relation independently. Hence, an analysis of the economic factors will create an understanding in terms of which factors *need* to - or *can* - be altered in order to optimize the situation for the parties.

As mentioned in chapter one, some of the industry's issues occur because of the information asymmetry among the parties, but factors such as the parties'

behavior towards one another will also affect the collaboration and thereby influence the possibility of engaging in a successful relational contract.³¹⁷ When two parties consider relational contracting, the parties must acknowledge each other and gain joint utility in order to achieve the optimal contract; and thereby a successful long-term collaboration. This will be further discussed below.

It will become evident that the management as a party is introduced by the shipowner with the sole purpose of purchasing a required product at a lowest possible price in order to keep the costs down.

This dissertation analyzes relational contracting as a more optimal solution for the shipowner and the supplier - rather than the current one-off transaction which includes the management as a third party – this chapter will address different theoretical aspects, including a discussion of how behavioral economics (as a development of neoclassical theory)³¹⁸ may influence the creation of a more efficient contract from an economical point of view.

Hence, through the use of behavioral economics and transaction cost theory, neoclassical theory will be the basis for the discussion of the possibility to identify an improved way for the parties to engage in a relational contract situation by defining and optimizing the transaction costs. The chapter will present the transaction costs both for the current situation, which includes the management, and the relational contract situation which should illustrate the economical incitement for illuminating the management as a third party.

³¹⁷ This was mentioned in Chapter 1, section 1. Introduction.

³¹⁸ Knudsen, C. (1997). *Økonomisk metodologi. Bd. 2: Virksomhedsteori og industriøkonomi* (2nd ed.). Jurist- og Økonomforbundets Forlag, p. 284-86.

2. The economic foundation for understanding transaction costs

This section will outline the economic framework of the case, thus illustrate how to approach relational contracting from an economic perspective. This dissertation proposes to apply relational contracting instead of the current on-off transactions, thus it is relevant to investigate whether this type of contracting is more efficient for the parties i.e. the shipowner and the supplier.

In order to understand the different underlying relations, the dissertation will conduct a broad study of several economic theoretical phases in order to define the economic framework in which the parties are operating and thereby clarify what influences them. The dissertation will begin by reviewing the theory of behavioral economics and, thus, set the boundaries for the dissertation.

2.1 Behavioral Economics

Due to the focus of this dissertation, an economic foundation is important to prepare in order to define the most efficient type of contract within the shipping industry. To this end, the neoclassical theory is used as the basis for the discussion of the possibility of creating a greater contractual value.

The neoclassical theory is a major factor in areas such as microeconomics and economic theory in general, since both are essentially based on the assumption of complete rational parties in economic transactions.³¹⁹ This also means that neoclassical theorists assume that all organizations are stable structures, that does not change over time and that all parties are ensuring full disclosure of knowledge, i.e. asymmetric information does not exist.³²⁰ The essential feature

³¹⁹ *Ibid.*, p. 54-55.

³²⁰ *Ibid.*

of neoclassical theory is the profit maximization hypothesis³²¹ which is also one of the main assumptions in microeconomics. Christian Knudsen (hereinafter, referred to as, “Knudsen”)³²² describes the structure of the neoclassical theory as a situation which limits centered heuristics that defines so many external constraints on a decision-maker that eventually only one option is left; the so-called 'single-exit'.³²³ The neoclassical thinking can be considered single-minded and looking unabashedly economic efficiency by assuming that all parties in a given market are complete rational collaborating to create the most economically efficient outcome. As a consequence, behavioral theory emerged with the criticism of the neoclassical profit maximization hypothesis, the assumption that the company's behavior does not change over time, as well as challenge the scenario of a perfect market, which makes it more applicable to the market.³²⁴

The reasoning behind this criticism can be explained by an idea that a question of doubt can be viewed from different angles. It can be illustrated through an object (e.g. a company, a legal dispute, a public offer) which is placed in a square transparent box. Here the object can be considered from several different aspects, e.g. the neoclassical angle from one side and the behavioral angle from the other side.³²⁵ Arguably, the more additional angles from where an object is analyzed, the more knowledge is gained around the object in question.

³²¹ *Ibid.* See also Sornn-Friese, H. (2007) *Hvad er en virksomhed?: Erhvervsøkonomisk teori og analyse*. Samfundslitteratur, p. 39.

³²² Ph.D., Dr.merc and Professor at Department of Marketing Management at CBS (Afsætningsøkonomi).

³²³ Knudsen, C. (1997). *Økonomisk metodologi. Bd. 2: Virksomhedsteori og industriøkonomi* (2nd ed.). Jurist- og Økonomforbundets Forlag, p. 51.

³²⁴ *Ibid.*, p. 284-88.

³²⁵ *Ibid.*,

The dissertation will – later on - discuss relational contracting between the shipowner and the supplier. Thus, clarify the incentives for both of the parties and from a joint perspective, and thereby define the contractual framework, in order to establish a successful collaboration.³²⁶ Therefore this chapter is the starting point, to create an interaction between the law perspective and the economic perspective. Hence, relational contracting is viewed from two perspectives. Similarly, the interaction between law and economics can be explained: There are two different subject areas, where problems can be visualized from two different angles, and by combining these, a more comprehensive explanation of the problem is created. Neoclassical theory and behavioral theory are, as a rule, opposite in their respective perceptions of human rationality. Neoclassical theory assumes unlimited rationality, whereas behavioral theory assumes a restriction on the parties' rationality.³²⁷ Therefore, these two theories form the part of the basis for the economic analysis. These will be the basis of the more central risk-based discussion which will contribute to the definition of risk tolerance that the parties hold in the shipowner versus the supplier contractual relationship. Which will be discussed in chapter 6.

Therefore, the following analysis will be based on behavioral theory which includes a theory of limited rationality, in order to adjust the preliminary result into what may appear to be a more authentic, industry-relevant result.

³²⁶ Relational contracting will be discussed in chapter 4; 5 and 6. Whereas the discussion on the incentives between the shipowner and the supplier will be discussed in chapter 6.

³²⁷ Knudsen, C. (1997). *Økonomisk metodologi. Bd. 2: Virksomhedsteori og industriøkonomi* (2nd ed.). Jurist- og Økonomforbundets Forlag, p. 54-56 and p. 284-86. See also Tvarnø, C. D. & Nielsen, R. (2017). *Retskilder og retsteorier*. Djøf/Jurist-og Økonomforbundet, p. 432-435 and Hendrikse, G. (2003). *Economics and management of organizations: coordination, motivation and strategy*. McGraw-Hill, p. 18-19.

According to George Hendrikse (hereinafter, referred to as, “Hendrikse”)³²⁸ behavioral economics can be based on the following stereotypes of behavior:

1. *Self-interested behavior* – people who care about their own interest and are honest and reliable. They keep their promises and do not misrepresent information in order to gain something and stick to the rules.³²⁹
2. *Opportunistic behavior* - people who strive for their own self-interest without guile. All means are advanced in order to gain benefits, like lying, stealing and treason, but also more subtle forms of dishonesty are considered, like telling only a part of the truth or presenting an over-optimistic view of a new product.³³⁰
3. *Idealistic behavior* – People behaving according to this assumption strive for the common interest and take decisions in the interest of the whole organization.³³¹

These three stereotypes, are defining different kinds of behavior and the level of tolerance, meaning that these three types are covering a broad range of self-centered behavior. In regards to the shipowner and the supplier, then they need to be placed within one of these stereotypes. Both the supplier and the shipowner are not displaying idealistic behavior, since they are in a competitive situation, both of them, they are not putting the common interest first hand. Though, both the shipowner and the supplier are between self-interested and opportunistic behavior, though both of them are concerned by their image and therefore needs to be reliable, however they are both self-optimizing. Therefore, it is more likely

³²⁸ Professor of the Economics of Organisations at Rotterdam School of Management.

³²⁹ Hendrikse, G. (2003). *Economics and management of organizations: co-ordination, motivation and strategy*. McGraw-Hill, p. 21.

³³⁰ *Ibid.*

³³¹ *Ibid.*

that they can be categorized more as opportunistic individuals, though this will be discussed further below.

Within behavioral economics, it is important to define the party's behavior, but also to define their level of rationality. As mentioned above, the neoclassical theory is based upon parties with complete rationality, whereas the behavioral assumes a change in the parties rationality.³³² Therefore, the behavioral approach towards rationality needs to be clarified.

According to Hendrikse behavioral economics can be based on different approaches to rationality:

1. *Complete rationality*; This is the rationality principle of the neoclassical theory. This is in regards to when the cognitive capacities of the decision maker are sufficient in terms of being able to grasp the problem and being able to make a rational decision, based on all the relevant factors.³³³
2. *Limited rationality*³³⁴; when the cognitive capacities of the decision-maker are insufficient when trying to grasp the whole complexity of a problem. It is not possible to take all relevant factors of a problem into account when a decision has to be made, because behavior is "*intendedly rational, but only boundedly so*,"³³⁵ or when perhaps efforts are made to take the best decision it is actually too costly to do so. Limited time and means often prevent all the relevant information from being extracted from the data.³³⁶

³³² Knudsen, C. (1997). *Økonomisk metodologi. Bd. 2: Virksomhedsteori og industriøkonomi* (2nd ed.). Jurist- og Økonomforbundets Forlag, p. 130-32. Authors translation. Original Language; Danish.

³³³ Hendrikse, G. (2003). *Economics and management of organizations: co-ordination, motivation and strategy*. McGraw-Hill, p. 19-20. See also Simon, Herbert A. *Administrative behavior*. Simon and Schuster, 2013, p. 87-89.

³³⁴ Also known as '*bounded rationality*'.

³³⁵ Simon, H. A. (2013). *Administrative behavior*. Simon and Schuster, p. 88.

³³⁶ Hendrikse, G. (2003). *Economics and management of organizations: co-ordination, motivation and strategy*. McGraw-Hill, p. 19.

Limited rationality does not necessarily mean that people behave inconsistently. The way in which behavior is “intendedly rational, but only boundedly so” is interpreted so that behavior is consistent within the limitations of the decision-making.³³⁷

The purpose of the use of behavioral economics is to explore the parties’ incentives and define the importance hereof. The study of behavioral economics is basically how market decisions are made and the mechanisms that drive the choices.³³⁸ The dissertation will discuss how this is applicable in regards to relational contracting. Thus, the dissertation addresses three parties which all have a significant role in the market and within the decision-making process.

3. The parties and their market role in a behavioral perspective

As illustrated in the *relational triangle*, each party has an *inter partes* relation relevant in the decision-making. Based upon the assumptions that the parties are limited rational and showing opportunistic behavior, the dissertation will define the behavior of the parties.

The definitions below will be set out from the current one-off transaction perspective, hence this current situation *before* engaging in relational contracting. At this point, the reason for defining the behavior of the parties is to understand how each of them operates in order to understand how to change

³³⁷ *Ibid.* See also Simon, H. A. (2013). *Administrative behavior*. Simon and Schuster, p. 88.

³³⁸ Knudsen, C. (1997). *Økonomisk metodologi. Bd. 2: Virksomhedsteori og industriøkonomi* (2nd ed.). Jurist- og Økonomforbundets Forlag, p. 25-27 and 284-185. Authors translation. Original Language; Danish.

their behavior, e.g. by using incentives, which will be further discussed in chapter 6, from the supplier and the shipowners perspective.³³⁹

3.1 The supplier

The supplier is an individual manufacturer within the market, who makes decisions from a business perspective. The supplier can be characterized as *self-interested* and does not have the incentive to think of the greater good or the other parties, which means that the supplier's interest lies solely within its own organization and the success of the company's performance. However, arguably, the supplier must be showing more of an *opportunistic behavior*, since the decision-making is purely based on the business' perspective in the given engagements. So, the supplier can, arguably, be found in the middle of *self-interested* and *opportunistic behavior*. Although, the supplier is self-optimizing, therefore they must be categorized as *opportunistic*. In a sales situation, the supplier is *limited rational* based on the fact that it may not ensure full disclosure of information with the shipowner, as both parties may have an interest in withholding information that could be relevant for the other party.

3.2 The management

As the supplier's behavior is seen from a business perspective, it is also relevant to illustrate the management's behavior from a business perspective. Like the supplier, the management is focused on its business and its strategy, since the management also has an aim to optimize their own business. Although, the management's primary function is to perform a service which is based upon the

³³⁹ The parties incentives is discussed in chapter 6, though the discussion is just in regards to the shipowner and the supplier, therefore the managements incentives is not discussed.

explicit and implicit requirements of the shipowner. Hence, the management is the intermediary party between the supplier and the shipowner, which creates an incentive for the management to perform at its best towards the shipowner.

In a purchasing situation, the management is hired by the shipowner which creates loyalty between the two parties and not necessarily between the management and the supplier. Thus, even though the management could lean towards self-interested behavior, the management can be characterized as a party with an opportunistic behavior due to its strategy. When the shipowner hires the management to purchase a given commodity, the management will buy the specific product as requested at the given price range based on the specifications provided to them. However, if the management was leaning towards self-interested behavior, arguably, it could present the shipowner with better alternatives to the requested commodity – at a higher price.

Therefore, the management is considered to perform a more opportunistic behavior, than self-interested, since the management does what they are paid to do and nothing else. This means that the management focuses on performing the requested service from its clients (e.g. the shipowners) sufficiently, despite the fact that it may possess more information than the shipowners and vice versa.³⁴⁰ Arguably, this illustrates that the management is limited rational. However, the management will never be able to obtain complete information, due to the information asymmetry – as previously mentioned - in the industry.

3.3 The shipowner

Similarly, to the management, the shipowner is also managing a business which is why it is considered to lean towards opportunistic behavior too.

³⁴⁰ The meaning of this, is that the shipowner hires the management to purchase a requested item, although the shipowner might withheld information, as they might not inform the management of the actual needs, since they just orders the product, in which they think they need. On the other side, the Management does not create a dialogue with the shipowner in regards to the different product possibilities presented from the suppliers.

The shipowner's primary business model is to own and manage ships which means that the shipowner's main interest in a purchasing situation is to get the best possible deal. As this dissertation perceives shipowners as owners of highly leveraged assets (which means that they are under financial pressure),³⁴¹ this may result in a market situation where the shipowners are mainly interested in the lowest possible price. Arguably, these products are not necessarily the most optimal long-term products, which means that shipowners may not have utilized all their opportunities.³⁴² Thus, based on the above, shipowners are opportunistic, due to their focus on maintaining their own business and earnings in the market. Additionally, since the maritime market is not characterized as a perfect market, shipowners also suffer from the information asymmetry. This also means that all three parties are limited rational, due to the fact that each of the parties have information that none other possesses which they are not willing to share.

To summarize, the three parties' situation have been defined from a behavioral perspective where the focus is to clarify and understand a given behavior. Thus, the dissertation's objective is to clarify *how* and *if* it is possible to optimize the contract between the supplier and the shipowner by entering into a relational contract. The use of behavioral economics is used to analyze the parties' situation and expected behavior in such a relational contract. However, the benefits of such a transition to a relational contract also entail a focus on the transaction cost of contracts. Therefore, in the following section, the dissertation will apply the transaction cost theory.

³⁴¹ This was set out in chapter 1, section 4.1.1 The shipowner, where the definition of the shipowner was set out.

³⁴² This is in reference, to the case set out in chapter 1, where the shipowner is interested in the cheapest and best product. The cheapest and best product, might not always be the best product on a long-term basis, whereas other more expensive products, might have a longer lifespan and/or better performance, all depending on the product and the shipowners needs.

4. Transaction cost theory

Transaction cost theory stipulates that the transaction costs associated with the market³⁴³ creates organizational innovation – e.g. the formation of companies – in order to minimize transactions costs.³⁴⁴ In simple words, transaction cost theory challenges or demonstrates the implications of the assumption of zero transaction, as with zero transaction costs, parties will without a cost bargain to an efficient result.³⁴⁵

The transaction cost theory origins to seminal contributions in law, economics and organizations made in the 1930's.³⁴⁶ Even though it was largely ignored in micro-economic theory, John R. Commons (hereinafter, referred to as, "Commons")³⁴⁷ quickly perceived the need to move beyond simple market exchange (e.g., exchanging nuts for berries on the edge of the forest or buying a can of soda at a vending machine) to include transactions for which the continuity of an exchange relationship was important.³⁴⁸ Commons furthermore described the fundamental problem of economic organization as follows: "the ultimate unit of activity (...) must contain in itself the three principles of conflict, mutuality, and order. This "unit" is a transaction."³⁴⁹

³⁴³ This dissertation is dealing with transactions between the shipowner, the supplier and the management, in regards to purchasing a new product in a newbuilding situation.

³⁴⁴ Williamson, Oliver E. (1989) "Transaction cost economics." In *The Handbook of industrial organization* Volume I, Edited by R. Schrammensee and R.D. Willig ©Elsevier Science Publishers B.V., p. 137.

³⁴⁵ Coase, R. (1992). "The Institutional Structure of Production". *American Economic Review*, 82(4): 713-719, p. 717

³⁴⁶ Williamson, Oliver E. (1989) "Transaction cost economics." In *The Handbook of industrial organization* Volume I, Edited by R. Schrammensee and R.D. Willig ©Elsevier Science Publishers B.V., p. 137.

³⁴⁷ American economist at the University of Wisconsin-Madison.

³⁴⁸ Williamson, O. E. and Tadelis, S. (2013) "Transaction cost economics" in *The Handbook of Organizational Economics* edited by Roberts Gibbons and John Roberts. Princeton University Press, p. 160.

³⁴⁹ Commons, J. R. (1932) "The problem of correlating law economics and ethics." *Wis. L. Rev.* 8: 3-26, p. 4.

Initially, Commons and Ronald Coase (hereinafter, referred to as, “Coase”)³⁵⁰ made the leading contributions, whereas Karl Llewellyn (hereinafter, referred to as, “Llewellyn”)³⁵¹ added key insights and Chester I. Barnard (hereinafter, referred to as, “Barnard”)³⁵² presented an organization theory perspective.³⁵³ Commons advocated that the transaction *was* and *should be* the main focus of analysis.³⁵⁴ Hereon, a contractual point of view was adopted and the importance of crafting institutions, which serve to harmonize the trade between parties with otherwise oppositional interests, now became the main focus. Llewellyn argued that the study of the contract should focus on the purposes to be served rather than the legal rules, whereas Barnard urged that the powers and limits of the internal organization should be taken more self-consciously to the front of the analysis.³⁵⁵ Although Commons and Coase made the leading contributions, economists originally ascribe the theory of transaction cost to Coase.³⁵⁶ Afterwards, Oliver Williamson (hereinafter referred to as, “Williamson”)³⁵⁷ further developed the theory of transaction costs and, therefore, the analysis unit in transaction cost theory is the transaction itself.

³⁵⁰ Ronald Harry Coase, British Economist and Professor at University of Chicago Law School. Nobel Laureate in Economics. It was in his 1937 article named *The Nature of the Firm* – where he introduced the transactions cost theory.

³⁵¹ Prominent American jurisprudential scholar associated with the school of legal realism. Llewellyn added the key insights in his Llewellyn, K. N. (1931). “What price contract? An essay in perspective.” *Yale Law Journal*, 40: 704-751, article.

³⁵² American business executive and author. His most famous article is the Barnard, C. (1938) “The functions of the executive” 15th printing (1962). *Cambridge: Harvard University Press*, which is where he added his key insights.

³⁵³ Williamson, Oliver E. (1989) “Transaction cost economics.” In *The Handbook of industrial organization* Volume I, Edited by R. Schrammensee and R.D. Willig ©Elsevier Science Publishers B.V.p. 137.p. 136. See also Barnard, C. (1938) “The functions of the executive” 15th printing (1962). *Cambridge: Harvard University Press*.

Llewellyn, K. N. (1931). “What price contract? An essay in perspective.” *Yale Law Journal*, 40: 704-751.

³⁵⁴ Commons, J. R. (1932) “The problem of correlating law economics and ethics.” *Wis. L. Rev.* 8: 3-26: p. 4-8.

³⁵⁵ Williamson, Oliver E. (1989) “Transaction cost economics.” In *The Handbook of industrial organization* Volume I, Edited by R. Schrammensee and R.D. Willig ©Elsevier Science Publishers B.V.p. 137.p. 137.

³⁵⁶ This was in regards to his Coase, Ronald H. “The nature of the firm.” *economica* 4.16 (1937): 386-405.

³⁵⁷ American Economist, Professor at the University of California, Berkeley. Nobel Laureate in Economics.

4.1 Ex ante and ex post transactions

A transaction is defined as a transition between two distinct technological activities which can be divided into *ex ante* and *ex post* transaction costs.³⁵⁸ *Ex ante* is the transaction costs that are attributed to the pre-contractual conclusion, e.g. costs which are related to the negotiation process and eventually leading to the stipulation of the contract. As a contrast, *ex post* transaction costs are attributable to the post-contractual conclusion, e.g. cost related to the re-negotiation and enforcement of the contract.³⁵⁹

Based on the classical transaction cost theories, several economists treat behavioral assumptions as insignificant.³⁶⁰ This reflects a widely held opinion that the realism of the assumptions is unimportant and that the usefulness of a theory activates its consequences.³⁶¹ Frank H. Knight (hereinafter, referred to as, "Knight")³⁶² insisted that the study of economic organization needed to be informed by an appreciation for "*human nature as we know it*",³⁶³ with a special reference to the condition of "*moral hazard*".³⁶⁴

Initially - set out by Coase - the starting point of the theory was that the parties operated in a neoclassical perspective with complete information and rationality. However, Williamson argued that:

"(...)contracting man is distinguished from the orthodox conception of maximizing man in two respects. The first of these is the condition of bounded rationality.

³⁵⁸ Williamson, O. E. (1988). "Corporate finance and corporate governance." *The journal of finance* 43.3: 567-591, p. 572.

³⁵⁹ *Ibid.*

³⁶⁰ Williamson, Oliver E. (1989) "Transaction cost economics." In *The Handbook of industrial organization* Volume I, Edited by R. Schamlensee and R.D. Willig ©Elsevier Science Publishers B.V., p. 138.

³⁶¹ Friedman, Milton, and MARILYN FRIEDMAN. (1953) "Essays in positive economics." *University of Chicago press*, p. 14. See also Williamson, Oliver E. (1989) "Transaction cost economics." In *The Handbook of industrial organization* Volume I, Edited by R. Schamlensee and R.D. Willig ©Elsevier Science Publishers B.V., p. 138.

³⁶² American economist at University of Chicago. Became one of the founders of the Chicago school.

³⁶³ Knight, F. H. (2006). *Risk, uncertainty and Profit* (1921). Dover Publications Inc, p. 270. Williamson, Oliver E. (1989) "Transaction cost economics." In *The Handbook of industrial organization* Volume I, Edited by R. Schamlensee and R.D. Willig ©Elsevier Science Publishers B.V., p. 138.

³⁶⁴ *Ibid.*, p. 260.

*Second, contracting man is giving to self-interest seeking of a deeper and more troublesome kind than his economic man predecessor."*³⁶⁵

Williamson uses the term *self-interest* - which was outlined in section 2.1. *Behavioral economics* - Williamson stresses that the term *self-interest* is variously described as *opportunism*, *moral hazard* and *agency*.³⁶⁶ Williamson mentions in the same context that it is notable that "(...)Niccolo Machiavelli's efforts to deal with 'men as they are'³⁶⁷ makes prominent provision for opportunism."³⁶⁸

Therefore, arguably, the dissertation interprets Williamson's *self-interest* term as leaning more toward *opportunistic* behavior, rather than the definition of *self-interest* behavior, as set out in section 2.1. Even though the importance of behavioral theory is questioned by some economists (e.g. Coase), the dissertation will take the behavioral assumptions into consideration, as introduced by Williamson. In this context, Williamson introduced the two basic assumptions in which his interpretation of transaction cost theory is based upon.³⁶⁹ The two assumptions are as follows:³⁷⁰

1. Man is limited rational (bounded rationality)
2. Man is opportunistic.

These assumptions are fundamental to understand costs incurred in relational contracts such as partnering contracts – which will be further discussed in

³⁶⁵ Williamson, Oliver E. (1989) "Transaction cost economics." In *The Handbook of industrial organization* Volume I, Edited by R. Schamlensee and R.D. Willig ©Elsevier Science Publishers B.V., p. 138.

³⁶⁶ *Ibid.*, p. 139.

³⁶⁷ Machiavelli, N. (1952). *The Prince; Introduction by Christian Gauss*. New American Library, p. 14. Williamson, Oliver E. (1989) "Transaction cost economics." In *The Handbook of industrial organization* Volume I, Edited by R. Schamlensee and R.D. Willig ©Elsevier Science Publishers B.V., p. 139.

³⁶⁸ *Ibid.*, p. 139.

³⁶⁹ *Ibid.*

³⁷⁰ Williamson, O. E. (1988). "Corporate finance and corporate governance." *The journal of finance* 43.3: 567-591, p. 569.

chapter 5. According to Williamson, bounded rationality and opportunism serve both to refocus the attention and to contribute to the distinction between achievable and not achievable modes of contracting.³⁷¹

In regards to the achievable set, Williamson argue that both impossibly complex and hopelessly naïve modes of contracting are excluded. Thus, Williamson argues that:

"Incomplete contracting assumes that agents have limited capacity to engage in comprehensive ex ante contracting (with or without private information), as bounded rationality precludes this. All contracts within the feasible set are incomplete. Accordingly, the ex post side of a contract takes on special economic importance such as facilitating gap-filling, dispute settlement, adaptation, and the like thus become part of a problem of economic organization. Whereas such institutions play a central role in the transaction cost economics scheme of things, they are ignored by the fiction of comprehensive ex ante contracting.³⁷² Conversely, contract as a promise, is to assume that economic agents will reliably fulfill their promises. However, such stewardship behavior will not be obtained if the agents' opportunistic ex ante efforts to screen economic agents in terms of reliability and ex post safeguards to deter opportunism take on different economic significance as soon as the hazards of opportunism are granted. Institutional practices that were previously regarded as problematic are thus often seen to perform valued economizing purposes when transaction cost features are measured."³⁷³

³⁷¹ Williamson, Oliver E. (1989) "Transaction cost economics." In *The Handbook of industrial organization* Volume I, Edited by R. Schamlensee and R.D. Willig ©Elsevier Science Publishers B.V., p. 139.

³⁷² *Ibid.*, p. 139-40. Williamson too argues in a footnote of his, "...that impossibly complex contracting processes cannot be saved by invoking economic natural selection arguments. Natural selection applies only to the set of viable practices and cannot be used to extend the domain. Alchain's (1950, p. 218) claim that 'the economist, using the present analytical tools developed in the analysis of the firm under certainty, can predict the more adoptable or viable types of economic interrelationships that will be induced by environmental change even if individuals themselves are unable to ascertain them'... This is not, however, to say that natural selection plays no role in. the study of contract. To the contrary, transaction cost economics maintains that those forms of organization that serve to economize on bounded rationality and safeguard transactions against the hazards of opportunism will be favored and will tend to displace inferior modes in these respects. But transactions cost economics insistently deals only with feasible modes. Within this subset it focuses analytic attention on those properties of organizations that have economizing and safeguarding features."

³⁷³ *Ibid.*

According to Williamson, alternative contract theories with different behavioral assumptions also support definitions of the feasible set, opposing theories of contract can, in principle, be evaluated by establishing which of the implied feasible sets is borne out in the data.

As mentioned previously in this chapter, both the management, the supplier, and the shipowner are assumed to be limited rational and opportunistic. The analysis will be divided in an ex ante and ex post part. As Williamson states, alternative economic theories may provide a different outcome, though the dissertation will use the above assumptions towards the parties involved.

Transaction cost economics adopts a contractual approach to the study of economic organization.³⁷⁴ According to Williamson, transaction cost economic stands out in seven different parts:

1. *Transactions cost economic is more microanalytic*
2. *More self-conscious about its behavioral assumptions*
3. *Introduces and develops the economic importance of asset specificity*
4. *Relies more on comparative institutional analysis*
5. *Regards the business firm as a governance structure rather than a production function*
6. *Places greater weight on the ex post institutions of contract, with special emphasis on private ordering (as compared with court ordering)*
7. *Works out of combined law, economics and organization perspective.*³⁷⁵

³⁷⁴ *Ibid.*, p. 136.

³⁷⁵ *Ibid.*

The seven elements above are the “essence” of the transaction cost theory. To explain this “view” in a broader context, Williamson explains that:

“Adopting Commons proposal, that transactions are the basis of the analysis and, thus, the focus should be on the continuous economic efforts within the organization, e.g. when a transaction occurs or when a good or a service is transferred. This can be illustrated through a well-working machine. When the machine works impeccably, these transactions occur smoothly. In mechanical systems, one looks for frictions; do the gears mesh, are the parts lubricated, is there needless slippage or other loss of energy? To continue this illustration, the economic counterpart of friction is transaction costs; for that subset of transactions where it is important to elicit cooperation,³⁷⁶ will the parties operate harmoniously, or are there frequent misunderstandings and conflicts which may lead to delay, breakdowns, and other malfunctions? A transaction cost analysis entails an examination of the comparative costs of planning, adapting, and monitoring the task completion under alternative governance structures.”³⁷⁷

4.2 The transaction cost analysis

Contracting is in itself associated with costs. The contract may bind the parties to conditions which, as a result of changed circumstances, are not necessarily favorable for both parties. If contracts have a short duration, conditions and clauses must be renegotiated and may cause the parties to perform costly actions which the parties would have attempted to avoid in the first place.

³⁷⁶ Williamson refers to his note saying; *“The genius of neoclassical economics is that there are large numbers of transactions where conscious cooperation between traders is not necessary. The invisible hand works well if each party can go its own way – the buyer can secure product easily from alternative sources; the supplier can redeploy his assets without loss of productive value – with little cost to the other. Transaction cost economics is concerned with the frictions that obtain when bilateral dependency intrudes. This is not a trivial class of activity.”* Williamson, Oliver E. (1989) “Transaction cost economics.” In *The Handbook of industrial organization* Volume I, Edited by R. Schamlensee and R.D. Willig ©Elsevier Science Publishers B.V., p. 142.

³⁷⁷ *Ibid.*

A major difference between traditional, economic theory and recent business theory is the existence of transaction costs for coordination in the market. The market and the company are seen as two alternative options for coordination. As Williamson points out, a transactions cost analysis entails an analysis of the planning process, the adapting process, and the monitoring process.³⁷⁸ In other words – and corresponding to the concept of ex ante and ex post - Williamson advocates that a transaction cost analysis can be categorized in three groups:³⁷⁹

1. *Contact Costs*

2. *Contract Costs*

3. *Control Costs*

The cost categories above represent the three phases of a contractual conclusion. First, the contact costs are defined as the costs that exist when attempting to find a suitable contract counterparty (pre contracting). Second, the contract costs are considered to be the costs associated with the actual contract (contracting). Lastly, the control costs are characterized as the costs incurred in maintaining the contract (post contracting).³⁸⁰

³⁷⁸ Williamson, Oliver E. (1975). "Markets and hierarchies." *New York, Free Press*, p. 24-26.

³⁷⁹ Williamson, O. E. (2008). "Outsourcing: Transaction cost economics and supply chain management." *Journal of supply chain management* 44.2: 5-16.

³⁸⁰ *Ibid.*, See also Williamson, Oliver E. (1989) "Transaction cost economics." In *The Handbook of industrial organization* Volume I, Edited by R. Schamlensee and R.D. Willig ©Elsevier Science Publishers B.V., p. 139-42 and Knudsen, C. (1997). *Økonomisk metodologi. Bd. 2: Virksomhedsteori og industriøkonomi* (2nd ed.). Jurist- og Økonomforbundets Forlag, p. 25-27. Authors translation. Original Language; Danish.

Williamson operates with three principal dimensions to determine the transaction costs. These principal dimensions are:

1. *Frequency*
2. *Uncertainty*
3. *Asset specificity*³⁸¹

Williamson states that all three factors are important. However, many of the refutable implications of transaction cost economics are critically in relation to asset specificity.³⁸²

According to Williamson, asset specificity covers the amount of transaction supported by assets. An asset is transaction specific, as the given asset cannot be used by another party or for other purposes without a significant reduction in value. This difference in the value is described as the eligible quasi-interest rate.³⁸³ If the assets are distinctive to the parties, it can lead to high risk of opportunistic behavior, contractual rigidity, reduced incentives to invest in the asset and high costs associated with legal security.

If the value of the asset produced by a supplier depends on the transaction being successful, there is a risk of a hold-up problem.³⁸⁴ The supplier may choose to terminate the contract or deliver a defect product if it is not guaranteed a larger output based on the amount of risk. In an effort to reduce these transaction costs, the company will strive to integrate highly specific assets. Transactions supported by durable transaction-specific assets are also subject to so-called "lock-in" effects which through vertical integration over time will lead to unified regulation.³⁸⁵

³⁸¹ Williamson, Oliver E. (1989) "Transaction cost economics." In *The Handbook of industrial organization* Volume I, Edited by R. Schamlensee and R.D. Willig ©Elsevier Science Publishers B.V., p. 142. See also Williamson, O. E. (2008). "Outsourcing: Transaction cost economics and supply chain management." *Journal of supply chain management* 44.2: 5-16, p. 8.

³⁸² *Ibid.*

³⁸³ Knudsen, C. (1997). *Økonomisk metodologi. Bd. 2: Virksomhedsteori og industriøkonomi* (2nd ed.). Jurist- og Økonomiforbundets Forlag, p. 214-17. Authors translation. Original Language; Danish.

³⁸⁴ *Ibid.*

³⁸⁵ *Ibid.*

According to Williamson, transactions are in general also characterized by uncertainty, which is a more complex dimension. Uncertainty is related to any decision-making process, which is a question of whether it is possible to predict any contingencies that may occur during a given transaction. The element of time is an important factor in terms of uncertainty, as the longer it takes to complete a transaction, the greater risk of something unpredictable happening. In this connection, Williamson distinguishes between uncertainty and behavioral uncertainty.³⁸⁶

Limited rationality and uncertainty depend on each other. Williamson believes that uncertainty is also related to opportunism, and it is this kind of uncertainty that Williamson calls behavioral uncertainty (but denotes it as strategic).³⁸⁷

If a high degree of uncertainty - or many alternatives – exist in the market, the limited rationality of man will make the necessarily detailed planning more complex and hence costlier.³⁸⁸ If it is not possible to execute the full content of the transaction ex ante, there is a high risk of opportunistic behavior. If transactions rarely occur, there will be no need for a formal structure of the transaction. The higher frequency of transactions, the more it can be justified that it is sought to save transaction costs by investing in the formal structure of the transaction, as well as a control system or the like.³⁸⁹

Variations in the three relevant dimensions are important to consider, in terms of whether it would be advantageously to be organized through the market, internally in the company, or in a combination hereof. The parties i.e. the shipowner and the supplier are therefore responsible for saving transaction costs

³⁸⁶ Williamson, O. E. (2008). "Outsourcing: Transaction cost economics and supply chain management." *Journal of supply chain management* 44.2: 5-16, p. 8-9.

³⁸⁷ *Ibid.*

³⁸⁸ Williamson, Oliver E. (1989) "Transaction cost economics." In *The Handbook of industrial organization* Volume I, Edited by R. Schrammensee and R.D. Willig ©Elsevier Science Publishers B.V., p. 139-42.

³⁸⁹ *Ibid.*

between technologically distinct functions in order to economize the communication and the decision-making process, as well as to monitor the costs.³⁹⁰

However, - as mentioned previously - the dissertation has three different parties which each have an *inter partes* relation and therefore, arguably, in the current on-off transaction, the dissertation is dealing with *three* different transactions ex ante and *one* transaction ex post. Although, if the supplier and the shipowner applied a relational contract, instead of three ex ante and one ex post transactions, the supplier and the shipowner would be the only *inter partes* relation and, therefore, only have one ex ante transaction and one ex post transaction. Hence, in the following, the dissertation will discuss the transaction costs in connection to both situations in order to analyze each situation's efficiency and clarify whether relational contracting is possibly an optimized contract.

5. Transaction costs in the relations

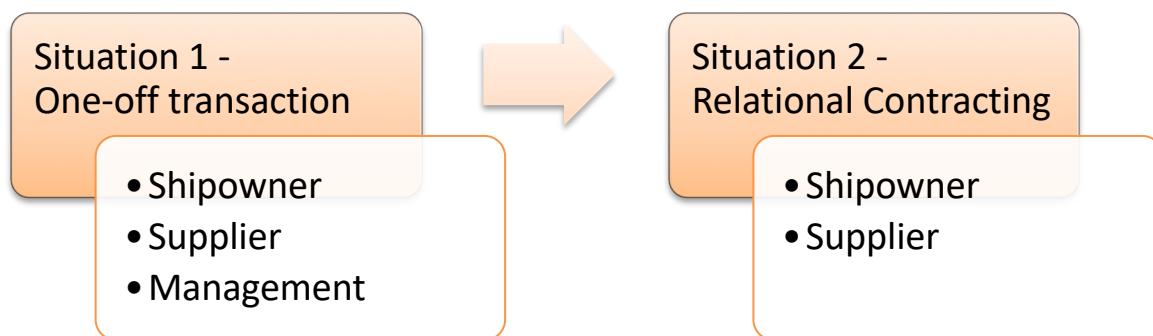
The relational triangle, as illustrated by figure 3.1, outlines the relationship between the parties. Even though the relations are primarily an illustration of the ex-ante relations, ex post relations also exist between the parties. The dissertation is working with several "levels", which is relevant in regards to the transaction cost theory. Although there are different levels, it is also important to distinguish the two situations apart, see figure 3.2. For comparison, this analysis has its starting point from the one-off transaction situation which is laid out as the current situation, where the management act as the middleman between the supplier and the shipowner which may hinder a relationship between the shipowner and the supplier.

³⁹⁰ *Ibid.*, p. 142-44.

As a contrast to the on-off transactions where all agreements are short-term, the relational contracting situation is set as the end goal, as it will arguably contribute to a stronger long-term relationship between the supplier and the shipowner, in which the parties will be more willing to share their information for mutual gain.

In other words, this analysis will start out by analyzing the current transactions and compare these to the relational contracting situation. By doing so, the dissertation will discuss the theories and move from one scenario to another by comparing the situations. The aim of this is to clarify which of the scenarios will be the best possible solution in order for the parties to optimize the contracts in-between, from a transaction cost perspective.

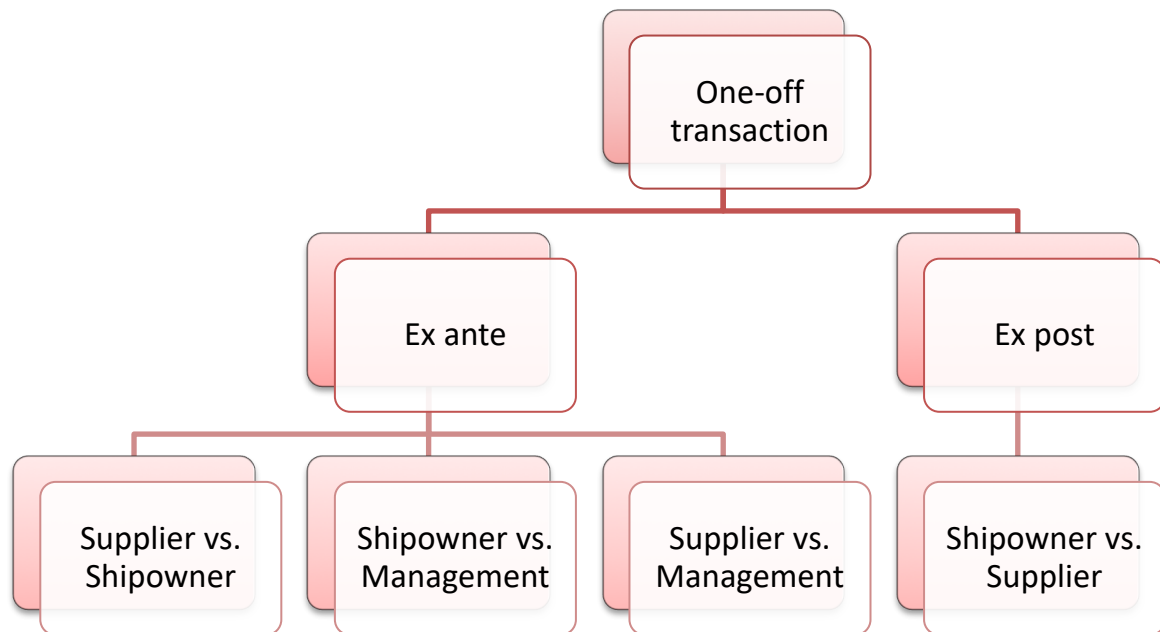
Figure 3.2 –The two transaction situations



Source: the author's creation

This situation is affected by one-off transactions, with all three parties involved and this situation is divided into two “levels”. For clarity, the “levels” as set out in *the relational triangle*, are structured as followed in figure 3.3:

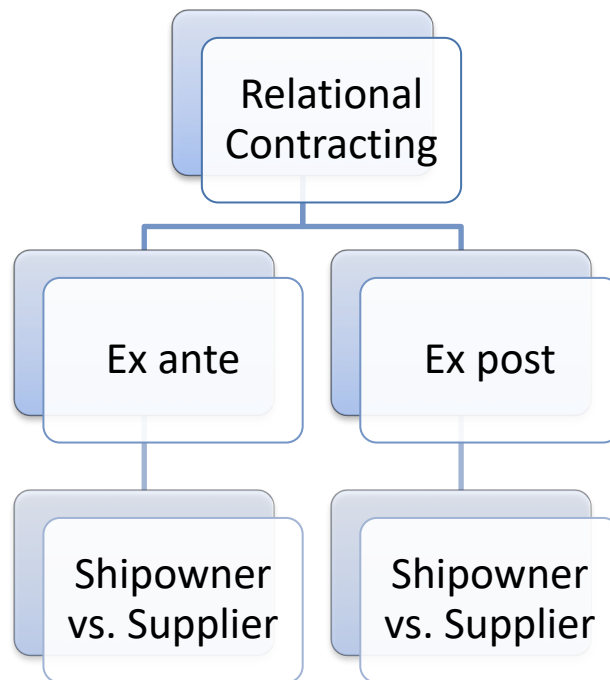
Figure 3.3 – One-off transaction



Source; Authors Creation

Conversely, the second situation is illustrated with “levels” and is structured as followed in figure 3.4:

Figure 3.4 – Relational contracting transaction



Source; the author's creation

As the dissertation has established the quantity of relations in the two situations, the foundation of the analysis, seem to be in place, hence the dissertation will take a closer look upon the relations and the transactions cost involved.

5.1 The first situation

As stated previously in section 4.2, the transaction cost analysis entails an analysis of the three elements (*contact costs*, *contract costs*, and *control costs*) and, consequently, the situation between the parties will be analyzed. The case has its starting point from where the shipowner wants to purchase a commodity for one of its ships. This situation is labeled situation one and is illustrated in figure 3.3. The shipowner appoints the management that will be managing the dealing by finding the given commodity with the right supplier, based on the requirements from the shipowner.

The structure of this analysis will be step-by-step, based on the order of the purchasing situation. Thus, the analysis is divided into ex ante and ex post costs. The ex-ante costs are the transaction costs attributable to the pre-contractual conclusion, which includes both negotiation and compliance. Hence, the ex-ante costs are what Williamson would define as *contact costs* and *contract costs* respectively. The ex post transaction costs are attributable to post-contractual conclusion such as renegotiation, cost of contract enforcement, and costs associated with setup and operation, and are hence equivalent to *control costs*.

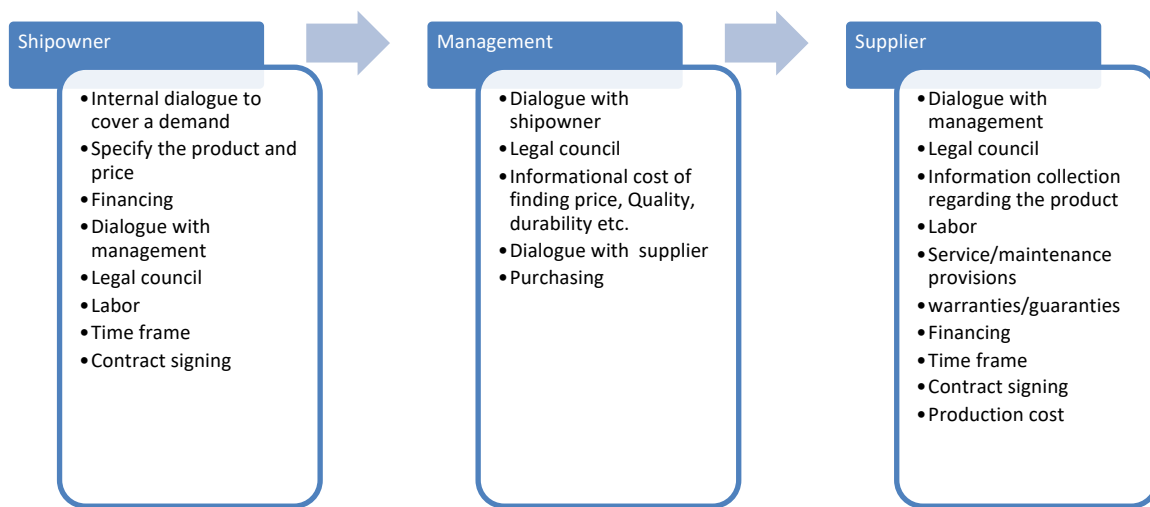
5.1.1 Ex ante cost

5.1.1.1 The shipowner vs. the management

In the given situation where the shipowner needs to buy a specified commodity, the shipowner contacts the management party and hires it to find the commodity at a given price. Based on Coase and Williamson's perspective, it is important to categorize the costs in terms of whether it is contact costs, contract costs, or control costs, thus to clarify how the transaction costs are divided. Furthermore, it is important to classify the specific transaction, based on the uncertainty, frequency and asset specificity.

When the shipowner initiates the contact with the management, the process is categorized as a part of the Contact activity. Within this process, both parties spend time on communicating and the sharing of information regarding the cost of finding the commodity at the right price, quality, and durability. The figure 3.5 illustrates the purchasing process and the steps that each of the parties take in order to finalize the purchase.

Figure 3.5 –Transaction cost overview



Source: the author's creation

Before discussing the transaction costs tangled in the given transaction, this dissertation will take a further look upon the product which is being transacted. As the example set out above, the shipowner is considering buying an engine. Hence, the question is how to classify a specific commodity.

As set out in section 4.2, an asset is transaction specific if it cannot be used alternatively without significant reduction in its value.³⁹¹ A ship engine is a very costly and complex product where the primary aim is to create a propulsion system, by using a mechanical power delivered through the engine to the propeller shaft, in order to move tons of weight.³⁹² The ship engine is a part of a mechanical system, meaning that it plays an important part of the propulsion system, where other components³⁹³ have their main functions too.³⁹⁴ Therefore,

³⁹¹ Williamson, Oliver E. (1989) "Transaction cost economics." In *The Handbook of industrial organization* Volume I, Edited by R. Schrammensee and R.D. Willig ©Elsevier Science Publishers B.V., p. 139-42.

³⁹² Carlton, J. (2012). *Marine propellers and propulsion*. Butterworth-Heinemann, p. 25-27.

³⁹³ E.g. the propeller or oil pump.

³⁹⁴ It is worth mentioning that there are several types of ship engines (e.g. Steam engines/turbines, diesel engines/turbines, gas turbines, electric etc. other propulsion types; Screw, Paddle wheel, Pump-jet, Sail, Caterpillar etc.) and that it depends on the ship and the technology which is used. This dissertation will not distinguish in the engines used

based on the fact that an engine gets installed in the ship and becomes a part of a complex system, it is possible to qualify it as being a highly specified asset which complicates the transaction further.

Another side of the transaction is that this is a low frequency transaction, but with higher risk involved due to a hold-up problem. This is important factors in the purchasing process, which complicates it. Conversely, if the shipowner were to buy a low specific asset i.e. interior for the ships, the shipowners would have lower risks and the specifications for the management party would not be as complex.

The clarification of the commodity will be used in the context of the illustration set out in figure 3.5. According to the purchasing process, there are several “steps” affiliated with costs, which the parties are inflicted by. From a shipowner’s perspective, it is involved in many transaction costs, and thus it can be assumed that a need for internal dialogue arises as to what the product needs are, what price they are willing to pay, but also in terms of quality, durability, and the financing of the products.

As an example, it may be important for the shipowner whether it is an engine provided for a new ship or whether it is a new engine for an already existing ship. If it is an engine for an already existing ship, the shipowner will also have to think about the lifespan of the ship and whether the investment can be paid. In addition, it is important that the product meets the legal requirements. As already mentioned in Chapter 1, a ship can have a lifespan of approximately 20+ years³⁹⁵ and - as it is a vast and expensive investment - the ship must be in line with the

as examples and therefore the dissertation will use the expression engine as one common term. See also Carlton, J. (2012). *Marine propellers and propulsion*. Butterworth-Heinemann, chapter 2 and 3.

³⁹⁵ Stopford, M. (2009). “Maritime Economics”, 3rd edition, Routledge p. 207.

legislation in the long run.³⁹⁶ This is primarily environmental law (e.g. MARPOL), which is the biggest factor when the environment has reached the top of the agenda.³⁹⁷ Having said that, it is not possible to look ahead in time, but it may be worth paying more for a product now, which is even more environmentally friendly than what the law prescribes.

As soon as the shipowner has completed its product needs - and thus has specified the product - the shipowner will contact the management party which will be responsible for the purchase of this product. As the ship owner hires the management to carry out this task, large amounts of resources will be used to outsource this purchase, as the shipowner's actual needs must be clear to the management. As the shipowner outsources this task, a cooperation agreement between the shipowner and the management is required, as the management conducts a service on the shipowner's behalf. However, this additional party is also a significant factor, as it is time and resource demanding to outsource the ex-ante transactions. It also affects the transaction in the sense that the more instances a purchase is going through, the more expensive it becomes, since everyone in the value chain will want to have their share of the cake to still have their eligibility.

As mentioned in section 8.2³⁹⁸ in connection with the new building of a ship, it can easily take six months to a year for the entire process of choosing a supplier, create the exact specification, formulate the legal terms, and the design of the ship. Although, in this case, it might be more comprehensive, hence this might be a specification for a new ship, but in this case it could easily be a specification for a new propulsion system.³⁹⁹

³⁹⁶ This was discussed in chapter 2.

³⁹⁷ This was discussed in chapter 2, section 6. Go green – an environmental necessity.

³⁹⁸ Chapter 2, section 8.2. The newbuilding market.

³⁹⁹ For further information see Stopford, M. (2009). "Maritime Economics", 3rd edition, Routledge, p. 207-210. See also Chapter 2, section 8.

On the management's side, it is important that it can provide the required service and that the task is clearly defined. The management only has the authority to conduct what has already been agreed with the shipowner, which is in the specification, and the management does not have the authority to go beyond it. Therefore, the management will use many resources to be in dialogue with the shipowner in order to be able to meet its needs as best as possible.

5.1.1.2 The supplier vs. the management

In terms of the relationship between the supplier and the management, this section still covers the contact costs and the initiated contract phase. Thus, after the shipowner has outsourced the task to the management and the task is clearly defined, the management has the task of finding this product, which means that it uses resources to search the market for the right product at the right price, quality, and durability. Once the management has narrowed the market to potential suppliers, the dialogue with the relevant supplier will be initiated for this specific product in order to make purchases on behalf of the shipowner.

In the dialogue with the supplier, the management is based on the specification list that the shipowner has already prepared, which results in the management not having the power or the ability to trade with the supplier. In this case, the supplier is interested in determining exactly which product the management needs; when it should be provided; and at what price. As the management has limited powers, the supplier is also limited in the purchasing situation, even though the supplier wants to sell a product, because of the lack of actual negotiation situation due to the management's lack of authority.

From a transaction cost perspective, it may seem inefficient to involve a third party in a purchase process like this, though it may be possible that the shipowner thinks that the task is outsourced to a party with more expertise than the shipowner himself. Though, it would be interesting that the management should enter into a dialogue with the supplier to get the correct product, however, it is the shipowner who is going to operate the product, so it would seem more obvious that the dialogue had been between the shipowner and the supplier.

5.1.1.3 The supplier vs. the shipowner

As the management has found the right supplier for delivery of the desired product, the last part of the contract phase can be initiated. In this situation, it is elementary that the shipowner and the supplier make the deal by getting the contractual formalities in place in relation to the purchase. The primary time issue in this phase is the actual contract conclusion and the negotiation thereof. The management has done the preliminary work, which means that most of the important factors should be in place – meaning that the management has found the right product at a given price, and thereby, it is possibly not the big deal to negotiate. Next, it should be mentioned that there is probably a standard contract that will be the starting point. However, both parties spend time on the actual negotiation of the contract and have prepared the most important details in relation to delivery, warranty, financing thereof, such as how many installments should the payment be divided in, as well as to clarify the installation of the product and the contractual liability in case of disputes or product defects.

All in all, the above must be in place before the contract can be signed. When the contract has been signed, there will be no additional costs ex ante, according to

the theory, and thus, the contact and the contract phase are over. Afterwards, the requirements will be to control the contract performance ex post.

5.1.2 Ex post cost

5.1.2.1 The shipowner vs. the supplier

After the signing of the contract, both parties will primarily spend time on compliance with the contract. For the shipowner, this means that it spends time making sure that the agreed installments are being paid on time, make follow-ups on whether the supplier delivers on time, and quality checks the product to ensure that the supplier complies with its part of the agreement. From the supplier's perspective, they spend time and labor on producing the commodity. Thus, the supplier's tasks ex post is to make sure that it gets the payments, tests the product, and - in the end - deliver and install the final product. These transaction costs are of more positive nature, as it is important that both parties fulfill their part of the contract. If the shipowner does not pay the rates on time, the supplier will potentially stop the production, as it may cause liquidity problems with the supplier, but it may also weaken the incentive structure if the supplier is worried about not getting the payment.⁴⁰⁰

5.2 The second situation

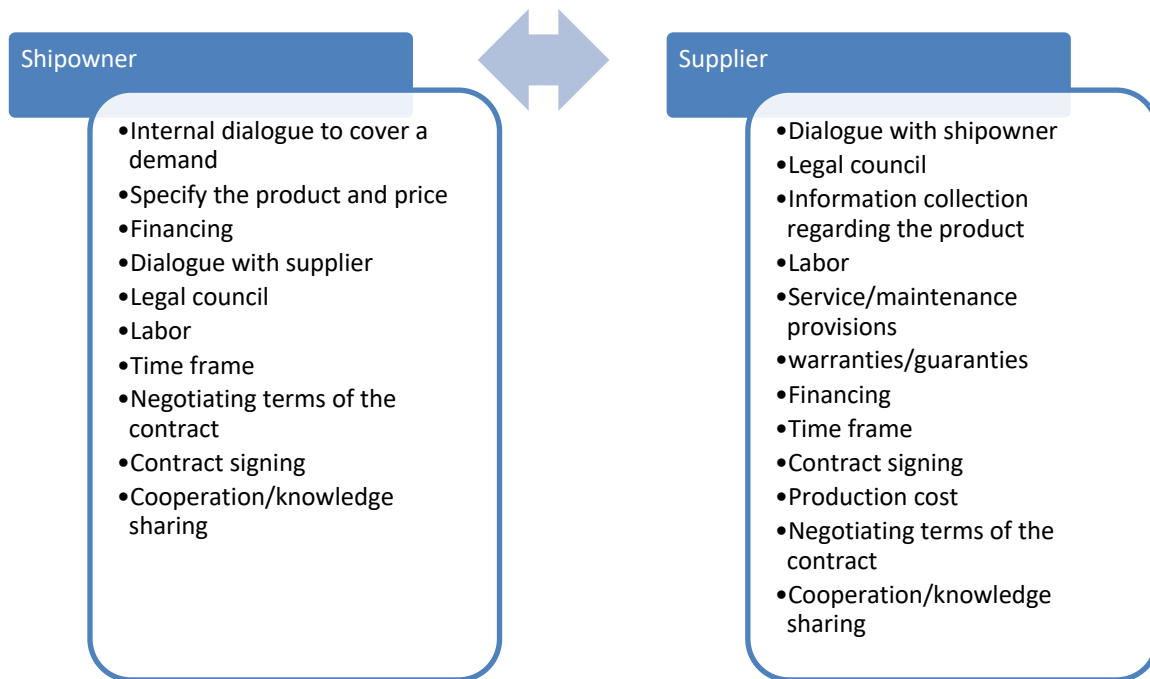
The second situation differs from the first situation, since this is based on a relational contracting situation between shipowner and supplier. In this situation, the management is not included in the value chain. The second situation, like the first one, is based on the fact that the shipowner needs to buy a certain new engine for the ship by the supplier. Corresponding with the first situation, the analysis is

⁴⁰⁰ This was discussed in chapter 2, section 8. For further information see Stopford, M. (2009). "Maritime Economics", 3rd edition, Routledge, p. 207-209.

divided into contact and contract costs which are designated ex ante, and control costs, which are designated ex post. The “levels” of this situation is illustrated in figure 3.4.

Figure 3.6 illustrates the purchasing process and the factors that apply to this.

Figure 3.6 – Transaction cost in relational contract transaction



Source: the author's creation

5.2.1 Ex ante cost

5.2.1.1 The shipowner vs. the supplier

In this situation, the parties have a relationship and, as a result, the game has changed. In the first situation, the shipowner would draw up a specification list for management, which would find the product in question. In this new situation, the shipowner will still develop a form of specification list, as the shipowner still needs a clear idea of what it is looking for. Afterwards, the shipowner will contact its supplier and present the requirements for the product needed. This initiates

the dialogue with the supplier who will ideally become a sparring partner on the product. The supplier will be the expert in the field and is likely to be in a position where it can probably present a better, but more expensive, product for the shipowner – e.g. a product that is equipped with sensors, which means that it is possible to track its performance or when it needs to be repaired. The difference from the first situation to this new is huge, as the supplier and the shipowner take on new roles.

The supplier has the opportunity to engage in a real dialogue with the shipowner, and will thereby be trying to meet the supplier's needs as best as possible, as the parties will share the information between them. Based on the theory of transaction costs, the parties are limited rational as well as opportunistically imposed. Because the parties have entered into a relational contract, it should rationalize and be opportunistic, as the parties commit more to the sharing of information, to cooperate, and move towards joint utility. From the point of view, it will be a win-win situation for both parties, as they are allowed to do what they are best at and create a collaboration and mutual gain with each other. Arguably, in theory, the relational contract is an optimized situation for the supplier and the shipowner.

The transaction costs that occur ex ante are the dialogue between the partners, and - despite the fact that management does not occur here - a large amount of transaction costs will still be associated with this dialogue and cooperation between the parties. However, it can be argued that the parties are likely to be more positive towards one another, as they mutually gain from the relationship and collaborate, and thus will be willing to continue the game. In addition, as the shipowner still has to finance the product, both parties must have negotiated the contract in place, and thereby define all the legal aspects thereof.

Additionally, this occurs in a relational context, therefore it is apparent, that the supplier, in addition to providing a product, also will be responsible for the maintenance hereof, meaning that the shipowner does not have to educate its employees in the maintenance of the product. Once the contract has been negotiated and all formalities are in place, the parties can sign the contract, and no additional costs will be incurred as both the contact and contract processes are over.

5.2.2 Ex post cost

5.2.2.1 The shipowner vs. the supplier

The ex post costs are very similar to the first situation because of the similarities of the processes following the signing of the contract, and, therefore, both parties will primarily spend time on compliance with the contract, as described previously. The main difference between the two situations is the parties' collaboration. This is an important factor, as the parties are cooperating towards creating the preferred commodity. Hence, due to the relational contracting, both parties are sharing knowledge, they trust one another, and thus have a shared incentive to create a successful cooperation.

Both situations have been clarified and the various transaction costs in both situations and in respect of all "levels" have been analyzed. The interesting thing is how the difference lies and what situation is the advantage for the shipowner and the supplier. The first situation consists of a dialogue process that is three-point, whereas the other situation is only two-way. If the management had been part of the second situation, it would not have had the eligibility. By switching to the two-way dialogue, the parties go from having a one-way communication process to transition to a collaborative process where the output is the product. By getting the shipowner and the supplier to communicate and collaborate, they

will optimize the product together and they will both take responsibility for the task. By involving the management, as the shipowner does in the first situation, the shipowner disclaims any responsibility and miss out on the opportunity to gain better products. The interesting thing about the shipowner and the supplier collaborating on the product means that both parties do what they do best, which - in the long term – is likely to create more innovation, e.g. within the product area.

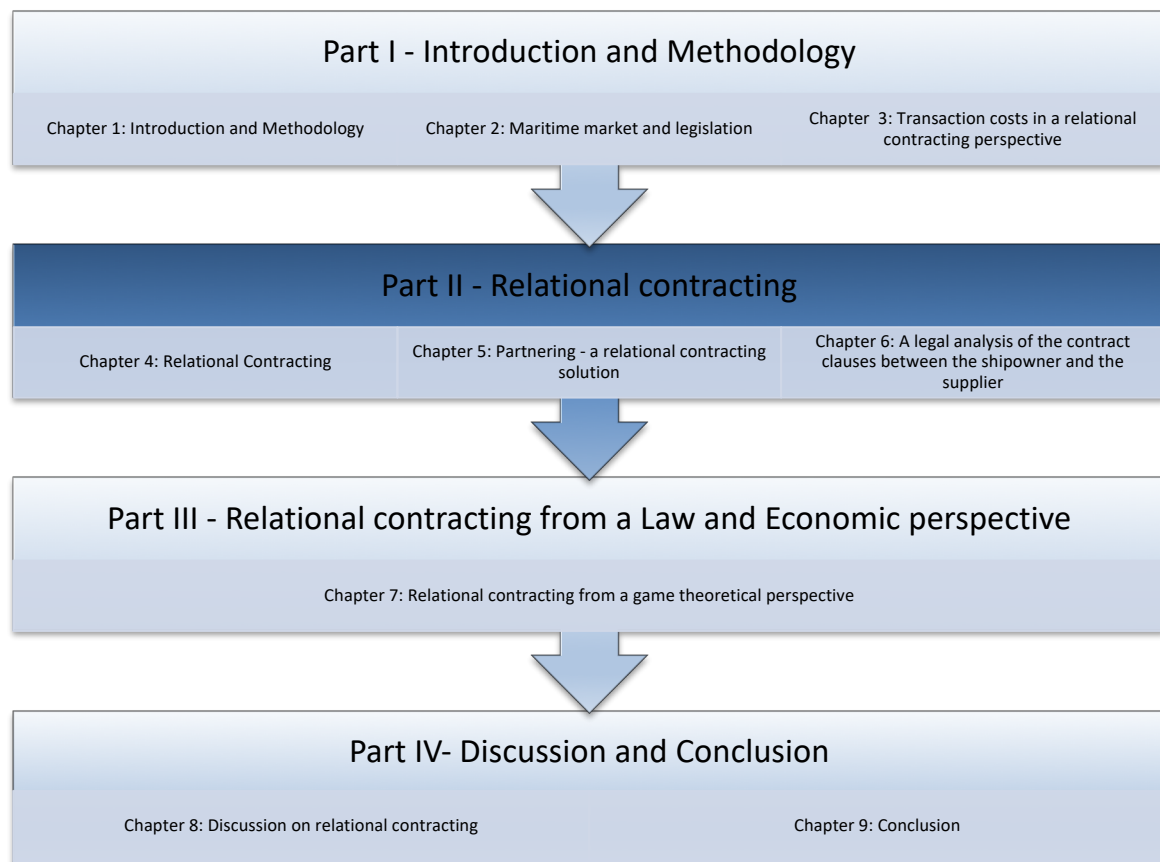
6. Concluding remarks

The two situations – the one-off transaction situation and the relational situation - have been discussed and the various transaction costs in both situations and all “levels” have been analyzed. The noteworthy take from the analysis, is the difference between the situations and which situation is more advantageous for the shipowner and the supplier. The current situation – one-off transaction – is influenced by a dialogue process that is three-point, whereas the other situation – relational contracting - is only two-way. By eliminating the management party in the second situation, both the shipowner and the supplier are forced to engage in a two-way dialogue, with the possibility of creating a collaborative process where the output is the product. Thereby the shipowner and the supplier can optimize the product together and both take responsibility for the task. However, the transition from the one-off transaction to the relational situation leads to other transaction cost, although these are considered more positive, as they are used to gain more value for both the shipowner and the supplier. By continuing the current threefold situation, the shipowner disclaims any responsibility, as the purchasing element or the task is outsourced to the management. The threefold situation consists of unnecessary transaction costs, as this is a more convenient situation for the shipowner, however it is not the optimal situation, as they can gain more and better value by collaborating with the supplier. Therefore, the interesting thing about the shipowner and the supplier collaborating on the

product means that both parties do what they do best, which the dissertation argues -in the long-term - is likely to create more innovation, e.g. within the product area.

Future cooperation should therefore encourage both parties to cooperate, as this creates a more efficient situation for the parties. Although, the management will, as mentioned above, be redundant in this scenario and therefore needs to find another way of doing business, as it only acts as intermediaries. Therefore, this dissertation purposes to eliminate the management party from the case – as illustrated in figure 1.2. – since this will create a better situation for the shipowner and the supplier and thus creates the opportunity for collaboration.

Part II – Relational contracting



Part II summary

Part II is divided into three chapters; Chapter 4: Relational contracting; Chapter 5: Partnering – a relational contract; and Chapter 6: A legal analysis of relational contracting. The focus of this part is to define and discuss relational contracting and define how to apply this to the shipowner and the supplier. Chapter 4 discuss relational contracting in order to clarify what the concept hereof. Chapter 5 discuss partnering contracts, as a relational contract, in order to define how this contract is set out; the purpose hereof; and lastly how this is applicable to the parties.

The last chapter - chapter 6 - discuss relational contracting in regards to the shipowner and the supplier. The purpose of this chapter is to incorporate the findings of chapter 4 and chapter 5 in a discussion of how relational contracting is applicable to the shipowner and the supplier and to clarify what key elements this contract should focus on, in order to create a successful collaboration between the shipowner and the supplier.

Therefore the aim of this part is to address a relational contract between shipowner and supplier and to focus on specific contract clauses, to establish what key elements these clauses should address.

Chapter 4: Relational Contracting

1. Introduction

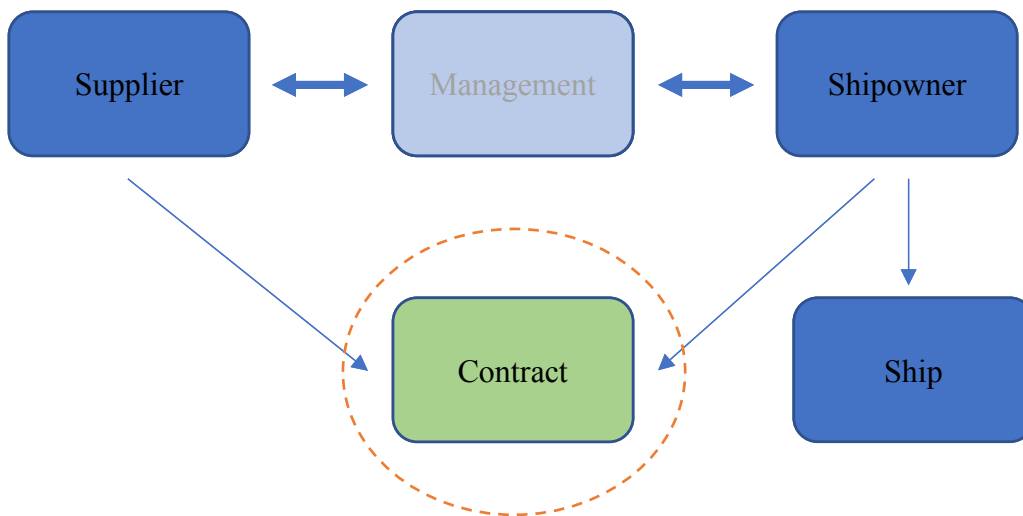
The previous chapter has set the framework by examining the maritime law and the overall market, which the law influences as illustrated in figure 1.1.⁴⁰¹ Chapter 3 eliminated the management party from the case, thus the dissertation has outlined the case and the parties i.e. the shipowner and the supplier and the industry in which the shipowner and supplier are operating.⁴⁰²

In order to conduct the analysis as set out in the purpose statement, the dissertation will examine the aspects of relational contracting in order to define the concept and how to approach it from the shipowner's and the supplier's perspective.

⁴⁰¹ The overall figure 1.1. in chapter 1.

⁴⁰² See figure 1.2 and section 4. In chapter 1.

Figure 4.1 – Case overview revised



Source: the author's creation

The figure 4.1 illustrates the revised case, which has been modified with the elimination of the management in chapter 3. As mentioned previously, the case is set out from figure 1.1., although the supply chain has been modified slightly. Both the shipyard and the management⁴⁰³ have been removed as relevant parties, in order to focus on the contract point between the shipowner and the supplier. Thus, the dissertation takes a necessary step towards a parameter, which hopefully ends in a solution, in order to create a more efficient situation for the shipowner and supplier, contrary to their current situation. Therefore, this chapter will solely focus on an overall perspective of relational contracting between with the shipowner and the supplier. This chapter will highlight some of the benefits in relational contracting and is supposed to set the scene for chapter 5 which will be focusing on partnering.

This model is the substance of this dissertation and it illustrates the aim of this chapter which is to look further at the relationship between the shipowner and

⁴⁰³ Which is a part of the overall supply chain, set out in figure 1.1.

supplier in order to study the possibilities of a long-term collaboration. Before applying partnering onto the case, this chapter will define what relational contracting is and how it can be applicable to the situation in focus. The dissertation will start out by looking further into relational contracting and how this can affect the parties in this case.

1.1 An introduction to relational contracting

Relational contracting theory is based upon the relationship of trust between the parties in the contract.⁴⁰⁴ Originally relational contracting theory was developed in the United States by the two legal scholars Ian Macneil (hereinafter, referred to as, “Macneil”)⁴⁰⁵ and Stewart Macaulay (hereinafter, referred to as, “Macaulay”).⁴⁰⁶

Contracting is a common phrase, thus commonly used on an everyday basis. Siegwart Lindenberg⁴⁰⁷ and Henk De Vos⁴⁰⁸ (hereinafter, referred to as, “Lindenberg and De Vos”) wrote in 1985:

“Only twenty years ago the word ‘contract’ was confined to the ‘contract curve’ in the Edgeworth-Bowley box;⁴⁰⁹ now it has become a household word in the discipline.”⁴¹⁰

⁴⁰⁴ Levin, J. (2003). “Relational incentive contracts.” *American Economic Review*, 93.3: 835-857, p. 835-36.

⁴⁰⁵ Professor Ian Roderick Macneil, a Scottish American legal scholar, born in New York, 1929. Educated from University of Vermont, majoring Sociology and Bachelor of Laws (LL.B.) from Harvard Law School.

⁴⁰⁶ Professor of Law Emeritus at the University of Wisconsin-Madison. Leading expert of the law-in-action approach to contracts. Macneil, I. R. (1985). “Relational Contract: What We Do and Do Not Know.” *Wisconsin Law Review*, 4: 483-526 p. 483.

⁴⁰⁷ German Professor of Cognitive Sociology at the University of Groningen in the Netherlands.

⁴⁰⁸ Researcher at University of Groningen at the Department of Sociology.

⁴⁰⁹ Named after Francis Ysidro Edgeworth, is in economics a way of representing various distributions of resource. Edgeworth made his presentation in his book *Mathematical Psychics: An essay on the Application of Mathematics to the Moral Science* in 1881. Pareto transformed Edgeworths two-axis depiction into a diagram in his book of 1906; *Manual of Political Economy*. Source; Why was it called and Edgeworth-Bowley box? A Possible Explanation, Weatherby, J. (1976). “WHY WAS IT CALLED AN EDGEWORTH-BOWLEY BOX? A POSSIBLE EXPLANATION.” *Economic Inquiry*, 14(2): 294-296.

⁴¹⁰ Cheung, S. N. S. (1983). “The Contractual Nature of the Firm.” *Journal of Law and Economics*, 26: 1-21, p. 20. See also Lindenberg, S. and De Vos, H. (1985). “The Limits of Solidarity: Relational Contracting in Perspective and Some Criticism of Traditional Sociology” *Zeitschrift für de gesamte Staatswissenschaft (ZgS)* 14: 558-569. *Journal of Institutional and Theoretical Economics*, p. 559.

Almost everything revolves around a contracting point, even though a contract has many facets i.e. employment, purchase or a promise.⁴¹¹ Especially a promise is interesting, which makes it the starting point, as Macneil states:

*"The doctrine of promissory estoppel, has been the focus of some of the most important and interesting debates in contract law in the 20th century."*⁴¹²

MacNeil continues:

*"The original objective of promissory estoppel was to provide a substitute for consideration in certain cases involving promises that were not bargained for. Defining this as the doctrine's "objective," of course, does not mean that judges and scholars consciously designed it to fill a perceived gap in the case law. Instead, the doctrine evolved through the common law process as a device that helped avoid results which were perceived to be unjust in particular kinds of cases. These cases mostly involved gratuitous, noncommercial promises: charitable subscriptions, gift promises between relatives, and marriage settlement."*⁴¹³

Promissory estoppel, as a legal principle, is one of the foundation points in contract theory, even though this relates to "classical" contract theory. Macneil distinguishes the difference between classical law,⁴¹⁴ neoclassical law,⁴¹⁵ and relational contracting law. Thus, this raises the question, what relational

⁴¹¹ *Ibid.*

⁴¹² Beale, H.G, Bishop, W.D. & Furmston, M.P. (1995). *Contract, Cases and Materials*, (3rd Ed.), Butterworths, p. 697.

⁴¹³ *Ibid.*

⁴¹⁴ According to Macneil classical contract law refers (in American terms) to that developed in the 19th century and brought to its pinnacle by Samuel Williston in *The Law of Contracts* (1920) and in the *Restatement of Contracts* (1932). Macneil, I. R. (1978). "Contracts: Adjustment of Long-term Economic Relations under Classical, Neoclassical and Relational Contract Law." *Northwestern University Law Review*, 72(6): 855.

⁴¹⁵ According to Macneil Neoclassical contract law refers to a body of contract law founded on that system in overall structure but considerably modified in some, although by no means at all, of its detail. The latter is epitomized by the U.C.C. Art. 2, and *Restatement (Second) of Contracts a Presentation*, 60 Va. L. Rev. 589 (1974), where, however, both classical and neoclassical contract law are denominated 'traditional contract law.' Macneil, I. R. (1978). "Contracts: Adjustment of Long-term Economic Relations under Classical, Neoclassical and Relational Contract Law." *Northwestern University Law Review*, 72(6): 855.

contracting is and how this differs from the classical and neoclassical contract law.⁴¹⁶

1.1.1 Macneil's classification of contracts

Macneil uses the three dimensions as a system of classification, which is illustrated in figure 4.2, whereas he defines the classic contract law as the contracting law set out from the 19th century. Furthermore, Macneil defines neoclassical contract law as depending upon the trilateral governance, in which third party assistance is used for resolving disputes or evaluating performance. In Macneil's analysis, which is leading to his classification system, his main focus is the exchange. Macneil analysed the nature of discrete exchange within classic contract law and stated:

*"A truly⁴¹⁷ discrete exchange transaction would be entirely separate not only from all other present relations but from all past and future relations as well. In short, it would occur, if at all, only between total strangers, brought together by chance (not by any common social structure, since that link constitutes at least the rudiments of a relation outside the transaction)."*⁴¹⁸

Macneil stresses that for a truly discrete exchange to occur, the parties would have to be completely sure of never having seen or done anything with one another. However, if this scenario does not occur, Macneil points out that a social structure may arise. Furthermore, Macneil states:

⁴¹⁶ According to Macneil the difference in the values of neoclassical and relational contract lies in the baseline approach to obligation. Neoclassical contract emphasizes the autonomy of individuals from each other, and the limited liability that that autonomy necessitates. Relational contract, on contrast, emphasizes the interdependence of individuals in social and economic relationships. Because its paradigmatic unit of inquiry is the extensive relation rather than the discrete transaction, relational contract focuses on the necessity and desirability of trust, mutual responsibility, and connection among people. Not all of these bonds should be legally enforceable, but beginning analysis by recognizing them is likely to produce a broader set of legal obligations. Beale, H.G, Bishop, W.D. & Furmston, M.P. (1995). *Contract, Cases and Materials*, (3rd Ed.), Butterworths, p. 699.

⁴¹⁷ Emphasis added thus to quote correctly.

⁴¹⁸ Macneil, I. R. (1978). "Contracts: Adjustment of Long-term Economic Relations under Classical, Neoclassical and Relational Contract Law." *Northwestern University Law Review*, 72(6): 855.

"That discrete exchange can never be the only economic function essential to production, distribution, and final consumption of goods and services should also go without saying. But it must be said because the so-called science of neoclassical economics⁴¹⁹ presumes a model treating discrete exchange as the sole economic function essential to production, distribution, and final consumption."⁴²⁰

Here, Macneil states that there must be a relational impact on exchanges. Based on this quote and the previous quote regarding discrete exchanges, he argues that - for a social structure not to arise - the discrete exchange must happen quickly, as he otherwise postulates that there might develop *some kind of a relation impacting on the transaction so as to deprive it of discreteness*.⁴²¹

From this point, it is clear that Macneil argues that within a transaction there might be a kind of social impact, unless a truly discrete transaction is a possibility.⁴²²

The hypothesis that a social structure occur even on a discrete exchange⁴²³ (unless it all happens quickly and the parties never see each other again) is relevant in connection with the case, as the shipowner and the supplier could not in any possible manor be partaking in a *truly* discrete exchange, as set out by Macneil. Based on his hypothesis, a social structure must occur between the

⁴¹⁹ Macneil point out that 'in the neoclassical model of capital and labor, the goods and services are not, of course, omitted. But they are simply inputs and/or outputs on the X and Y axes of a mathematical concept centered on discrete exchange. Moreover, they themselves normally are ultimately reduced entirely to exchange, i.e. their exchange value.' For further elaboration see Macneil, I. R. (1985). "Relational Contract: What We Do and Do Not Know." *Wisconsin Law Review*, 4: 483-526, p. 486.

⁴²⁰ *Ibid.*, p. 485-86.

⁴²¹ Macneil, I. R. (1978). "Contracts: Adjustment of Long-term Economic Relations under Classical, Neoclassical and Relational Contract Law." *Northwestern University Law Review*, 72(6): 856.

⁴²² Macneil stresses that it is important view exchange broadly. He states that 'we are so brainwashed as to be almost unable to conceive of exchange except in terms of markets and discrete transactions. But exchange is not the product simply of social relations so organized. Rather exchange is the inevitable product of specialization of labor, however that specialization of labor may occur.' For further elaboration see Macneil, I. R. (1985). "Relational Contract: What We Do and Do Not Know." *Wisconsin Law Review*, 4: 483-526, p. 485.

⁴²³ According to Macneil discrete exchange will always be a comparatively rare phenomenon because it performs only the transfer of control function and is only minimally related to physical production of goods and services. He argues that the closest relation to the latter is in the transport of goods or services from one place to another. For further elaboration see Macneil, I. R. (1985). "Relational Contract: What We Do and Do Not Know." *Wisconsin Law Review*, 4: 483-526, p. 488.

shipowner and the supplier, even in their one-off transactions. Thus, arguably, the shipowner and supplier are already partaking in a relational context, although not necessarily a grand version, but in accordance with Macneil's theory, something must have transpired and this needs to be broadened and transformed into a relational contract.⁴²⁴

For Macneil, in order for a social impact to be able to occur on such a short notice is, arguably, the only possibility is to create a new way of thinking about contracts. Lindenberg and De Vos are critical towards the sociological approach towards contracts, thus - in their view - there might be pitfalls⁴²⁵ in terms of traditional sociology. Consequently, they stated that:

*"Macneil's quest for a new legal framework in which the guiding norms are oriented towards contracts as relations rather than as spot exchanges."*⁴²⁶

Macneil began examining the relational situation instead of spot exchange, whereas economists mainly focused on the exchange. According to Lindenberg and De Vos, the strong emphasis on the exchange aspects of the contract and economics could be seen in the works of leading academics within sociology, economy, and public choice analysts.⁴²⁷ This revival naturally led to the focus on the powerful combination of exchange with a promise in the contract.⁴²⁸

Lindenberg and De Vos argued that those academics who mainly draw their inspiration from sociology emphasize conditions of exchange such as norms,

⁴²⁴ Macneil argues that types of behavior differ when conditions of exchange are relational rather than discrete. E.g. relational contract emphasized behavioral norms that commit to preserving a relationship, Furthermore MacNeil suggests that in a situation where there is a strong commitment, it is possible to adjust enhance the level of cooperation needed to maintain a long-term relationship. McLaughlin, J., McLaughlin, J., & Elaydi, R. (2014). "Ian Macneil and relational contract theory: evidence of impact." *Journal of Management History*, 20.1: 44-61, p. 51.

⁴²⁵ Lindenberg, S. and De Vos, H. (1985). "The Limits of Solidarity: Relational Contracting in Perspective and Some Criticism of Traditional Sociology" *Zeitschrift für de gesamte Staatswissenschaft (ZgS)* 14: 558-569. *Journal of Institutional and Theoretical Economics*, p. 559. Lindenberg and De Vos lists some examples of scholars, who have worked in this direction. One of the most prominent of these pitfalls is the systematic lack of attention to limits of solidarity and the concomitant exaggeration of the powers of socialization and internalized norms and values.

⁴²⁶ *Ibid.*, p. 558. Lindenberg and De Vos based their analysis upon Macneil's articles from 1978 and 1983, where Macneil presented and reworked the prominent arguments of his more detailed publications on the subject.

⁴²⁷ *Ibid.*, p. 559. Lindenberg et al., mentions sociologists e.g. Homans (1958); Coleman (1975); transaction costs and property rights economists e.g. Coase (1960); Alchian and Demsetz (1973); Williamson (1975); North (1981); and public choice analysts e.g. Buchanan and Tullock (1962).

⁴²⁸ *Ibid.*

status, role etc., which may be why they debated that Emile Durkheim's (hereinafter, referred to as, "Durkheim")⁴²⁹ view on contract may summarize the biggest concern in relation to a contract that is focused on exchange:

*"(...) a contract is not sufficient unto itself, but is possible only thanks to a regulation of the contract which is originally social... moreover, exchange as we have seen, is not all there is to a contract. There is also the proper harmony of functions occurring. They are not only in contact for the short time during which things pass from one hand to another; but more extensive relations necessarily result from them, in the course of which it is important that their solidarity be not troubled."*⁴³⁰

Durkheim stresses that a contract is more than an exchange, namely the relational aspects. He promised that exchange would be studied in the context of relational aspects. However, Lindenberg and De Vos argued that this study did not occur, thus relational aspects and exchange became each the subject matter of a different discipline.⁴³¹

Different scholars possess different perceptions of the relational context in an exchange and in connection to the contract. Although, it remains that Macneil believed that it was time for a new legal framework to be developed, where contracts were to be seen as relations instead of analogues of spot exchange.⁴³² Macneil emphasised that the future framework would be a "*relational*" contract law, as opposed to the "*classical*" contract law of the late 19th century. As mentioned, this classical contract law is oriented towards discrete transactions

⁴²⁹David Emile Durkheim was a French sociologist, Professor at Sorbonne University. He established sociology as an academic discipline and together with W.E.B. Du Bois, Karl Marx and Maw Weber, they were the architects of modern social science.

⁴³⁰ Durkheim, E. (1933). *The Division of Labor in Society*. The free press of Glencoe, pp.215, 2017. See also Lindenberg, S. and De Vos, H. (1985). "The Limits of Solidarity: Relational Contracting in Perspective and Some Criticism of Traditional Sociology" *Zeitschrift für de gesamte Staatswissenschaft (ZgS)* 14: 558-569. *Journal of Institutional and Theoretical Economics*, p. 559.

⁴³¹ Lindenberg, S. and De Vos, H. (1985). "The Limits of Solidarity: Relational Contracting in Perspective and Some Criticism of Traditional Sociology" *Zeitschrift für de gesamte Staatswissenschaft (ZgS)* 14: 558-569. *Journal of Institutional and Theoretical Economics*, p. 559.

⁴³² *Ibid.*, p. 560.

and thus generates norms that put a premium on a predictable future, no matter what happens to disrupt performance. In terms of neoclassical contract law, it attempts to accommodate relational aspects, but it remains committed to the basic norms of classical contract law and, therefore, remains a poor promise, according to Lindenberg and De Vos.⁴³³

According to Macaulay, the problem arises from confusing of what would be recognized as a more classical model of a contract system with an empirical picture of the relationship between law and the contract process. Here, Macaulay states that a rough sketch of the classical model of the contract process in Western capitalist societies would stress its formal and normative aspects. Formally, it assumes that the rules of contract law will be invoked by the parties and applied by courts; normatively, it holds that they ought to be.⁴³⁴ Macaulay further defines the classical model which starts with the assumption that entrepreneurs need to plan and deal with risk. The entrepreneurs do so by carefully drafting contracts, which they understand and agree upon. This is done, in order to fill any gaps in the language – in the contract - by applying norms reflecting the customs of the commercial community and, importantly, offers remedies that either induce performance or compensate for non-performance.⁴³⁵

The studies, as a whole, show that the empirical picture of the contract process in capitalist societies differ clearly from the classical model. Planning for the risk of non-performance often is done too carefully, and disputes are seldom resolved by litigation or even by applying the norms of contract law outside of litigation.⁴³⁶ The classical model of the contract process may be fit for one-off transactions, such as financing or real estate, but the reality of the modern business,

⁴³³ *Ibid.*

⁴³⁴ Beale, H.G, Bishop, W.D. & Furmston, M.P. (1995). *Contract, Cases and Materials*, (3rd Ed.), Butterworths, p. 678.

⁴³⁵ *Ibid.*

⁴³⁶ *Ibid.*

particularly manufacturing, generally involves long-term continuing relationships.⁴³⁷

1.1.2 The classical model

David Trubek (hereinafter, referred to as, “Trubek”)⁴³⁸ has argued that economic actors will employ the litigation process to settle disputes only to the extent that (1) the present value of continuing relationships is low, and (2) the anticipated return from the litigation process is relatively high. The classical model of the contract process, thus, operates only in a special and limited case where these conditions are met. Max Weber’s (hereinafter, referred to as, “Weber”)⁴³⁹ theories about the role of contract law in the development of capitalism rest on a model of economic relations, in which the typical dispute occurs between firms operating in what would be called a perfectly competitive market. In such conditions, continuing relations have no economic value, and no actor has economic power over another.⁴⁴⁰ According to Macaulay, this raises an interesting question, which barely have been mentioned by authors conducting research within this field: what functions might a classical picture of the contract process serve if it is not an adequate description of what happens. If one shows that business people in all societies compromise differences rather than invoke contract norms to seek victories, rely on a network of contracts, and seek to avoid being dependent on other firms, one must still explain the existence of a widely held, often implicit, picture of the contract process that varies so markedly from reality. A major conclusion to be drawn from these studies is that we should give

⁴³⁷ *Ibid.*

⁴³⁸ Professor of Law and Dean of International Studies Emeritus at the University of Wisconsin-Madison.

⁴³⁹ German sociologist, philosopher, lawyer and political economist.

⁴⁴⁰ Beale, H.G, Bishop, W.D. & Furmston, M.P. (1995). *Contract, Cases and Materials*, (3rd Ed.), Butterworths, p. 678.

further thought to the functions of the classical model. All that can be done here is to offer a very sketchy explanation.⁴⁴¹

The most obvious explanation, according to Macaulay, for the persistence of the classical model, would be that scholars and reformers are unaware that the contract process described in the law books seldom affects behavior directly. Yet, for many, it is an unwillingness to listen rather than unfamiliarity. Some actively resist considering the implications of empirical findings, dismissing them grandly as mere counting. Ignorance can be a partial explanation.⁴⁴² On the other hand, an alternative explanation for the persistence of the classical model of the contract process may be that it is partially accurate. The classical picture may be just an overgeneralization from a biased sample.⁴⁴³

This dissertation seeks to avoid the classical contract model, since the aim is to create a relational contract between the shipowner and supplier and the classical contract model, according to Macaulay, rarely have an effect on the behavior.

1.1.3 The interpretation of the contractual relation

According to Macneil: “We must know who “we” are before we can talk about what “we” do and do not know about anything, including relational contracting.”⁴⁴⁴

Hence, by establishing who “we” are (in order to define a relational contract), the first and most important aspect is to define the parties. As Macaulay states, there can be many “we” and every one of them can be accurate, but it all comes down to the specific situation, since the situation is not static.⁴⁴⁵ After establishing the current “we”, which the dissertation focuses on, i.e. the shipowner and the supplier, then comes the explanation of what is meant by “know”. Macneil stresses that knowledge is a variable thing, meaning that knowledge is a

⁴⁴¹ *Ibid.*

⁴⁴² *Ibid.*, p. 679.

⁴⁴³ *Ibid.*

⁴⁴⁴ Macneil, I. R. (1985). “Relational Contract: What We Do and Do Not Know.” *Wisconsin Law Review*, 4: 483-526, p. 483.

⁴⁴⁵ *Ibid.*

mechanism that keeps on progressing. As an example, once, people thought that the world was flat⁴⁴⁶ until science proved it otherwise.⁴⁴⁷ Thus, as knowledge evolves, so does the understanding of certain things and new philosophies and viewpoints occur, and – thereby - a new knowledge has occurred.

However, one thing is to define knowledge, another thing is to clarify the “levels” of knowledge that each of the parties possess. Macneil is referring to the information asymmetry and how the information flow is defined in regards to the level of information.⁴⁴⁸ In the given situation, this also means to define what is mutual information and how can the parties be sure that this level of shared information is correct. All of this comes down to the interpretation of the giving situation which means that it is based on the interpretation and, by all means, the result is relying on the interpreter itself. When discussing the interpretation, it relies on what kind of “meaning” the interpreter awards it.

In terms of the case, the question is what knowledge does the shipowner and the supplier possess, e.g. do they have equal information about one another and about the contractual relation. Due to information asymmetry in the maritime industry, there is no such thing as complete information, even though it is possible to decrease the level of asymmetric information by collaboration. Therefore, the shipowner and the supplier does not possess equal information. Although, it requires that the shipowner and the supplier will share knowledge. When examining relational contracting, the importance of the analysis is the relational contract dimensions which are divided into three:⁴⁴⁹

⁴⁴⁶ Arguably, some people still believe this is true, though they won't be considered.

⁴⁴⁷ As Macneil states that “hard” knowledge existed in the form of either physical experiments or pragmatic uses of knowledge. He adds, that since new knowledge often destroys old, this statement proves nothing about a net gain of loss from this new knowledge. He believed that an immensely amount of knowledge regarding relational contracts, have been lost, due to our enhanced understanding of utilitarian principles gained over the last centuries. Macneil, I. R. (1985). “Relational Contract: What We Do and Do Not Know.” *Wisconsin Law Review*, 4: 483-526, p. 484.

⁴⁴⁸ *Ibid.*, p. 485.

⁴⁴⁹ *Ibid.*, p. 484.

Figure 4.2 – The three dimensions

The behavioral dimension	The legal dimension	The scholarly dimension
The everyday working relations and transactions or contract behavior	The positive law of the sovereign relating to that behavior	The legal scholarship relating to that behavior

Source: MacNeil⁴⁵⁰

In connection with the case, the three dimensions will need to be considered when discussing the relational contract between the shipowner and the supplier. In order to “know” the contractual behavior, which is the first of the three dimensions, it is crucial to acknowledge that the physical production of goods and services is not carried out through a discrete exchange. Rather, the production of goods and services is done by one or several people who utilize their hands, minds, tools, and/or materials, and often by doing the same patterns continuously – which will be involving or relying upon some kind of relational exchange.⁴⁵¹

However, all relations are connected with and belong to a broader social context, where successful relations must be harmonized. It is possible to draw axes through many facets of contractual relations which indicates the likely features of such facets in relations that fall at different points along the spectrum.⁴⁵² Macneil postulates a number of “norms” which are to be seen in a more positive way. These nine norms are common contract norms, which apply to all contracts:⁴⁵³

⁴⁵⁰ *Ibid.*

⁴⁵¹ *Ibid.*, p. 490.

⁴⁵² *Ibid.*

⁴⁵³ Macneil, I. R. (1982). “The new social contract: An inquiry into modern contractual relations.”, p. 40. See also

- (i) role integrity;
- (ii) reciprocity (or 'mutuality');
- (iii) implementation of planning;
- (iv) effectuation of consent;
- (v) flexibility;
- (vi) contractual solidarity;
- (vii) the 'linking norms' (restitution, reliance and expectation interests);
- (viii) the power norm (creation and restraint of power);
- (ix) harmonization with the social matrix.

By "norms in a positivist sense", Macneil states that they are norms-in-fact, that is to say that they are observable in operation, to distinguish them from norms in the sense of normative as opposed to positive economics.⁴⁵⁴ The extent to which a particular exchange relation is in harmony with the norms is likely to influence the success of the relation in terms of its longevity (where appropriate) and the ability for the parties to gain the full range of benefits that the exchange can potentially offer. The extent to which the actual doctrinal law harmonizes with these norms can arguably determine the usefulness of legal tools and interventions in exchange relations, but it is a complicated question.⁴⁵⁵

These norms, are an expression of behavior, thus these behavioral norms can be used for a better understanding and gives a context for discussing relational contracts.⁴⁵⁶ Thus the norms, should be used to understand the behavior of the parties i.e. the shipowner and the supplier in order to form a relational contract. Therefore this is the essential framework for relational contracting, which is

Macneil, I. R. (1983). "Values in contract: internal and external." *Nw. UL Rev*, 78 and McLaughlin, J., McLaughlin, J., & Elaydi, R. (2014). "Ian Macneil and relational contract theory: evidence of impact." *Journal of Management History*, 20.1: 44-61, p. 52.

⁴⁵⁴ *Ibid.*, p. 41.

⁴⁵⁵ *Ibid.*, p. 42.

⁴⁵⁶ McLaughlin, J., McLaughlin, J., & Elaydi, R. (2014). "Ian Macneil and relational contract theory: evidence of impact." *Journal of Management History*, 20.1: 44-61, p. 53.

important to understand in order to design a relational contract between the shipowner and the supplier. Relational contracting focus on trust, mutual responsibility and connection among people.⁴⁵⁷ In order to construct a relational contract it is important to understand the focus hereof and to use the norms in a positive sense other than the classical contractual sense, whereas the norms are used in a more negative sense, as punishment for not complying with the contract.⁴⁵⁸ This is the basic foundation of using relational contracting.⁴⁵⁹

2. "Contracting" as a buzzword

The previous section has discussed relational contracting and, among other things, the origin hereof. According to MacNeil, it is important to analyze the transaction, thus this is the main focus. Lindenberg and De Vos stated in 1985 that: "(...)contracting has become a household word"⁴⁶⁰ but, since then, *contract* has become some kind of a buzzword. In this connection, chapter 2 discussed maritime contracting and chapter 1 introduced figure 1.1 which illustrates some of the many contractual relations that occur in the maritime industry.⁴⁶¹ Even though contracts are everywhere, they still come in many forms. Especially, the contract purpose is relevant which is why it is necessary to clarify where some of the contract theories belong and to see whether they are applicable in the relational contract between the shipowner and the supplier. Some of the contract

⁴⁵⁷ Beale, H.G, Bishop, W.D. & Furmston, M.P. (1995). *Contract, Cases and Materials*, (3rd Ed.), Butterworths, p. 699.

⁴⁵⁸ Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*. Authors translation – original Language; Danish. P.72

⁴⁵⁹ Beale, H.G, Bishop, W.D. & Furmston, M.P. (1995). *Contract, Cases and Materials*, (3rd Ed.), Butterworths, p. 699.

⁴⁶⁰ Cheung, S. N. S. (1983). "The Contractual Nature of the Firm." *Journal of Law and Economics*, 26: 1-21, p. 20. See also Lindenberg, S. and De Vos, H. (1985). "The Limits of Solidarity: Relational Contracting in Perspective and Some Criticism of Traditional Sociology" *Zeitschrift für de gesamte Staatswissenschaft (ZgS)* 14: 558-569. *Journal of Institutional and Theoretical Economics*, p. 559. This was also mentioned in section 1.1 An introduction to Relational contracting.

⁴⁶¹ Figure 1.1. uses freight contracts, maintenance supply, loans as examples of contracts. However, there are a variety of other contracts which might or does occur. Such as chartering contracts, newbuilding contracts, sale and purchase contracts, insurance etc.

forms, which will be discussed, is leaning towards partnering which thus makes them relevant to observe.⁴⁶²

Thus, when studying contracting, several definitions occur due to several opinions. Some academics write about performance-based contracting, others focus on outcome-based contracting, and a third part writes about relational contracting. Although the difference between these is hard to find, some argue that they are in fact pretty much the same.⁴⁶³

However, the common thing about these contract forms, is that they all have the transaction in focus. Therefore the dissertation will discuss some of these contract forms, as an illustration to the purpose of partnering agreements which will be discussed in the next chapter.

2.1 Outcome-based contracts

Outcome-based contracts (hereinafter, referred to as, “OBC”) have gained increasing attention over the recent years, both in academia and in practice.⁴⁶⁴ Current literature has progressed the discussion of value, from value-in-exchange towards value-in-use.⁴⁶⁵ Thus, the essence of the OBC’s is the buying of relevant business outcomes rather than resources required to their provision e.g. spare parts or repair actions.⁴⁶⁶ OBC’s are mainly used to create a possibility to align the interests of the customer (e.g. the shipowner and the supplier), and contrary compensate the supplier based on the same outcome that the

⁴⁶² Section 7. Maritime contracts and 8.2.3 Newbuilding contracts in chapter 2, discussed maritime contracts in general and some specific contract templates which are relevant for the dissertation.

⁴⁶³ Martin, L. L. (2005). "Performance-based contracting for human services: Does it work?" *Administration in Social Work*, 29.1: 63-77.

⁴⁶⁴ Kim, S., Cohen, M. A. & Netessine, S. (2007). "Performance contracting in after-sales service supply chains." *Management Science* 53(12): 1843-1858; Cited in Böhm, E., Backhaus, C., Eggert, A., Cummins, T., Barton, T., Berger-Walliser, G., & Haapio, H. (2016). "Understanding outcome-based contracts: Benefits and risks from the buyers' and sellers' perspective". *Journal of Strategic Contracting and Negotiation*, 2(1-2): 128-149, p. 129.

⁴⁶⁵ Ng, I. CL., & Nudurupati, S. S. (2010). "Outcome-based service contracts in the defence industry-mitigating the challenges." *Journal of Service Management*, 21.5: 656-674, p. 657. According to Ng, et al., value is now described as that which is evaluated by the customer, rather than the currency for the transfer of ownership of a particular good. See also Porter M., (1990). *The Competitive Advantage of Nations*. Free Press, p. 162.

⁴⁶⁶ *Ibid.* See also Böhm, E., Backhaus, C., Eggert, A., Cummins, T., Barton, T., Berger-Walliser, G., & Haapio, H. (2016). "Understanding outcome-based contracts: Benefits and risks from the buyers' and sellers' perspective". *Journal of Strategic Contracting and Negotiation*, 2(1-2): 128-149, p. 129.

shipowner cares about (i.e. products utilization), and therefore the supplier is encouraged to create better products and increase the product performance.⁴⁶⁷

According to Irene Ng,⁴⁶⁸ David Xin Ding⁴⁶⁹ and Nick Yip⁴⁷⁰ (hereinafter, referred to as, “Ng et al.”), the literature involves several themes which contribute to the significant concepts of a business model. These themes are:

1. *Value drivers – these are defined as value-creating activities or transformations that generate revenue for the firm.*⁴⁷¹
2. *The performance of a company, through the change in such value drivers, is an essential element in a business model.*⁴⁷²
3. *The formation of successful partnership is a feature of new business models.*⁴⁷³

According to Benoît Demil⁴⁷⁴ and Xavier Lecocq⁴⁷⁵ (hereinafter, referred to as, “Demil and Lecocq”), the firm’s *value chain of activities* should include the fostering of partnerships as part of the construction of a business model. Evidently, business models exhibit a need to be value-driven, partnership-

⁴⁶⁷ *Ibid.*

⁴⁶⁸ Professor of Marketing and Service Systems at University of Warwick, UK.

⁴⁶⁹ Assistant professor in the Information and Logistics Technology Department at the University of Houston.

⁴⁷⁰ Lecturer in Marketing at the Norwich Business School, University of East Anglia, UK.

⁴⁷¹ Ng, I. CL, David Xin Ding, and Nick Yip. (2013). "Outcome-based contracts as new business model: The role of partnership and value-driven relational assets." *Industrial Marketing Management*, 42.5: 730-743, p. 730. These value drivers are seen as key elements for businesses and new business models are often a result of a change in regards to the value drivers.

⁴⁷² Wirtz, B. W., Schilke, O., & Ullrich, S. (2010) "Strategic development of business models: implications of the Web 2.0 for creating value on the internet." *Long range planning* 43.2-3: 272-290., p. 280. Cited in *Ibid.* The performance of business models is defined as something which requires a joined-up, systems-focused and holistic understanding across the company's current resources and capabilities, in order to retain or achieve a competitive advantage in the industry in which it operates as environmental conditions change.

⁴⁷³ Johnson, M.W., Christensen, C.M., & Kagermann, H. (2008). "Reinventing your business model." *Harvard Business Review*, 86(12): 50–59. Cited in *Ibid.* A successful partnership is grounded in strategy literature where the ability to construct a strong partnership is recognized as a core competency.

⁴⁷⁴ Professor of Strategic Management and Organizational Theories at the Institut d'Administration des Entreprises, the management department of the University of Lille.

⁴⁷⁵ Professor of Strategic Management and Entrepreneurship at University of Lille.

focused, and with focus on the value-creating system that exceed traditional boundaries.⁴⁷⁶

Additionally, it is important to understand the difference between *interorganizational* and *intraorganizational* activities, which add to the system where profits are derived from its performance. Despite of the above, Ng et al., argue that: “...there are three major gaps in business model literature.” Ng et al., has listed them as follows:

“First, new business models emerge across different industries in different ways and there may be greater heterogeneity in both their theoretical conceptualization and their empirical and practice characterization. This is evidenced by the number and the inconsistency of “Key concepts” that seem to emerge from the literature, as well as by the different definitions of a business model ranging from “an underlying core logic”⁴⁷⁷ to “system manifested in components.””

“Second, it is also important not only to understand the key concepts, but also to appreciate how these concepts – such as value drivers, partnerships, customer-centricity – relate to one another both theoretically and empirically, and how they manifest themselves in practice for different types of business models.”

“Finally, since business models investigations require a holistic approach, there should be a concerted attempt to bring together existent approaches of the various disciplines of marketing, strategy, operations, and OBHRM⁴⁷⁸ in a trans-disciplinary manner and into an empirical context, to understand the characterization of new business models - in order to both critique and draw insights into the intra-disciplinary assumptions.”⁴⁷⁹

⁴⁷⁶ Demil, B., and Lecocq, X. (2010) "Business model evolution: in search of dynamic consistency." *Long range planning* 43.2-3: 227-246. See also Zott, C., & Amit, R. (2010). "Business model design: an activity system perspective." *Long range planning* 43.2-3: 216-226 and Ng, I. CL, David Xin Ding, and Nick Yip. (2013). "Outcome-based contracts as new business model: The role of partnership and value-driven relational assets." *Industrial Marketing Management*, 42.5: 730-743, p. 730.

⁴⁷⁷ Shafer, S. M., Smith, H. J., & Linder J. C. (2005). "The power of business models." *Business horizons* 48.3: 199-207, p. 205.

⁴⁷⁸ Organizational behavior and human resource management.

⁴⁷⁹ *Ibid.* See also Tikkanen, H., et al. (2005). "Managerial cognition, action and the business model of the firm." *Management decision* 43.6: 789-809, p. 792.

Ng et al., argues that – in order to understand business models - it is important to acknowledge that a sole focus on the key concepts, are not always explanatory. Contrary, it is important to comprehend and understand the entire business model and what factors that are relevant within this. Ng et al., argues that in order to approach a current or new business model, it is essential to understand the importance of value-drivers, partnerships, strategies, OBHRM etc. Companies who use OBC's have changed their focus from the classical sale and purchase situation to a customized business situation. Since, OBC's are focused on the customer and the customers value of the product. Especially the value is a key element, as it now describes value as that which is evaluated by the customer, rather than the currency for the transfer of ownership of a particular good.⁴⁸⁰ OBC's are a form of relational contract, as the focus has become on the transaction and the value hereof.

OBC's have – as mentioned previously – become more common in today's businesses. However, OBC's is not a new concept, but these OBCs have a longer history in certain markets such as airlines (e.g. Rolls Royce), defense, logistics, as well as health care and public services. However, recently, a wide range of suppliers in diverse industries experiment with this business model.⁴⁸¹ This trend is due to several drivers, such as the ongoing service transition of goods-based manufacturing companies,⁴⁸² the growing demands of customer firms which increasingly pressure their suppliers to show them value for money,⁴⁸³

⁴⁸⁰ Ng, I. CL., & Nudurupati, S. S. (2010). "Outcome-based service contracts in the defence industry-mitigating the challenges." *Journal of Service Management*, 21.5: 656-674., p. 657.

⁴⁸¹ Ng, I. CL, David Xin Ding, and Nick Yip. (2013). "Outcome-based contracts as new business model: The role of partnership and value-driven relational assets." *Industrial Marketing Management*, 42.5: 730-743, p. 732. See also Böhm, E., Backhaus, C., Eggert, A., Cummins, T., Barton, T., Berger-Walliser, G., & Haapio, H. (2016). "Understanding outcome-based contracts: Benefits and risks from the buyers' and sellers' perspective". *Journal of Strategic Contracting and Negotiation*, 2(1-2): 128-149, p. 129.

⁴⁸² Ostrom, A. L., et al. (2010). "Moving forward and making a difference: research priorities for the science of service." *Journal of service research*, 13.1: 4-36; Cited in *Ibid*.

⁴⁸³ Terho, H., et al. (2012). "It's almost like taking the sales out of selling'—towards a conceptualization of value-based selling in business markets." *Industrial Marketing Management* 41.1: 174-185; Cited in *Ibid*.

and the ever-increasing global competition which forces supplier firms to find innovative ways of differentiating their market offer.⁴⁸⁴

OBC's is highly relevant in regards to the supplier as this is a potential business model in which they could consider using. The focus of the OBC is the transaction, hence the value of the customer. Many business is reviewing their business models in order to gain new market shares and gain competitive advantages, by differentiate their products.⁴⁸⁵

2.1.1 Equipment-based services

According to Ng et al, equipment-based services have traditionally been contracted on the basis of revenue-generating activities, materials, and on time required to maintain, repair, or overhaul equipment such as engines and elevators.⁴⁸⁶ According to Ng. et al., this often results in provider opportunism, since the very activities which disrupt the customer's use of the equipment are those that generate revenue for the firm and, thus, the firm has less incentive to ensure the long term care of the customer's equipment.⁴⁸⁷

Rolls Royce's "Power-by-the-hour®", which is an outcome-based contract, is not paid based on the service activities such as material and repairs, but is based on the outcome of such activities in continual use situations, i.e. the number of hours of engine use in the air. This is analogous to the well-known story in marketing

⁴⁸⁴ Ulaga, W., & Eggert, A. (2006). "Value-based differentiation in business relationships: Gaining and sustaining key supplier status." *Journal of marketing* 70.1: 119-136; Cited in *Ibid.* See also Porter M., (1990). *The Competitive Advantage of Nations*. Free Press, p. 162.

⁴⁸⁵ Porter M., (1990). *The Competitive Advantage of Nations*. Free Press, p. 162.

⁴⁸⁶ Ng, Irene CL, David Xin Ding, and Nick Yip. "Outcome-based contracts as new business model: The role of partnership and value-driven relational assets." *Industrial Marketing Management* 42.5 (2013);, p. 731.

⁴⁸⁷ *Ibid.*

of being paid for holes-in-walls,⁴⁸⁸ rather than for the maintenance, repair, and upkeep of the drill.⁴⁸⁹

This new business model is challenging, due to continual use of equipment sits within the customer's space and requires the customer's resources to achieve their own goals. From the delivery standpoint, OBC is unlike traditional service contracts where there is a progressive process.⁴⁹⁰ In OBC, there is usually no sequential "value chain" and, thus, effective use of equipment is a consequence of collaborative processes and practices with the customer in a value-creating system where the sole purpose is to achieve positive outcomes. To achieve the performance of an "outcome" is therefore dependent on the nexus of logistics, relationships, operations and management within the system and how they come together effectively in such a way that the engines continue to generate power and the planes continue to fly. Such a system requires a complete rethink of the firm's business model and its capability, in particular its ability to cooperate mutually with the customer. Ng et al. argue that such a business model capability would require all stakeholders to invest in relational assets that are both value-driven and partnership-focused.⁴⁹¹

In this case with the shipowner and the supplier, this is highly relevant. Based on the above, there are different takes on how to optimize a maintenance situation, although the key ingredient is the relational factor. For the shipowner and the supplier to actually engage in a relational context, they both need to rethink their business strategy and need to understand that this is an actual cooperation, where both parties need to collaborate evenly in order to make it work. Therefore, besides having to rethink the business model, the supplier needs to

⁴⁸⁸ Professor Theodore Levitt has stated that people do not want to buy a quarter-inch drill. They want a quarter-inch hole. Levitt, T. (1960). Marketing myopia. *Harvard Business Review*, 45-56.

⁴⁸⁹ Ibid., Cited in Ng, I. CL, David Xin Ding, and Nick Yip. (2013). "Outcome-based contracts as new business model: The role of partnership and value-driven relational assets." *Industrial Marketing Management*, 42.5: 730-743., p. 731.

⁴⁹⁰ Call comes in, processes triggered, equipment repaired, activities invoices.

⁴⁹¹ Ng, I. CL, David Xin Ding, and Nick Yip. (2013). "Outcome-based contracts as new business model: The role of partnership and value-driven relational assets." *Industrial Marketing Management*, 42.5: 730-743, p. 731.

ensure that it is able to perform this kind of service, as otherwise, this partnership will be a dead-end solution which will collapse within a short amount of time, due to the lack of performance from the supplier. On the other hand, the shipowner needs to be prepared for a partnership of this calibre, and have the right incentives to create and maintain the agreement in the partnership.⁴⁹²

2.1.2 Performance as a relational asset

According to the study by Ng et al., OBC performance depends on the relational assets of behavioural and information alignment, rather than on material/equipment process alignment (i.e. the joint supply chain). This suggests that OBC – as a business model - has to completely adjust how the supply chain regarding equipment performance should be designed and configured for consistent use outcomes, since the system of material and equipment use interacts with other value drivers and is no longer linear, but holistic.⁴⁹³ Another result from the study revealed that the alignments are driven by partnership inputs of opposite competencies and correspondence of expectations, and the relationships are further facilitated by the control and empowerment of individuals. This means that the complicated value-creating system in OBC includes several management interactions in order to achieve contract performance, hence it is a challenge to understand where the management begins and where the operations end.⁴⁹⁴

⁴⁹² *Ibid.*

⁴⁹³ *Ibid.*

⁴⁹⁴ *Ibid.* These cross-function interactions suggest that more research is needed on how firms could be better organized to achieve the outcomes with their customers in this new business model, but also to consider how disciplinary knowledge can stay relevant when the boundaries between them collapse.

In management studies, the research appears to have grown independently with little cross-disciplinary understanding.⁴⁹⁵ However, despite different views, most researchers seem to agree that business models include concepts that relate to: *firm's value offering; economic model; customer interface and relationships; partner network and roles; internal infrastructure/connected activities; and target markets.*⁴⁹⁶

Within Ng et al.'s study,⁴⁹⁷ common themes have risen from its substantial body of research. Scott Shafer,⁴⁹⁸ H. Jeff Smith,⁴⁹⁹ and Jane C. Linder⁵⁰⁰ (hereinafter, referred to as, "Shafer et al.") and Alexander Osterwalder⁵⁰¹ and Yves Pigneur⁵⁰² (hereinafter, referred to as, "Osterwalder & Pigneur") suggest that business models consist of four primary components:⁵⁰³

⁴⁹⁵ *Ibid.* p. 732.

⁴⁹⁶ Morris, M., Schindehutte, M. & Allen, J. (2005). "The entrepreneur's business model: toward a unified perspective." *Journal of business research*, 58.6: 726-735, p. 792;

⁴⁹⁷ Ng, I. CL, David Xin Ding, and Nick Yip. (2013). "Outcome-based contracts as new business model: The role of partnership and value-driven relational assets." *Industrial Marketing Management*, 42.5: 730-743., p. 732.

⁴⁹⁸ Professor of Management at Wake Forest University.

⁴⁹⁹ Late Professor at the Department of Information Systems at Miami University.

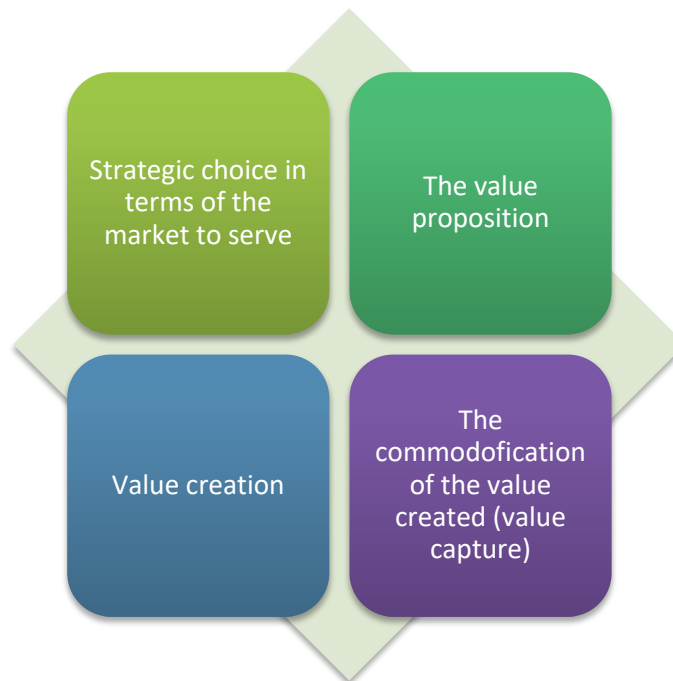
⁵⁰⁰ Professor at Accenture Institute for Strategic Change.

⁵⁰¹ Swiss business theorist and author.

⁵⁰² Professor of Management Information systems at University of Lausanne.

⁵⁰³ Shafer, S. M., Smith, H. J., & Linder J. C. (2005). "The power of business models." *Business horizons* 48.3: 199-207., p. 202 Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: A handbook for visionaries, game changers, and challengers*. Hoboken, NJ: John Wiley & Sons., p. 232. Cited in Ng, I. CL, David Xin Ding, and Nick Yip. (2013). "Outcome-based contracts as new business model: The role of partnership and value-driven relational assets." *Industrial Marketing Management*, 42.5: 730-743, p. 732.

Figure 4.3 - Four elements of a business model



Source: the author's creation

These four components which is illustrated in figure 4.3., is relevant for companies, as they illustrate the essential elements of a business model.

OBC's are a value creating business solution, which is much a like servitization or partnering. The elementary point is the value creating part, in which one company can provide another company with an added value, by understanding the buyer of the product. In the end, the company who comprehends to sell value to their customers, are those who gain an competitive advantage. Therefore OBC's have further establish the value creating point, which the shipowner and the supplier needs to address in order create a successful partnership.

3. Concluding remarks

The purpose of this dissertation is to optimize the contracting in the maritime industry in order to increase the value creation. It has been suggested that this could be achieved through relational contracting between the supplier and the shipowner.

Thus, this chapter introduced relational contracting as a concept and illustrated through Macneil that such a contract as a discrete exchange transaction, where no relations are established between the parties, does not exist in practice. Therefore, it can be argued that there may not be much difference between a classical contract and a relational contract.

The biggest challenge in terms of achieving a successful relational contract is to convince the parties to disclose all knowledge and information. This dissertation has previously mentioned the information asymmetry of the maritime industry and the question is, thus, whether it would be possible to decrease the asymmetry in order to achieve full information between the parties. If both the parties agree upon full disclosure of knowledge and information, it is - in theory - possible to eliminate the information asymmetry, but it requires trust between the parties. However, given that the parties achieve this, it will arguably influence the parties' performance as well, as performance will come to function as a relational asset.

Furthermore, this chapter addressed OBC's as an alternative relational contract. OBC's are - as relational contracting - focused on the transaction. OBC's are an alternative business model, which main focus is on the value creating aspect. It is important to understand the value creating element in order to become more competitive.

In order for the shipowner and the supplier to create a collaboration between them, they need to be aware of how to create value for one another. On another

note it is important for both the shipowner and the supplier to consider the four factors in figure 4.3, in order to better understand their business, when creating the relational contract between them. The chain of values, which has been discussed in this chapter, should – for the shipowner and the supplier - be seen in conjunction with the discussions in chapter 5 and 6.

Chapter 5: Partnering – a relational contracting solution

1. Introduction

The previous chapter focused on relational contracting, whereas this chapter solely will focus on partnering as a form of relational contracting. Therefore, it is essential to focus on what partnering is, how it works, and how it can be a solution for the shipowner and the supplier, as an approach to optimize their business and become more innovative. Thus, interfirm strategic alliances like partnering appear to have become more important as a part of (international) business.⁵⁰⁴ However, the question is which motives will lead firms to collaborate in their effort to become more innovative. This will be discussed further in order to establish the incentives that lead the parties to cooperate and the outcome hereof. John Hagedoorn (hereinafter, referred to as, “Hagedoorn”)⁵⁰⁵ has made some observations regarding this and states: *“When going beyond theoretical statements and case studies, attention is paid to both sectoral differences in the motivation for partnerships, as well as to contrast in interorganizational features of technology cooperation.”*⁵⁰⁶ Therefore, the hypothesis is that when engaging in partnering contracts, the parties change from being parties to become partners

⁵⁰⁴ To name a few in relevance to Denmark. Danske Bank announced their engagement in a strategic alliance with Tryg; Maersk Line; and Alibaba and has collaborated with the creation an online booking system called Gangweibao. For further information see also; in reference to Danske Bank and Tryg, Press Release from Danske Bank November 12th 2018, <https://danskebank.com/da/news-og-insights/nyhedsarkiv/press-releases/2018/pm12112018>. Last visited January 29th 2019. . and in reference to Maersk Line and Alibaba, <https://www.reuters.com/article/us-alibaba-maersk/maersk-alibaba-team-up-to-offer-online-booking-of-ship-places-idUSKBN1400S7>. Last visited January 16th 2019. Also see chapter 4 for outcome based contracting.

⁵⁰⁵ Professor of Strategic Management at the faculty of Economics and Business Administration of Maastricht University.

⁵⁰⁶ Hagedoorn, J. (1993). "Understanding the rationale of strategic technology partnering: Interorganizational modes of cooperation and sectoral differences." *Strategic management journal* 14(5): 371-385, p. 371.

through the formation of a collaborative team which has common goals and objectives either through a binding⁵⁰⁷ partnering contract or through a non-binding contract.⁵⁰⁸

There may be several reasons as to why parties engage in partnering. Joseph L. Badaracco, Jr. (hereinafter, referred to as, “Badaracco”)⁵⁰⁹ describes four customary reasons for why parties choose to engage in a partnership with competitors:

1. Reduce competition in order to raise profits or to serve other purposes.
2. Risk sharing, as some projects are too large or too exposed for a single firm to handle.
3. Bundle complementary resources. E.g. If one company can invent products, but not sell them, contrary another can sell, but not invent, thus they may form a joint enterprise.
4. Overcome market barriers by collaboration.⁵¹⁰

Kathryn Rudie Harrigan (hereinafter, referred to as, “Harrigan”),⁵¹¹ has tried to make a more complete list – in addition to Badaracco - of the value-drivers for companies to enter into a partnering agreement. Harrigan has categorized the list in the following sections;⁵¹²

- *Internal*
- *Competitive*
- *Strategic*

⁵⁰⁷ Partnering contracts are considered binding in the UK and Denmark.

⁵⁰⁸ Partnering contracts are not binding in the US, however, they are characterized as Letter of Intent. Tvarnø, C. D. (2015). "To bind or not to bind: It's in the contract Formalizing collaboration through partnering contracts in the US, British and Danish construction industries." *Journal of Strategic Contracting and Negotiation*, 1.4: 288-314 p. 289.

⁵⁰⁹ Professor of Business ethics at Harvard Business School.

⁵¹⁰ Badaracco, J. (1991). *The knowledge link: How firms compete through strategic alliances*. Harvard Business School Press, p. 7-8.

⁵¹¹ Professor of Business Leadership at Columbia University Graduate School of Business.

⁵¹² Harrigan, K. (1986). *Managing for joint venture success*. Lexington, mass, p. 16.

Within these sections Harrigan has listed several factors that are important for the company. Some of these factors are divided into the three sections, which is illustrated in table 5.1. However, this will be discussed further below.

Additionally, the selling and purchasing processes in the maritime industry (and other industries that e.g. produce vehicle components) has developed to be an industry where the requested components are acquired directly from a supplier. This was already noticed in the beginning of the 1980's where Donald Peterson, President of Ford, stated:

*"I think world trade in built-up vehicles will be largely replaced by trade in vehicle components (...) The distinction between imports and domestics could very well become meaningless."*⁵¹³

Therefore, in this chapter, the focus will be on partnering as a concept; both in terms of what partnering is and how it works in practice. The chapter will also analyze how value creation is defined and how it is created between parties, as value may be another influential factor to motivate the parties. Also, the chapter will illustrate how other industries (the pharmaceutical industry and the construction industry) engage in partnering, as well as what the risks of partnering are. When all these aspects of partnering have been discussed, the remaining chapter will discuss how partnering ought to influence the maritime industry.

⁵¹³ Donald Peterson, President of Ford quoted In the International Herald Tribune, September 19, 1981. Cited in Reuer, J. (2009). *Strategic Alliances: Theory and Evidence* (Oxford Management Readers). Oxford University Press p. 28.

2. Rationales for collaboration

In addressing the conditions necessary for entering into a collaborative relationship, it is necessary for the dissertation to illustrate the viewpoint of any one party and examine the contribution it makes to a given party's strategy. It is critical to keep the strategy of one party in mind. How central is the particular business domain of a joint collaboration for the party. What possible opportunity losses must the party estimate with, as a consequence of joint collaboration, such as limitations on future strategic flexibility and alternative use of management's capacity – these losses are to be compared to the benefits of the collaboration. Further examination of the overall benefit/cost balance of collaborative relationships will be examined further below. For the moment, the benefits will primarily be discussed, i.e. the reasons for forming joint collaboration.⁵¹⁴

As states previously, Harrigan has set out three overall sections as a grouping of value-drivers and specified these sections by adding specific objects, as a clarification of the value-drivers for the parties. These are illustrated in table 5.1.

⁵¹⁴*Ibid.*, p. 26.

Table 5.1 – Motivational factors for partnerships

Internal	Competitive	Strategic
<ul style="list-style-type: none"> -Cost and risk sharing Finance supplement -Output sharing (brands, distribution channels etc. -Intelligence (information and technologies) -Innovative managerial practices -Retain entrepreneurial employees 	<ul style="list-style-type: none"> -Industry influence (reduce competition; develop new industries; Adjust current industries) -“First-mover” advantages -Reaction to industry limits and globalization -Creation of effective competitors 	<ul style="list-style-type: none"> -Form and explore synergies -Transfer of technology (or other skills) - Diversification (e.g. new markets, products or skills)

Source: Harrigan⁵¹⁵

These factors are value-drivers for the companies to enter into a joint collaboration.

According to Jeffrey J. Reuer (hereinafter, referred to as, “Reuer”)⁵¹⁶ joint collaborations, licensing, joint ventures and other types of collaborative agreements can achieve several overlapping objectives.

- a) risk reduction
- b) economies of scale and/or rationalization
- c) technology exchanges
- d) co-opting or blocking competition
- e) overcoming government-mandated trade or investment barriers,

⁵¹⁵ Harrigan, K. (1986). *Managing for joint venture success*. Lexington, mass, p. 16. Harrigan has made a further detailed list, however table 5.1 should in overall cover them all.

Professor Harrigan’s outline is a great tool in order to define each party’s motives which is essential in order to structure the partnering agreements. The explanations from the leading academics above provide a useful framework in order to understand the partnering agreements from a theoretical perspective, although the CEO’s, CFO’s and other corporate development staff may have a less academic approach and a more practical understanding of the partnering agreements

⁵¹⁶Guggenheim Endowed Chair and Professor of Strategy and Entrepreneurship at the University of Colorado.

- f) *facilitating initial international expansion of inexperienced firms, and*
- g) *vertical quasi-integration advantages of linking the complementary contributions of the partners in a "value chain."*⁵¹⁷

Reuer has listed these seven objectives, which, arguably, can be classified under Harrigan's three sections; are aligned with Harrigan's objectives in table 5.1; and there are certain similarities with the four elements set out by Badaracco. Thus, there are certain alignments in theories of the objectives set out by academics.

Reuer argues, in a broad sense, that when examining the benefits of joint collaboration, the value creating point are typically through either a *vertical* or *horizontal* agreement.⁵¹⁸ Furthermore Reuer states, when studying a vertical agreement - value-addition - within a joint collaboration, it is convenient to use the value chain approach⁵¹⁹ suggested by Michael E. Porter⁵²⁰ (hereinafter, referred to as, "Porter").

Porter states that:

*"A firm may possess two types of competitive advantage: low relative cost or differentiation – its ability to perform the activities in its value chain either at lower cost or in a unique way relative to its competitors.(...) Competitive advantage is a function of either providing comparable buyer value to competitors but performing activities efficiently (low cost), or of performing activities at comparable cost but in unique ways that create greater buyer value than competitors and, hence, command a premium price (differentiation)."*⁵²¹

⁵¹⁷ Reuer, J. (2009). *Strategic Alliances: Theory and Evidence* (Oxford Management Readers). Oxford University Press, p. 26.

⁵¹⁸ *Ibid.*

⁵¹⁹ Porter, M. E. (1986). "Changing patterns of international competition." *California management review* 28.2: p. 13-14.

⁵²⁰ Professor in Management and Economy at the Department of Strategy and Competitiveness at Harvard Business School.

⁵²¹ *Ibid.*

In regards to Porters value chain approach – value creation – Reuer states:

“The combined efforts of all partners must add up to a value chain which can produce a more competitive end result. It is important that the parties have complementary strengths which cover all relevant knowhow dimensions needed, and that the strategies of the parties are compatible and not in conflict. Instead of the partners making complementary contributions, an alternative model of cooperation is one in which the partners provide similar inputs to the venture.”⁵²²

Reuer’s foundations for the latter can be limited to excess capacity, to achieve a reduction in risk through joint efforts and cost savings. Both models exist in international cooperative ventures, but their relative incidence and stability are not definitely known.⁵²³

Both Porter and Reuer are emphasizing the importance of the value chain and how it is important that both parties within a joint collaboration add to the value chain. However, all companies have different value-drivers i.e. motivational factors. An important and difficult task in regards to partnering agreements is to identify and understand each party’s motive.⁵²⁴ In order to create a relational contract between the shipowner and the supplier, the parties’ value-drivers are essential and needs to be defined. Thus, based on Badaracco, Harrigan and Reuer’s rationales for joint collaboration, the shipowner and the suppliers possible rationale for joint collaboration, lies within the possibility of an optimization of the value chain, risk reduction and the benefits of a competitive advantage. The specific value-drivers of the shipowner and the supplier will be discussed further below.

⁵²² Reuer, J. (2009). *Strategic Alliances: Theory and Evidence* (Oxford Management Readers). Oxford University Press, p. 26.

⁵²³ *Ibid.*

⁵²⁴ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer, P. 1-8.

3. The theory of partnering

The globalization has changed the way in which companies, in all kinds of branches and industries, are seeking to maximize their profit and reduce their costs. Arguably, the companies' main focus used to be how to minimize the variable costs, but now there has been a change in their way of thinking of costs. The way of consolidating is no longer the essential aspect and the companies are not obliged to deliver the entire value chain themselves. Instead, outsourcing and strategic alliances are the keyword to the global economy, where both options have been keys to success in terms of creating a bigger growth and increase the profit.⁵²⁵

Businesses have used partnering agreements since the early 1980s and, due to the biotechnology companies, the visibility and number of these agreements has increased over the years. As an example, biotech companies began using partnering agreements to help finance the enormously expensive clinical development of human therapeutic products.⁵²⁶ Ever since, other industries have embraced this structure. The increasing global competition and the accelerating pace of technological innovation are key factors behind this proliferation and the commercialization of the internet, which has substantially increased the agitation.⁵²⁷ Nevertheless, according to Thomas F. Villeneuve,⁵²⁸ Robert V. Gunderson, Jr.,⁵²⁹ Colin D. Chapman,⁵³⁰ David P. Sharrow,⁵³¹ and Timothy H. Ehrlich,⁵³² (hereinafter, referred to as, "Villeneuve et al.,") no one can dispute that

⁵²⁵ Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*, p. 68 – Original Language; Danish – Authors Translation.

⁵²⁶ *Ibid.*, p. 68-69.

⁵²⁷ *Ibid.*

⁵²⁸ American lawyer and leading practitioner in corporate partnering and strategic alliances.

⁵²⁹ American lawyer and leading expert within in emerging growth companies and venture capital.

⁵³⁰ American lawyer and – among others – specialized in corporate partnering and strategic alliances.

⁵³¹ American lawyer and – among others – specialized in corporate partnering and strategic alliances.

⁵³² American lawyer and – among others – specialized in corporate structuring's and business strategies relating to strategic alliances.

partnering agreements has become a main feature of both domestic and international business landscapes.⁵³³ Thus, this is highly relevant for the shipowner and the supplier, in order to maximize their business and become a part of the technological innovation and take advantage hereof.⁵³⁴

The essential approach towards a partnering agreement is to build a customized agreement in order to meet the parties' *special needs, strategies, objectives, and circumstances*.⁵³⁵ Thus, partnering agreements are varied and thereby, arguably, difficult to define in theory, although in a practical matter, these agreements are easier to spot. Partnering agreements fall in the large grey area between traditional contractual agreements and corporate acquisitions.⁵³⁶ This broad scope is believed to lend flexibility to the partnering vehicle that, according to Villeneuve et al., ensures its immediate usefulness and long-term viability.⁵³⁷

Partnering should be seen as an organized way of improving the communications on specific projects and is especially used within the construction business. According to William Ronco⁵³⁸ and Jean Ronco⁵³⁹ (hereinafter, referred to as, "Ronco and Ronco"), if designed and implemented correctly, the presumption is that partnering can improve project communications, profitability, and the quality, while at the same time reduce costs, conflicts, and exposure to litigation.⁵⁴⁰

⁵³³ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer, P. 1-1. (Part I)

⁵³⁴ This is in reference to section 2: rationales for collaboration, where the benefits of joint collaboration was highlighted. Furthermore chapter 2 discussed the maritime industry and its structure and this should be in mind, for the shipowner and supplier to seek a competitive advantage.

⁵³⁵ *Ibid.* This is also in reference to the discussion on relational contracting and outcome based contracting in chapter 2. This will also be further discussed below.

⁵³⁶ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer, P. 1-2. See also discussion on relational contracting in chapter 2. See Reuer, J. (2009). *Strategic Alliances: Theory and Evidence* (Oxford Management Readers). Oxford University Press, p. 23 and Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*, p. 72-73.

⁵³⁷ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer, P. 1-2.

⁵³⁸ Director at the Science and Technology Leadership Institute at Cambridge Healthtech Institute, former Professor at Northeastern University and international expert on partnering.

⁵³⁹ Co-Director of the Center for Business Partnering at GATHERING PACE, INC. She has an Ed.M. from Harvard University.

⁵⁴⁰ Ronco, W. C. & Ronco, J. S. (1996). *Partnering manual for Design and Construction*. McGraw-Hill, p. 1. See also Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og*

Partnering can be characterized as a company strategy, but also a form of an agreement which is used as a tool for implementing a strategic alliance.⁵⁴¹ Companies that want to create a strategic alliance can either use the traditional way of contracting, where both parties seek to increase their own benefit and profit, *or* they can make use of a partnering contract, in which both parties' interests will jointly be optimized, where the parties negotiate their way into the best possible contract.⁵⁴² Both parties are trying to optimize the common goal/purpose with their contract and therefore not just their own benefits. This dissertation defines partnering contracts as a relevant alternative to relational contracts, when creating a strategic alliance or any other long-term relationship with a certain degree of frequency and specificity.⁵⁴³

According to a study made by the three professor(ter)s; Christina D. Tvarnø,⁵⁴⁴ Grith Ølykke⁵⁴⁵ and Kim Østergaard,⁵⁴⁶ (hereinafter, referred to as, "Tvarnø et al.,") companies who require to engage in a strategic alliance have two options:

- *traditional contracting*
- *partnering agreement*

As mentioned previously, for the company i.e. the shipowner and the supplier, to choose the traditional contracting, this means that each party seeks to self-optimize, whereas a partnering agreement focus on joint optimization and therefore, together, the parties choose the ideal contract agreement.⁵⁴⁷

Partnerskaber, p. 69, where they state that the construction industry has proven to be less risky and reduce the costs of the projects. Original Language; Danish – Authors Translation.

⁵⁴¹ Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*, p. 68 – Original Language; Danish – Authors Translation.

⁵⁴² Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*, Original language; Danish – Authors translation.

⁵⁴³ Tvarnø, C. D. (2013). "Partnering Contracts; A Solution to the Nash Equilibrium?" In a Contract Law and Game Theory Perspective." *Behavioral Analysis Applied to Economics and to Law*. Conference paper., 1-13, p. 1.

⁵⁴⁴ Professor and Deputy Director of CBS Law.

⁵⁴⁵ Professor at CBS Law and Director at Kammeradvokaten.

⁵⁴⁶ Professor (MSO) at CBS Law.

⁵⁴⁷ Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*, p. 68 – Original Language; Danish – Authors translation. See also chapter 7 for further elaboration on the economic perspective of the allocation of utilities and profit between the shipowner and supplier. See also discussion on relational contracting in chapter 4.

Thus, according to this study, the parties - i.e. the supplier and shipowner - have to choose between these two options. Even though, partnering is the main focus of the discussion, strategic alliances will to be discussed, as partnering and strategic alliances are two sides of the same coin, i.e. relational contracting. Therefore, the dissertation will use both under the same definition; partnering, as a reason for the shipowner and the supplier to engage in a Partnering agreement.⁵⁴⁸

However, before engaging further in to the world of partnering, the dissertation needs to stress that it will only be concerned with private contracts due to the principle of autonomy, as mentioned in chapter 1. The classic contract law perspective is based on a self-interest approach concerning commercial contracts. This perspective encourages a minimum of judicial intervention on the contract relationship and the contract itself supported by a maximum of legal certainty of the enforcement of the contract terms.⁵⁴⁹

3.1 Why partnering is a necessity

To many, the need for - and benefits of - partnering are obvious, although others may wonder, after so many years of getting along without it, how come partnering is becoming a necessity now. According to Ronco and Ronco, partnering is necessary, as it addresses a number of serious, complex problems that in recent years have become more pressing.⁵⁵⁰ These problems are listed below, as set out by Ronco and Ronco. These problems are based on the construction industry and, thus, these will be mentioned and compared to the shipowner and the supplier, which will also be discussed further in chapter 6.

⁵⁴⁸ See also discussion of relational contracting in chapter 4 and outcome based contracting and purpose statement in chapter 1.

⁵⁴⁹ Tvarnø, C. D. (2015). "To bind or not to bind: It's in the contract Formalizing collaboration through partnering contracts in the US, British and Danish construction industries." *Journal of Strategic Contracting and Negotiation*, 1.4: 288-314, p. 289.

⁵⁵⁰ Ronco, W. C. & Ronco, J. S. (1996). *Partnering manual for Design and Construction*. McGraw-Hill., p. 1.

Table 5.2 - Partnering in the construction industry

Type	Description
Litigation	As in many businesses, costly litigation plagues many design and construction projects. Partnering can provide the structure, the skills, and a forum to resolve conflicts easily, before they get serious enough to become lawsuits. ⁵⁵¹ For the shipowner and the supplier, this can be highly relevant as disputes regarding ships can be very costly. For instance, if the ship is not operational and under maintenance, it is very expensive, because it costs huge amounts of money if a ship is on the berth on a daily basis. ⁵⁵² Therefore, by using partnering agreements, the shipowner and the supplier can avoid litigation costs. ⁵⁵³
Project costs	Ineffective project communications directly impact project costs and the profitability of the firms working on the project. Few architecture firms make a profit on the construction phases of a project, usually because of ineffective communications. Engineering and construction firms, subcontractors, and the client also frequently lose money because of ineffective project communications which result in rework, mistakes, low quality, and lack of coordination. Partnering provides tools to improve the communication aspects of a job and reduce the resulting

⁵⁵¹ *Ibid.*, p.9 See also Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*, p. 71.

⁵⁵² Stopford, M. (2013). *Maritime economics*. (3rd ed.) Routledge, p. 232. Figure 6.4 illustrates maintenance cost.

⁵⁵³ In the shipping industry arbitration is the preferred choice to settle disputes between parties. In regards to the shipping industry, the details or the disputes are largely confidential, why this is often under the rules of the London Maritime Arbitrators Association. For further information see Eddings, G., Chamberlain, A. & Warder, R. (2017). *The shipping law review* (4th ed). Law Business Research., Chapter 7, Simon Blows and Vanessa Tattersall, p. 64. In Denmark we have the Danish Institute of Arbitration, which the parties also can choose. In maritime disputes, it is very common with ad hoc Arbitration. Arbitrations proceedings are governed by the Arbitration Act (AA) which is based on the 1985 UNCITRAL Model Law. Eddings, G., Chamberlain, A. & Warder, R. (2017). *The shipping law review* (4th ed). Law Business Research, p.146.

	<p>costs.⁵⁵⁴ Even though this is in connection to the construction industry, this too applies to the shipowner and the supplier. In a construction situation, there are, several parties involved,⁵⁵⁵ whereas the simplified situation in the maritime industry, only involves two parties.⁵⁵⁶ Even though, partnering can also help the shipowner and the supplier to create an efficient and effective communication. By having an effective communication between the two parties, this can improve the collaboration between them and eliminate hour consumption on miscommunication and defaults, and thereby decrease the project costs.⁵⁵⁷</p>
Fragmentation of the design and construction industry	<p>The design and construction industry have traditionally been rigidly divided into different trades and professions. In recent years, these divisions have become even stronger and more finely delineated, as some firms find economic rewards in specialization. New technologies have further fueled this trend.⁵⁵⁸ Dividing tasks into small pieces results in some efficiency, but can also put the pieces against each other. The design and construction industry have worked much more on dividing itself, rather than consolidating its fragmented pieces. Every project faces problems, where the solutions could best come from concerted, coordinated efforts of the divided trades and professions. Partnering can provide a forum for that coordination which brings the different players together to address project-wide</p>

⁵⁵⁴ Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*, p. 71.

⁵⁵⁵ E.g. an architect, a designer, an entrepreneur, a buyer (the one who initiated the project) etc.

⁵⁵⁶ This is meant as the supplier and the shipowner as the two main parties, however there are several other people involved, although they are either representing the shipowner or the supplier. Ronco, W. C. & Ronco, J. S. (1996). *Partnering manual for Design and Construction*. McGraw-Hill, , p. 10-11

⁵⁵⁷ It is also relevant in regards to the asymmetric information discussed in chapter 2 and chapter 3.

⁵⁵⁸ Ronco, W. C. & Ronco, J. S. (1996). *Partnering manual for Design and Construction*. McGraw-Hill, , p. 10-11.

	<p>problems.⁵⁵⁹ By using partnering to create a forum to address project problems, it is highly relevant for the shipowner and the supplier. The aim of creating a partnering agreement between these two are to form a collaboration between the shipowner and supplier, where they in collaboration can share knowledge and needs, thus collaborate on creating more innovative products.</p>
Complex, changing client organizations	<p>In their efforts to reduce costs and improve productivity, many client organizations are undergoing far-reaching cutbacks and changes. These changes, particularly in large companies and government agencies, make up for a problematic client in design and construction.⁵⁶⁰ People and responsibilities change, continuity breaks, momentum stops, etc.. Partnering does not eliminate client change, but it does help the project team manage the clients' involvement by creating procedures, policies, and practices that can lower the impact.⁵⁶¹ This is not a branch specific problem, but this occurs in all industries, and therefore it is relevant to consider using partnering to help the shipowner and supplier to create a better involvement for them both by implementing procedures, policies, and practices. The focus here is to create a forum for both parties, where representatives from both the supplier and shipowners can collaborate by using the same procedures and act upon the same goals. Representatives from both sites are ranging from several levels, meaning that on the shipowner's side, there might be placed representatives from the upper management level, whereas on the supplier's side, the</p>

⁵⁵⁹ *Ibid.*,

⁵⁶⁰ *Ibid.*, p. 11.

⁵⁶¹ *Ibid.*

	representatives might be from the lower-to-mid management levels, i.e. engineers (both construction and technical), designers, etc.
Design, construction, engineering, and real estate organizations face new challenges	<p>As clients become more productive, design, construction, and real estate organizations must keep up if not stay ahead. This is a challenge for firms and organizations that historically have lagged in using effective cost management and productivity tools.⁵⁶² Partnering provides participating companies with in-depth exposure to new management ideas and methods. Partnering can also bring to light internal issues in participating companies and, thereby, provide some insight into key internal issues to address.⁵⁶³ The shipowner and the supplier are too facing new challenges which is why the purpose of a partnering agreement could be a tool for both to acknowledge internal issues and in collaboration face these new challenges by revising their business.</p>

Source: authors creation

3.2 Partnering and strategy

Arguably, -and as previously mentioned - partnering and strategy are two sides of the same coin, because strategy is an essential element when discussing partnering, as the forming of strategies occur when the parties strive to gain new knowledge, access new markets, and share skills.⁵⁶⁴

⁵⁶² *Ibid.*

⁵⁶³ *Ibid.*

⁵⁶⁴ See Harrigan and Reuer. Harrigan, K. (1986). *Managing for joint venture success*. Lexington, mass, p. 16: Reuer, J. (2009). *Strategic Alliances: Theory and Evidence* (Oxford Management Readers). Oxford University Press, p. 26. The objectives set out by Harrigan and Reuer is also discussed in section 2 of this chapter.

In connection with the optimizing of the value chain, as described above, partnering has likewise been used to strengthen the relationship between the buyer and the supplier, without making an actual vertical integration.⁵⁶⁵ Therefore, partnering could potentially strengthen the relationship between the shipowner and the supplier. In situations like these, partnering has shown to be a cheaper and less risky solution than other strategic choices, such as joint ventures and outsourcing. This version of partnering has been imprinted by a series of independent companies which have cooperated throughout the entire value chain of goods and services.⁵⁶⁶

According to Tvarnø et al., partnering agreements are built upon the assumptions that companies need to take new initiatives in order to create value, if the companies want to survive in the global economy.⁵⁶⁷ This may be too simplistic and not as relevant in practice, but these presumptions are formed by the fact that the global economy is characterized by volatility and an aggressive competitive situation which is evident in the pharmaceutical industry and has been strengthened by the innovation pit, as mentioned previously.⁵⁶⁸

In the global industry, a strategic parameter is a sign that the companies rarely stand alone, when it comes to creating value.⁵⁶⁹ It is a principle that, within these changes in the company, the value creation lies. Instead of each company recreating their value, it is the companies that created the value together through collaboration, and this creates new forms of collaboration and new ways for

⁵⁶⁵ Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*. Authors translation – original Language; Danish. P. 69.

⁵⁶⁶ *Ibid.*

⁵⁶⁷ *Ibid.* According to Tvarnø et al., then some foreign authors think that there might be a 'revolution' ahead. They refer to Rackham; Friedsman and Ruff, *Getting Partnering Right – how market leaders are creating long-term competitive advantage*, McGraw-Hill, 1996. See also Scheuing, (1995) *The Power of strategic Partnering*, Productivity Press, Portland Oregon.

⁵⁶⁸ Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*. Authors translation – original Language; Danish. P. 69. Like the pharmaceutical industry, the maritime industry is also characterized by being a market with great volatility.

⁵⁶⁹ Scheuing, E. (1994). *The power of strategic partnering*. Productivity Press, p. 11.

them to engage in agreements and event in the early years of a company's existence.⁵⁷⁰

This is highly relevant both for the supplier and the shipowner. At the current stage of the market, where the supplier and the shipowner are operating in, the market or different actors within the market are trying to redefine the market by jointly optimizing. This is not a new or revolutionary way of thinking; it is just a way of looking at other industries and find inspiration herein. Hence, the maritime industry is being redefined by the huge development that the business it currently undergoing due to their newfound technological impact by engaging in a partnering agreement, this dissertation argues that a collaboration between the shipowner and the supplier would create a joint value.

According to Tvarnø et al., some of the most important parameters within a partnering agreement is:

1. *Need of the parties*
2. *Values*
3. *Opinions*
4. *Intentions*
5. *Economic conditions (open books policy)*
6. *Technical skills*
7. *Problem solving approach*
8. *Matching expectations regarding the collaboration*⁵⁷¹

Tvarnø et al., argues that the above 8 parameters are relevant to address in the negotiation of a partnering contract.

⁵⁷⁰ Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*. Authors translation – original Language; Danish. P. 69.

⁵⁷¹ *Ibid.*, p. 74.

When looking internationally, the new types of work collaborations in the UK, the US, and in Denmark all contains partnering. Partnering as a collaboration form has created great value, for the companies involved, e.g. due to larger productivity, enhanced quality, decreased costs, more competitiveness, enhanced innovation, dynamic, and synergies.⁵⁷² According to Neil Rackham,⁵⁷³ Lawrence Friedman⁵⁷⁴ and Richard Ruff⁵⁷⁵ (hereinafter, referred to as, “Rackham et al.”) based on these results, partnering agreements is here to stay.⁵⁷⁶

The shipowner and the supplier both seek to optimize their businesses and create value, and they both seek new ways to create new value. So based on what has been mentioned above, a partnering agreement could potentially benefit both the supplier and the shipowner. Although partnering has been slightly compared to strategic alliances, it has not quite been defined yet and, thus, the dissertation will take a further look at it later on.

3.3 Partnering in a practical matter

In a typical partnering agreement, the parties’ (in this case, the shipowner and the supplier) rights and obligations are not primarily fulfilled upon the “closing” of a transaction or the simple delivery of a product.⁵⁷⁷ Instead, the substance of the agreement remains to be completed, and often defined, over time. Performance over time alone is an insufficient tool to define a partnering

⁵⁷² Scheuing, E. (1994). *The power of strategic partnering*. Productivity Press, p. 24; Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*. Authors translation – original Language; Danish, p. 70.

⁵⁷³ British author, consultant and academic.

⁵⁷⁴ Law Professor at Stanford Law School.

⁵⁷⁵ American author.

⁵⁷⁶ Rackham, N., Friedman, L., & Ruff, R. (1996). *Getting partnering right: How market leaders are creating long-term competitive advantage*. McGraw-Hill., chapter 1 – The partnering revolution.

⁵⁷⁷ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer., P. 1-2.

agreement. A distribution agreement or a requirements contract, for example, is also completed over time, but is not by itself a partnering agreement.⁵⁷⁸

A partnering agreement also consists of at least two traditional contractual or transactional elements that are somehow interdependent. For example, it may include license agreements, R&D agreements, manufacturing agreements, distribution agreements, co-branding and other promotional agreements, and equity or debt investment agreements. Therefore, what is known as a partnering agreement is disposed to analysis by breaking the agreement into its components and applying traditional analytical approaches to each.⁵⁷⁹

A partnering agreement is a system and an ongoing interdependent relationship, and it should be considered in this context – whether one’s goal is to construct an alliance or simply understand its operation.⁵⁸⁰ This is highly relevant in connection with the shipowner and the supplier. When looking at the parties together and separately, the aim is to construct a new ‘contract form’ between the shipowner and the supplier which both parties will benefit from. The situation is – as stated – that the shipowner lacks the understanding of the product and the supplier holds a great deal of knowledge regarding the specific product, and their mutual aim is to be highly competitive. Hence, both the shipowner and the supplier are within the same supply chain and therefore their partnering agreement will be an ongoing interdependent relationship, although the question is whether their incentives are to structure an alliance or just to understand the operation.

A distinctive feature in connection to partnering is the fact that it is a fundamentally different form of collaboration between parties, whereas plenty of the traditional concepts do not apply such as supplier, customer, buyer, or seller. These perceptions lose their importance when applying partnering, as the

⁵⁷⁸ *Ibid.*

⁵⁷⁹ *Ibid.*

⁵⁸⁰ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer., P. 1-3.

focus changes to be on perceptions of a common goal, optimization, trust, and mutual respect.⁵⁸¹ In the relationship between the shipowner and the supplier, due to their positioning in the supply chain⁵⁸² and their business strategies, the optimal solution for these parties would be to structure an actual alliance, although it can also create some risks for both parties to understand each other's operation, due to the level of data and business knowhow. This risk will be treated further on in this dissertation,⁵⁸³ but, for now, the aim will be on the creation of an actual alliance between the shipowner and the supplier.

The art of structuring successful partnering agreements requires two intimately related tasks: crafting the components comprising the agreement and designing the system that defines the interrelationship among these components.⁵⁸⁴

According to Villeneuve et al., some researchers might claim that a partnering agreement also must be strategic in nature. As Villeneuve et al. states, it is often true that many alliances are in fact tactical: *"(...) In fact, tactical alliances are becoming more and more common. Moreover, determination of whether the agreement is strategic is subjective and may change over time."*⁵⁸⁵

Alliances take many forms. They range from brief and informal links to agreements so complex that it is difficult to distinguish, whether the organizations involved are actually separate. In essence, however, alliances are organization agreements and operating policies, where separate organizations and share administrative authority form social links, and accept joint ownership, and where freer, more open-ended contractual agreements replace highly

⁵⁸¹ Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*. Authors translation – original Language; Danish. p. 70.

⁵⁸² See figure 1.1.

⁵⁸³ See chapter 6, where the risk between the shipowner and the supplier will be discussed.

⁵⁸⁴ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer., P. 1-3.

⁵⁸⁵ *Ibid.*

specific arm's length contracts.⁵⁸⁶ Thus, strategic alliances in connection with partnering will be discussed further in this chapter.

3.4 Partnering in other industries

When observing different industries, it has become apparent that technology-based companies have been very proactive in forming partnering agreements and alliances.⁵⁸⁷ These agreements typically involve a substantial contribution of some combination of products, technology/intellectual property/services and/or research and development by at least one party, and where the other party provides a form of investment⁵⁸⁸ and/or services.⁵⁸⁹ Usually, the services also involve the allocation of manufacturing and/or distribution rights to technology and products arising from the agreement. These are applicable according to the case presented, where the shipowner and supplier is considered to establish a collaboration in regards to new products, therefore the shipowner and the supplier needs to clarify how the arrangement between them, in order to clarify which services are included and the payments in regards to the collaboration. The partnering agreement in this context is the alignment of the shipowner which “provides” the funding for the supplier, but in a different content.

⁵⁸⁶ *Ibid.*, and Badaracco, J. (1991). *The knowledge link: How firms compete through strategic alliances*. Harvard Business School Press, p. 4.

⁵⁸⁷ See also the strategic alliance between Samsung Heavy Industries and Amazons AWS. AWS will be the cloud service provider, in regards to the development of autonomous shipping platforms. Source; Press Release from Amazon, “Samsung Heavy Industries Selects AWS as its preferred Cloud Provider”, August 8th 2018.

⁵⁸⁸ Equity, debt or R&D funding.

⁵⁸⁹ It is typically the large party that is the money provider and the smaller party who delivers the actual services/products according to Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer., P. 1-4.

Table 5.3 - Partnering agreements in different industries.

	Partnering in the construction industry	Partnering in the pharmaceutical industry
Purpose	The construction business often uses partnering on specific projects in order to create an actual cooperation between the parties involved and thereby define a common goal which the parties collaborate to achieve. ⁵⁹⁰	The pharmaceutical industry uses partnering agreements to create innovation and exploration of R&D possibilities, thus create new and better products/drugs to the consumers. ⁵⁹¹
Ways to achieve success	<p>Key project team members convene for a preconstruction workshop and for regularly scheduled follow-up workshops over the course of the project. According to Ronco and Ronco, these follow-up workshops often work with a facilitator to improve the quality and productivity of their discussions. At these preconstruction workshops, the participants write, agree in, and plan to implement three documents:</p> <ul style="list-style-type: none"> • <i>Goals statement</i> – a description of the expectations for the project. • <i>Communications procedures</i> – a detailed specification of how, when and what people will communicate with one another on the project. 	The pharmaceutical industry works in a different way than the construction industry. In the pharmaceutical industries, examples of how the partnering structure is used for the large industrial company to fund the research and development of a new product or product line of a smaller technology company exist. In exchange for the funding and various milestone, license fees and/or royalty payments one partner obtains marketing rights to these products in a specified territory. The other party usually obtains marketing rights (exclusive or non-exclusive) outside the territory. Therefore it is typically a R&D alliance, that occur. ⁵⁹³

⁵⁹⁰ According to several authors, construction projects in general are invariably temporary and expensive. During a traditional construction project, the parties often have different and even opposing objectives.⁵⁹⁰ In traditional contracts, collaboration takes place in the normal course of business, and without specific measures or incentives. In contrast hereto, partnering agreements are, where the partnering agreements: "(...)*specifically aim to foster and reward collaborative behaviors and actions by members of a project team.*"

⁵⁹¹ Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*. Authors translation – original Language; Danish. p. 95. See also Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer, P. 33-23.

⁵⁹³ Roijackers, Nadine, and John Hagedoorn. (2006) "Inter-firm R&D partnering in pharmaceutical biotechnology since 1975: Trends, patterns, and networks." *Research policy* 35.3: 431-33. See also Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*. Authors translation – original Language; Danish. p. 70.

	<ul style="list-style-type: none"> • <i>Conflict resolution process</i> – an anticipation that people assigned to the project will differ and maps out steps to help them resolve their conflicts to mutual satisfaction.⁵⁹² 	
Potential risks	<p>According to Ronco et al., it is one thing to actually put thoughts in writing and another thing is the execution of the idea. Many partnering programs stop at the conclusion of the partnering documents and procedures. In order to improve the impact and effectiveness of partnering, it is important to go beyond these initial steps to include two additional tasks: communications skills training and direct involvement with the infrastructure of communications on the job site. Construction projects are usually huge and very expensive projects, where communications are a key factor.⁵⁹⁴ To improve the projects effectiveness, it is very useful for partnering to strengthen the infrastructure of project communications.⁵⁹⁵</p>	<p>An R&D alliance in the pharmaceutical industry is based on huge amounts of capital, therefore companies within the pharmaceutical industry is using huge amounts of capital in investing in new R&D.⁵⁹⁶ In the pharmaceutical industry there is in general a challenge in regards to manufacturing, which might be due to an increase in costs for research, development, decrease in production and/or depleted pipelines.⁵⁹⁷ A combination of expirations of patents, lack of approvals of products are all risks which the pharmaceutical industry faces. However, in regards to and R&D alliance between two firms, the risks involved there is the potential of not developing a product, lack of drug approval in the case of a developed product or merely the investment in the developing company does not match the earnings for the licensee.</p>
Difference between DK, the	<p>Professor Tvarnø has discussed partnering agreements within the construction industry in the US,</p>	<p>In regards to the difference between the pharmaceutical industry and the construction</p>

⁵⁹² Ronco, W. C. & Ronco, J. S. (1996). *Partnering manual for Design and Construction*. McGraw-Hill, p. 7.

⁵⁹⁴ Ronco, W. C. & Ronco, J. S. (1996). *Partnering manual for Design and Construction*. McGraw-Hill, p. 8.

⁵⁹⁵ Ronco, W. C. & Ronco, J. S. (1996). *Partnering manual for Design and Construction*. McGraw-Hill, p. 8.

⁵⁹⁶ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer., P. 33-23.

⁵⁹⁷ Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*. Authors translation – original Language; Danish. p. 264.

UK, and the US	Great Britain, and in Denmark. Although, one formality, which needs to be stressed according to the article, is that in the US, as a contrast to the UK and in Denmark, partnering agreements are not legally binding, as a partnering agreement is perceived to be merely a letter of intent. ⁵⁹⁸ However, according to Dyer and Doyle, this view might be emerging. ⁵⁹⁹	industry, then this is aligned in towards the contract as stated by Tvarnø: In US partnering agreements are not legally binding, as a partnering agreement is perceived to be merely a letter of intent. ⁶⁰⁰ In regards to the pharmaceutical industry, there is a difference in the drugs approvals between the countries.
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Source: The author's creation.

As stated in table 5.3, examples of how the partnering structure – in the pharmaceutical industry - is used for the large industrial company to fund the research and development of a new product or product line of a smaller technology company exist. In exchange for the funding and various milestone, license fees and/or royalty payments one partner obtains marketing rights to these products in a specified territory. The other party usually obtains marketing rights (exclusive or non-exclusive) outside the territory.

Even though this is an example of how the pharmaceutical industry is using partnering agreement, since the industry revolves around developing new products, this form of collaboration is a bit different from the maritime industry, due to a different product development and industry specifications.⁶⁰¹ In the partnering agreement between the shipowner and the supplier, they also need to clarify the marketing rights, even though the shipowner's primary business is

⁵⁹⁸ Tvarnø, C. D. (2015). "To bind or not to bind: It's in the contract Formalizing collaboration through partnering contracts in the US, British and Danish construction industries." *Journal of Strategic Contracting and Negotiation*, 1.4: 288-314., p. 289.

⁵⁹⁹ Dyer, S. and Doyle, E. (2010). "A working model for collaborative partnering." IPI, White Paper: 1, Tvarnø, C. D. (2015). "To bind or not to bind: It's in the contract Formalizing collaboration through partnering contracts in the US, British and Danish construction industries." *Journal of Strategic Contracting and Negotiation*, 1.4: 288-314., p. 289.

⁶⁰⁰ Tvarnø, C. D. (2015). "To bind or not to bind: It's in the contract Formalizing collaboration through partnering contracts in the US, British and Danish construction industries." *Journal of Strategic Contracting and Negotiation*, 1.4: 288-314., p. 289.

⁶⁰¹ This is specially in reference to how the pharmaceutical industry is revolving around research and product development. Whereas the maritime industry is also regarding product development, however, the product of both industries are far from the same. The pharmaceutical products are way more complicated and needs more research.

the ship, which is why they would not engage in the sale and purchase market for supplies. In the pharmaceutical industry, there are some examples of the smaller party obtaining the manufacturing rights, whereas this right usually accrues the larger partner, although, it is provided that the smaller party can fulfill these needs for the larger party.⁶⁰² In connection to the shipowner and the supplier, it is difficult to label one of the parties as a small party and the other as a large party and vice versa. Albeit, the partnering agreement between the shipowner and the supplier would be constructed with the supplier as the manufacturer and thereby entail the rights hereto. Of course, the supplier should be able to comprehend the tasks and therefore be able to fulfill the manufacturing needs of the shipowner, but if the supplier was not able to live up to the task before hand, it would not necessarily be with a partnering agreement; which makes this a given factor.

Most partnering deals are purely contractual relationships. Occasionally, it may be advantageous to create a separate entity joint venture instead.⁶⁰³ Business partnerships are - by nature - collaborative relationships. Sometimes, the relationships are between a company and a customer or supplier. Other times, the relationship links two competitors or potential competitors. However, one might wonder, why engage in a such a collaboration. The simplest way to put it is that companies will collaborate when partnering agreements ought to address its requirements than go-it-alone strategies, traditional transactions, or acquisitions.⁶⁰⁴ George J. Stigler (hereinafter, referred to as, "Stigler")⁶⁰⁵ called

⁶⁰² In these examples, the larger partner typically has a back-up license and technology escrow, then if the smaller party can fulfill its obligations, then the larger party can produce it themselves Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer., P. 1-4. (Part I).

⁶⁰³ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer., P. 1-6.

⁶⁰⁴ *Ibid.*, See also discussion in section 2 rationales for collaboration.

⁶⁰⁵ The late Professor in Economics at University of Chicago and Nobel Laureate.

the collaborative relationship between two firms merely “an incomplete form of merger”.⁶⁰⁶

As stated previously, there is a fine line between a collaboration and a joint venture and years of studies have shown that there is a great difference between how parties collaborate and the form of the agreement is formed. Arguably, Stigler’s view upon the subject is not entirely wrong, but is lacking a bit of variety. From both the supplier and the shipowner’s perspective, a partnering agreement should accelerate an incentive for collaboration and a joint optimization not stress and actual merger. Neither parties are interested in giving up their actual business, and for the shipowner, it is a matter of convenience to engage in this relationship, as it is not directly linked to their actual business, but is a tool of optimizing the main business area. Partnering is a method to enter into an agreement. By using partnering in the contract process, the parties involved are able to maximize their efficiency by aiming at a common goal.⁶⁰⁷ Which is the common purpose for the shipowner and the supplier.

Although, when applying this to the maritime industry, it might be worth mentioning that communication is merely as essential a factor as in the construction business, however, it is dealing with a different product, where communication should be used to enhance the product performance and product needs, which will be of huge relevance not only for the supplier, but also for the shipowner. Nevertheless, based on this, the dissertation needs to take a further look at the parties’ practical perception of partnering agreements and the practical view of creating incentives.

⁶⁰⁶ Stigler, G. (1955). “Mergers and Preventive Antitrust Policy.” *University of Pennsylvania Law Review*, 104(2): 176-184. p. 176.

⁶⁰⁷ Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*, p. 74.

Based upon the academics' 'list' – which was set out in table 5.1. - of ways to have a positive impact upon the parties' incentives, from the practical point of view, there are different ways to interpret it. For one party to be motivated to engage in a partnering agreement, it needs to be recognized that this is a business and, therefore, the motive needs to be reflected in a business context. Thus, by looking at funding, this can be hard to negotiate, but needs to be reflected in the company's revenues (e.g. R&D contract funding), as the business in the process is important in connection to the accounting or tax purposes.

Also, risk sharing is a common motivation, especially in industries where the high costs of product development and testing are matched by the likelihood of failure of any particular product, such as the pharmaceutical industry. Often, - as stated previously - the one party shares the cost of its product development with the larger company, and the larger company avoids the costs and technology risks associated with the establishing of an independent research effort. According to Villeneuve et al., in the application software/hardware or application software/operating system platform transactions, the platform company subsidizes parts of the application software company's development risks, while the application software company helps ensure the marketability of the platform, by providing applications that run on the platform; the platform company may receive the right to bundle the software with its platform.

In a partnering situation between the shipowner and supplier, risk is an essential factor. The collaboration between the parties, which this dissertation is attempting to realize, risk needs to be considered. Even though the construction industry is using partnering on specific projects, as has been illustrated through this chapter, this differs quite a bit from the maritime industry. A construction project is merely the construction process of a given building, whereas the shipowner and supplier is merely intending to construct a specific component

with a long-term service upon the product. Therefore, the construction industry is the leading industry in terms of collaborative successful projects which makes it highly relevant to study before applying partnering to the maritime industry.

4. Value creation in the partnering agreement

Value creation has been discussed previously in this chapter and the value-chain was an important factor in the discussion on OBC's.⁶⁰⁸ Depending on the party, the "value" can change, meaning that at an individual stakeholder or customer level, as value means different things to different people and at different times it can be valued differently. Michael Treacy⁶⁰⁹ and Fred Wiersema⁶¹⁰ (hereinafter, referred to as, "Treacy and Wiersema")⁶¹¹ propose that 'value' is built from a mixture of different components including: price, time, premium service and quality, and perceive 'value' as being the combination of the costs customers pay and the benefits they receive.⁶¹² This applies to both the products sold and services offered.

According to Mark Darby (hereinafter, referred to as, "Darby"),⁶¹³ when looking at product costs, it includes: *"price and less than perfect reliability including the whole life cost of ownership. Service costs include mistakes, delays and inconvenience because customers are said to pay with both their time and money."*⁶¹⁴

When defining the benefits, Darby argues that value comes out of the features and needs that are fulfilled by the product and from the kinds of service benefits provided, and these are only seen as benefits if they 'substantially exceed

⁶⁰⁸ See chapter 4, for discussion on OBC's.

⁶⁰⁹ American author and expert within corporate strategy and business transformation.

⁶¹⁰ Dutch author and researcher at Penn State University.

⁶¹¹ Treacy, M. & Wiersema, F. (1996), *The discipline of market leaders*. Harper Collins. See also Darby, M. (2006). *Alliance Brand: Fulfilling the Promise of Partnering*. John Wiley & Sons, p. 3.

⁶¹² Darby, M. (2006). *Alliance Brand: Fulfilling the Promise of Partnering*. John Wiley & Sons, p. 3. This is also Porters take on the subjects see Porter, M. E. (1986). "Changing patterns of international competition." *California management review* 28.2: p. 13-14.

⁶¹³ British author and specialist in alliance services.

⁶¹⁴ Darby, M. (2006). *Alliance Brand: Fulfilling the Promise of Partnering*. John Wiley & Sons p. 4.

competitors offerings.⁶¹⁵ Hence, according to Darby, the term value can simply be outlined as *'the overall price paid or investment made for the benefits gained in return'*.⁶¹⁶

4.1 Shared expertise

Partnering agreements can provide instant access to established, efficient, and effective distribution channels, and approachable customer bases.

When granting access to regulatory expertise, smaller companies may be able to benefit from the special regulatory expertise of a larger corporate partner.

Access to manufacturing capacity and Second-Source measures– Setting up manufacturing operations can be extremely expensive, so partnering with an existing manufacturing company, can be a simple solution.⁶¹⁷ Furthermore, the customers in some industries may sometimes insist that alternative sources of products should be available.

In regards to market shares, in many cases - especially in the attempt of gaining new market share in a global economy - sheer size can offer a competitive advantage. A large organization can address the needs of a large number of customers and can take advantage of economies of scale to reduce costs. Partnering can be an effective way to pool resources to achieve critical mass.⁶¹⁸ Therefore in regards to the shipowner and the supplier, this is highly relevant, although the shipowner and the supplier are not within a vertical integration, therefore the collaboration between them is not a matter of the shipowner gaining access to the supplier manufacturing capacities, however it is a matter of sharing expertise in order to create new and better products. For the shipowner and the supplier to create a collaboration, where knowledge sharing is a key

⁶¹⁵ *Ibid.*

⁶¹⁶ *Ibid.*

⁶¹⁷ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer., P. 1-4.

⁶¹⁸ *Ibid.*

element and the need of the shipowner is in focus, then both parties can gain value by sharing their expertise and develop products based on the new knowledge.

4.2 Competitive advantages

Competitive advantages have been a very influential economic theory ever developed providing the intellectual foundation for the free trade philosophy which has dominated political thinking over the last half century through the World Trade Organization (hereinafter, referred to as, "WTO").⁶¹⁹

Within the last fifty years, the world trade has grown rapidly. Throughout this period of free trade improved transport and communications, it has encouraged growth by allowing global sourcing and marketing of products. The new technology too has improved the services that support trade. Legally secure documentation, especially in such areas establishing the ownership of goods, cheap direct-dialed phone calls, improved international banking, and more recently e-commerce have made global trading easier, especially for smaller companies.⁶²⁰ When providing all these new services, industries can migrate to the remote corners of the globe, where low costs reside and many more towns and cities in these areas are continuously being drawn into the global trading system. Today, exploiting differences in labor costs between regions drives trade in manufactures, even though it does not entirely rely on inter-country differences. Stopford argues that Porter's model of world trade attributes, comparative advantage is not only in terms of local resources such as cheap labor, but also to expertise.⁶²¹ Porter argues that clusters of companies which specialize in a particular item develop a 'comparative advantage' in that specific product. With the right communications and transport, these clusters can exploit

⁶¹⁹ Stopford, M. (2013). *Maritime economics*. (3rd ed.). Routledge, p. 398.

⁶²⁰ *Ibid.*

⁶²¹ *Ibid.*

their advantage globally, leading to a broader trade matrix and improved global efficiency and trade growth even if wage cost differences are eliminated.⁶²² This is a dynamic process. Once a particular company, country, or cluster has become an established product area, it is difficult for others to build up sufficient volume of sales to enter the market.

Today, technical advance is continuous. The manufacture of complex products such as cruise ships and aircraft are all examples where one country has developed a competitive advantage based on technical innovation and is protected by barriers such as the high cost of entry. In the case of particular inventions, the manufacturing rights may even be covered by a patent.⁶²³

According to Stopford, a variant on this is driven not by production technology, but by *product differentiation* in the market. Cars can be used as an example hereof.

*In these cases, the cause of trade is differences in tastes between countries. For instance, the manufacturer of motor vehicles face economies of scale, so low-volume production is expensive. So, if the majority of Americans prefer large vehicles, while most Europeans prefer smaller cars, then the minority in Europe who wish to purchase a larger car can actual benefit from importing American cars and vice versa, especially if transport costs are low. This has had a tremendous impact on trade. In most countries, consumers can choose between cars from twenty or thirty different brands, each sold at a highly competitive price.*⁶²⁴

Stopford's example of cars is an elementary example; however it is the perfect illustration of product differentiation. In regards to the case of the dissertation, product differentiation is the key element, thus this is the competitiveness of the supplier. In general, a competitive advantage is gained, according to Porter by

⁶²² Porter M., (1990). *The Competitive Advantage of Nations*. Free Press, p. 162.

⁶²³ Stopford, M. (2013). *Maritime economics*. (3rd ed.). Routledge, p. 399.

⁶²⁴ *Ibid.*

either having *low relative cost or differentiation*.⁶²⁵ The differentiation is the interesting aspect as this a way of becoming a more competitive. In regards to the case of the dissertation, product differentiation is a key element for the supplier, in order to be competitive and maintain current or gain new market shares. By entering into at partnering agreement between the shipowner and the supplier, both parties can collaborate on the products, which could provide the shipowner with new and cheaper products, but also products with better performance, which could influence the shipowners competitive situation, due to a decrease in costs and better performance of the ship. On the suppliers side, they can gain new markets shares and better products by collaborating with the shipowner. For the parties to share knowledge and improve the suppliers products, gives both parties a competitive advantage, by optimizing the products.

5. Structuring the Partnering Agreement

*"One of the big reasons partnerships go sour is that they are structured incorrectly."*⁶²⁶

Different factors are explanatory due to failed partnering agreements. Principal among them are poor choice of partners, poorly articulated objectives, unrealistic expectations, and changes in a partner's objectives or risk profile or in the environment in which the agreement is designed to operate.⁶²⁷

According to Harrigan:

"If the reasons for forming cooperative strategies are poorly conceived, if partners are not selected carefully, if firms have overestimated their partners' strengths, or if the agreements and systems used to control the venture are inadequate, such that each owner

⁶²⁵ Porter M., (1990). *The Competitive Advantage of Nations*. Free Press, p. 162.

⁶²⁶ Rice, Valerie. (1991). "Why teaming up is so hard to do." *Electronic Business* 8: 30-34, p. 32 (Emphasis added)

⁶²⁷ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer., P. 1-17.

believes the others are shortchanging it, firms may often be worse off than they were before... Some firms found that when resources and capabilities were commingled, the weaker partner often benefitted the most. If joint ventures were horizontal, strong firms found that they had more to lose than to gain by cooperating, especially if the knowledge comprising their technological core was highly appropriable. If linkages were forged with specific Suppliers or distribution channels, firms often increased (rather than decreased) their exposure to shortfalls and bottlenecks because doing so meant alienating vertically related outsiders that might have served as safety nets when shortages (or surpluses) occurred.”⁶²⁸

Some of the very valid points to keep in mind when engaging in a partnering agreement are the lessons taught by past failures. Moreover, what is even more important are the elements of the agreement that will enhance the probability of the agreement’s success by focusing upon the ordinary, but important, day-to-day details. A partnering agreement must be structured to accommodate the organic or dynamic aspects of a relationship that will evolve over time. The agreement itself cannot possibly anticipate every fortuity or eventuality. This is not its purpose. However, it should provide mechanisms that can adapt and respond to a wide range of events. It should serve as a roadmap that the parties can look to for direction, but it cannot possibly provide direction at each and every step.⁶²⁹

Accordingly, the challenge of negotiating partnering deals is to create a structure where the differing objectives and concerns of the two partners are compatible and can sustain a long-term relationship. The aim of the agreement is not to get the best deal on paper, but instead to promote compatibility and mutual

⁶²⁸ Harrigan, K. (1986). *Managing for joint venture success*. Lexington, mass, p. 26.

⁶²⁹ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer, P. 1-17. (Part I).

incentives that will result in a good working relationship which will be mutually profitable.⁶³⁰

One of the most important factors in developing a successful partnership is the creation in both companies of multi-level participation and enthusiasm for the agreement. This requires development of positive personal relationships between people in each company in R&D, in sales and marketing, and at senior executive levels. Many partnering agreements have failed due to certain people in either one or both companies unsatisfactory with their role in the partnership or the direction of it.⁶³¹

5.1 Common understanding

When negotiating a partnering agreement, it is crucial that the parties involved have a mutual understanding and common goals. Due to the complexity of these agreements, miscalculations can be difficult to detect at the outset, but could potentially have devastating future effects. Therefore, it is crucial that each party and the advisors fully understand its and the other party's general business philosophies, objectives, and strategies, as well as the different structures for the partnering deal which will either facilitate or hinder achievements of each parties goals.⁶³² For the shipowner and the supplier, this will be of huge importance in order to negotiate the right deal. Even though, in rare events where both parties understand each other's preferences and strategies, it is often difficult to strike a balanced deal that is consistent with both parties' strategies. A lack of clarity on either side about the other party's motivations can make negotiations extremely difficult. Unfortunately, because of fear of giving away a

⁶³⁰ *Ibid.*, p. 18.

⁶³¹ *Ibid.*

⁶³² Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer, P. 1-19.

strategic or tactical advantage, many companies are likely to “hide the ball” when negotiating corporate partner deals.⁶³³ Therefore, flexibility is a key element to consider.

On another note, a successful collaboration includes a clear definition of the deal of the scope. By having a clear definition of the agreement and if the rights and obligations of the parties are well defined up-front, and equally well understood, the chances that the parties will have a major misunderstanding will be reduced. It is not necessary, possible, or desirable to cover every conceivable circumstance contractually.⁶³⁴

5.2 Joint Incentives

If a partnering agreement is to succeed, the contract must be structured to provide both parties with incentives to perform throughout the terms of the agreement. Regardless of the content of the legal contract, the agreement will only be successful as long as both parties remain comparatively satisfied. Obviously, the best method is to make sure each party is motivated to perform.⁶³⁵ Incentives, such as milestone payments, is effective motivators. However, the most effective approach is to structure the parties’ obligations so that they are consistent with their basic business strategies and philosophies. Another way to design incentives, is to provide penalties by the lack of performance, e.g. minimum payments and loss of rights or exclusivity.⁶³⁶ Another motivational factor in a partnering agreement is the shared risk. As an example hereof, if the project is a risky undertaking and if the project goal is important enough for both parties and each party commits all of its efforts in that field to the project, each

⁶³³ *Ibid.*

⁶³⁴ *Ibid.*

⁶³⁵ *Ibid.* See also Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*, p. 75-75. Original Language; Danish – Authors Translation.

⁶³⁶ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer, P. 1-19. The parties also should try avoiding incentives not to perform; non-competition clauses are examples of this approach.

will be motivated to make the project work. If the parties retain other options for addressing that field, the motivation will not be as strong.⁶³⁷

5.3 Planning – with a touch of flexibility

Thorough preparation increases the odds for a successful alliance. Planning should involve both partners and should consider day-to-day operations, as well as strategic issues. Planning not only allows for a smooth start-up, prevents misunderstandings, conflicts, and cultural problems which are not obvious from the negotiation of the agreement. However, planning should not be viewed as leading to a fixed result; circumstances can or will change and plans will need to be reconsidered regularly.⁶³⁸ This is essential for the two parties: the shipowner and the supplier. These two parties will engage in a common purpose, where they would need to collaborate with each other on a regular basis. Nevertheless, this might seem as much more work, but - in fact - this will be a huge advantage to both parties, since they will be more willing to actually collaborate and the incentives to develop new products will be there.

In the search for a successful partnership, there needs to be a form of effective decision-making and dispute resolutions. It is usually advantageous to make clear allocations of decision-making authorities for most aspects of an alliance. Although, in an alliance, it is inevitable that there are some decisions which is set out to be for a joint termination by the parties. In either case, disputes may arise

⁶³⁷ *Ibid.* P. 1-20. In regards to the incentives, another factor is the investment of equity. Villeneuve states “An equity investment by the larger partner in the smaller partner is often viewed by the smaller partner as a guarantee that the larger partner will continue to work with it, if for no other reason than to maximize its investment. Unless the investment is very large, this is generally not the case, especially since the day-to-day business matters are usually managed by a business group that is completely separate from the investment group. Furthermore, a large equity investment may discourage competitors of the larger partner from dealing with the smaller partner. Participation by a high-level executive company’s board of directors is more likely to achieve (but still does not ensure) the desired result, whether or not an investment is made. When settling the negotiation on a corporate agreement, this might result in a letter of intent, “memorandum of understanding”, or “agreement in principle”. Contrary to what many businessmen believe, these documents can create substantial legal obligations”.

⁶³⁸ *Ibid.*

and, in the case of a joint decision, deadlocks are a possibility.⁶³⁹ Many other cases have shown that an effective pre-litigation dispute resolution mechanism can avoid unnecessary deadlocks and litigation that are begun in the heat of anger is likely to forever destroy the mutual trust, which is necessary for an ongoing relationship.⁶⁴⁰ Eventually all partnerships will come to an end and termination provisions often have an effect on whether the deal will be viewed negatively or positively. When looking at the supplier/shipowner relationship, then that will terminate at one point, but the contract will define how and when. All of this might depend upon the product and how the parties are negotiating the contract. Especially the negotiations are important and, therefore, it is crucial that the foundation of the relationship is not to be undermined by unnecessarily contentious negotiations. The parties will have to work close together once the negotiations are done and the contract in place, so this makes it essential that they leave the negotiations as allied rather than adversaries.⁶⁴¹

6. The risks of partnering agreements

There are several risks involved in these types of agreements which are very important to take into consideration. For example, for a small company, the primary risk of entering into a partnering agreement is often referred to as the loss of flexibility and future opportunities. Many of these companies intend to be integrated companies with R&D, manufacturing, and distribution capabilities. Although, if the scope of the agreement is too broad, or the terms too restrictive, it may be difficult to realize this goal.⁶⁴² Accordingly, a small company will often seek to retain as many rights as possible, e.g. rights to manufacturing of products

⁶³⁹ *Ibid.*

⁶⁴⁰ *Ibid.* p. 21. According to the Villeneuve et al., this is not standard arbitration, since they consider litigation to be standard arbitration. They are simply refereeing to the escalation through operational and management levels that are forcing each party's personnel to discuss the dispute with their counterparts and preclude litigation until a deadlock has been reached at the highest management levels.

⁶⁴¹ *Ibid.*

⁶⁴² *Ibid.*

and to develop and preserve possible future products. However, a related risk is that the terms of the project can be intrusive and thereby put such constraints on the smaller company's options that the contract becomes, in effect, an unintentional acquisition of the smaller company by the larger company.⁶⁴³ This can happen where licenses are broad and/or exclusive, or where restrictive rights of first offer or first refusal on new product or new deals make it extremely difficult for the smaller company to make deals with any third party and will make purchases unattractive for the thirds parties.⁶⁴⁴

Contrary, the greatest risk, for the larger companies, is the reliance on the smaller company. This dependence can possibly cause the larger company to fail to undertake its own efforts in areas that are critical to its future.⁶⁴⁵ This risk is particularly relevant to keep in mind, in the construction of a partnering agreement between the shipowner and the supplier. However, within the maritime industry, there are plenty of market players and due to the heavy market,⁶⁴⁶ the dissertation assumes that the shipowner and the supplier both a large market player, thus neither of them would potentially find themselves in an unintentional acquisition. However, both the shipowner and the supplier should be aware of the risk of interdependence, since a collaboration between them regarding the development of products and maintenance hereof, is a factor they need to consider.

Partnering agreements is necessarily not the right solution for every company, as they carry significant costs - opportunity costs in particular - and potentially high levels of risk that are not always justified. The decision to embark upon a partnering agreement should only be made after a careful assessment of the

⁶⁴³ *Ibid.*, p. 12-13.

⁶⁴⁴ *Ibid.*

⁶⁴⁵ *Ibid.* However, this does also apply to the small companies – especially in the manufacturing area.

⁶⁴⁶ See chapter 2, for more information on the maritime market.

other parties' strengths and weaknesses, the cost and benefits of the alternative to the partnering engagement, and hereon, furthermore an assessment of the strengths and weaknesses of the competitors, is also relevant.⁶⁴⁷

As stated by Harrigan:

*"The costs of cooperating (...) can be sizable, requiring a multitude of resources to be committed, including time, money, materials, personnel, and communications. There can be drawbacks (...) from opportunities forgone and partners will often be concerned over their perceived loss of control over invested capital, technical resources, proprietary information, and other advantages that might be disseminated to third parties. Commitments to one set of partners may reduce a firm's future opportunities to forge alliances with other partners. Fears concerning a firm's loss of strategic flexibility can weigh most heavily of all."*⁶⁴⁸

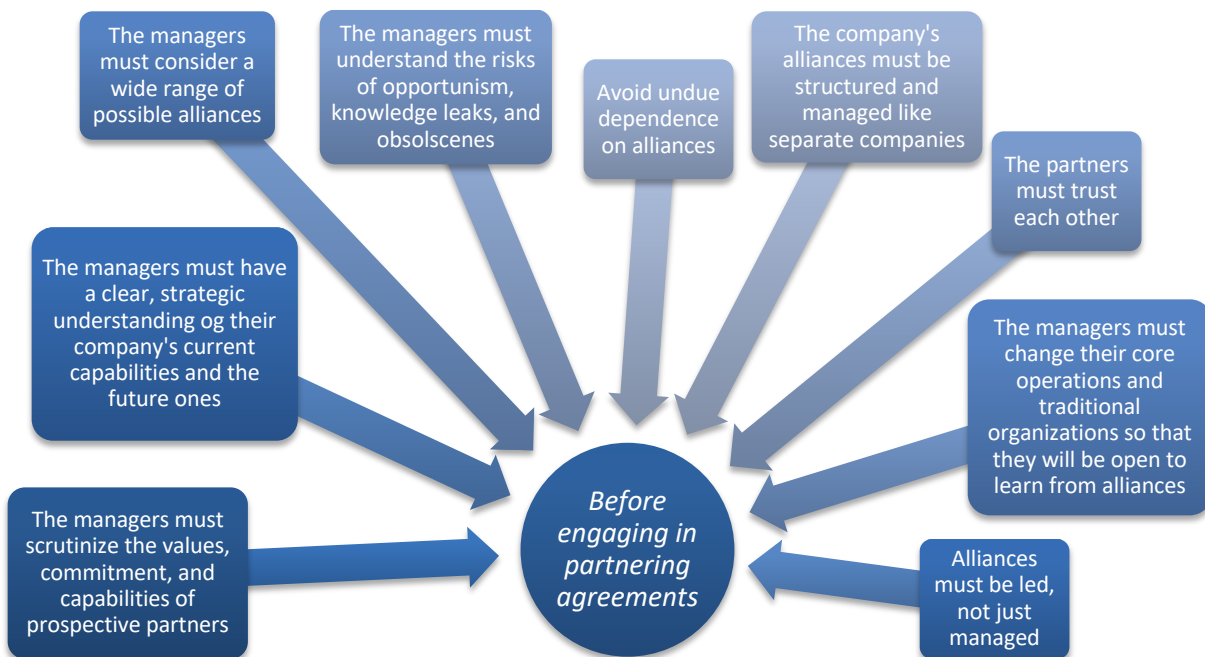
Badaracco agrees with Harrigan's perception on partnering agreements, and – in this connection – he suggests a few conditions which need to be clarified before engaging in a partnering agreement:⁶⁴⁹ The considerations are defined in figure 5.4.

⁶⁴⁷ *Ibid.* p. 1-14.

⁶⁴⁸ Harrigan, K. (1986). *Managing for joint venture success*. Lexington, mass p. 25.

⁶⁴⁹ Badaracco, J. (1991). *The knowledge link: How firms compete through strategic alliances*. Harvard Business School Press, pp. 131-45.

Figure 5.4 – Necessary considerations before entering a partnering agreement



Source: the author's creation⁶⁵⁰

Besides the conditions set out in figure 5.4., additionally timing is also a factor that the shipowner and the supplier needs to consider in deciding whether to pursue partnering opportunities. According to Villeneuve et al., companies which pursue these agreements at an early stage can reduce the share of risk and could potentially have more time to choose a partner and negotiate an alliance. Contrary, companies that delay the search of an alliance could be exposed to greater risks and financing pressures, although they might retain more of the future benefits of the project, as they are able to present a potential partner with a less risky deal and have more information about products and markets on which to base the selection of an appropriate partner and alliance structure.⁶⁵¹

⁶⁵⁰ Based on the considerations set out by Badaracco. Badaracco, J. (1991). *The knowledge link: How firms compete through strategic alliances*. Harvard Business School Press, pp. 131-45.

⁶⁵¹ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer, P. 1-16. (Part I).

The fact that a partnering agreement is not for every company, is an essential factor, which the shipowner and the supplier needs to have in mind. However, this will be discussed further in chapter 6.

6.1 Risk reduction

Partnering agreements can reduce another parties' risk by:

I dividing the risk of the project between both parties

II creates a possibility for diversification in regards to the products.

III possibility for quicker entry and payback

IV decrease in costs (meaning that the cost of the partnership is less than if the cost of investment was undertaken by each firm alone).⁶⁵²

In regards to risk reduction, for example a development of - for instance - a new ship is a multimillion dollar undertaking.⁶⁵³ Such an undertaking as an LNG tanker is a large undertaking.⁶⁵⁴ In a partnering agreement the project spreads the risk of failure - and the potential gains - over more than one party i.e. in this case the shipowner and the supplier. This applies also to exploration consortia. But there are other subtler considerations, which Reuer illustrates by the General Motors (GM)-Toyota venture:

"To the extent that GM did not have to sink \$2.5 billion into developing a new small car in the United States, it could invest the capital over a range of larger models. Given the public's fluctuating taste for smaller versus larger automobiles – something which Detroit

⁶⁵² Ibid. See also Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*, p. 74. Original Language; Danish – Authors Translation.

⁶⁵³ Arguably it is a multibillion dollar undertaking if the investments in development is considered and not merely the construction of a ship.

⁶⁵⁴ LNG tankers were mentioned in the introduction in chapter 1. They cost approx. 225 million USD. Stopford, M. (2009). *Maritime economics*. Routledge, p. 269.

⁶⁵⁴ Ibid.

has been largely unsuccessful in when attempting to predict during the past two business cycles and oil shocks – a diversification of the product portfolio might insulate auto producers from such variability in demand, at least up to a point.

Reuer's example should be seen in connection to product differentiation. Furthermore, a partnering agreement can lower the total investment cost of a particular project, or the assets at risk, by combining expertise and slack facilities in the parent firms – this is in reference to the decrease in costs”⁶⁵⁵

Another good example – set out by Reuer - is utility power pools that enable each regional electric company to make a lower investment than it would have been able to if operating alone. Finally, the experience of all the parties, i.e. their mutual split of risk or abandonment of markets in favor of the joint collaboration, make up for quicker entry with a better design and a quicker payback.⁶⁵⁶ Quicker entry and certification are seen as strong factors within the pharmaceutical-industry licensing. The industry's complaint is that due the time consuming factors regarding certification, the monopoly advantage of a patent is battered and therefore the time to recoup R&D costs is not enough.⁶⁵⁷ According to Reuer, the risk-sharing function of coalitions could particularly be significant in research-intensive industries e.g. computers, where each succeeding generation of technology tends to cost much more to develop, while at the same time product life cycles might shrink, leaving less time to repay the development costs.⁶⁵⁸

⁶⁵⁵ Reuer, J. (2009). *Strategic Alliances: Theory and Evidence* (Oxford Management Readers). Oxford University Press, p. 27-28.

⁶⁵⁶ *Ibid.*

⁶⁵⁷ *Ibid.*, Clinical testing performed by a licensee often speeds up the certification process.

⁶⁵⁸ *Ibid.*, Reuer argues This observation appears to be contradicted by Friedman, Berg, and Duncan (1979), who showed a negative correlation between R&D intensity and the propensity to form joint ventures – as if to suggest that the more valuable a firm's proprietary technology, the more likely it is to go-it-alone.

The apparent contradiction is possibly resolved when we consider that (1) Friedman, Berg, and Duncan's data are now a decade old, when the context for developing international strategies was markedly different and (2) industry-level studies typically are difficult to translate to the firm level.

A leader such as IBM may well be able to carry on by itself, while the followers such as Siemens, Fujitsu, and Amdahl may have to form joint ventures to share development costs and risks.

Reuer argues that another dimension of risk reduction occur, which has to do with containing some of the political risk by collaborating with a local partner. Such a partner may have sufficient political authority to prevent the partnering of local government action or interference.⁶⁵⁹

Reuer's take on risk reduction is a fundamental element, as this point out how partnering agreements and collaborations in general, can be a tool to reduce the risk within the various projects. Which is highly relevant in the larger investment industries such as the maritime industry.

7. Concluding remarks

In this chapter, the purpose was to focus on partnering as a kind of relational contracting. The argument is that when two parties perceive one another as partners in a collaboration rather than competitors or simply a supplier/shipowner relationship, they will begin to trust each other and thereby gain a long-term relationship that will benefit both businesses and the products in-between. In this way, the collaborative team will create common goals and objectives either through binding contracts or non-binding contract and will, arguably, create innovation as well.

The maritime industry could easily mirror itself in the pharmaceutical industry or the construction industry, where partnering has been used for contracting in the last decades. Besides the innovative and trusting collaboration, according to

⁶⁵⁹ Ibid., p. 28-29, Reuer also argues that it may also be that the partnering has come about as a result of the host government's industrial policy. In such a case, added political-risk reduction can be achieved; the government endorses the joint venture favoring joint ventures over fully-owned investments are by no means peculiar to less-developed countries (LDCs). Japan has, in fact, been a role model for many developing nations.

Ronco & Ronco, partnering may also be a great solution for the shipowner and the supplier in terms of the shared expenses and the shared risks in terms of the production of goods, as well as possibly being able to enter a market that would not be accessible without the other party. Moreover, the maritime industry has, arguably, changed during the years to become increasingly about purchasing spare part products – this I meant in a retrofitting and cost efficient perspective - rather than purchasing an entire new ship. Therefore, a strong collaboration between a supplier and a shipowner will benefit both, as the parties will then be likely to prefer to purchase/sell spare parts to this party rather than another party. Hence, partnering is likely to create value, based on the illustrated objectives, between the parties (besides the economical aspect) and, therefore, as illustrated in this chapter, partnering as a concept of relational contract may affect contracting in the maritime industry successfully in the future.

Therefore, based on this chapter, it has become evident that partnering may easily be the best solution in connection with contracting between the supplier and the shipowner in the future.

Chapter 6: A legal analysis of the contract clauses between the shipowner and the supplier

1. Introduction

The previous chapters have discussed relational contracting and partnering, thus clarified the relevance hereof in regard to the shipowner and the supplier from a theoretical and practical perspective. In this connection, the maritime industry was compared to the pharmaceutical industry and the construction industry, where partnering agreements are well known, although, the formation and execution of the agreements differ.⁶⁶⁰

As seen in the construction industry, partnering is merely used as a collaboration tool on a given project, whereas the pharmaceutical industry and the maritime industry's⁶⁶¹ way of applying partnering is much more aligned, besides the difference in products – at least that is what the dissertation is proposing. Therefore, this chapter will solely focus on the contractual aspect of the partnering agreement between the shipowner and the supplier. Consequently, this chapter will discuss how the partnering agreement should be outlined and how the shipowner and the supplier's approach towards this ought to be. Since a partnering agreement consists of several clauses, many of these are standardized clauses. Consequently, the dissertation will only discuss those few clauses that the

⁶⁶⁰ This is clarified in section 3.1 and 3.2 in chapter 5.

⁶⁶¹ That is at least what this dissertation is proposing.

dissertation finds relevant in this context. This chapter is based upon the PPC2000 standard contract and BIMCO's Newbuildcon – which was discussed in chapter 2- as point of discussion.

This chapter will start out by discussing the process pre-entering the partnering agreement followed by the post-entering of the partnering agreement between the shipowner and the supplier, which will include a discussion of some of the clauses.

2. Pre-engaging partnering agreement process

Before entering into a partnering agreement, the shipowner and the supplier are a part of a pre-engaging process. The process before engaging in a partnering agreement is not a walk in the park, and – consequently - the shipowner and the supplier need to safeguard themselves. For the parties to move from “*we are considering a collaboration*” to actual engage in one is a complex situation, and thus the parties need to protect themselves and be aware of potential risks and “dangers” in a collaboration. Hence, the parties need to find the right match, as otherwise the risk of a partnering failure is too high, as mentioned in chapter 5.⁶⁶² The case is based upon the assumption that the right match has been found between the shipowner and the supplier which means that the dissertation will look further into the next step in the process i.e. the pre-engaging process between the parties. This process is based upon the practical view discussed in chapter 5. Robert Cooter⁶⁶³ and Thomas Ulen⁶⁶⁴ (hereinafter, referred to as, “Cooter and Ulen”) discuss the risk of one of the parties defecting, which will be

⁶⁶² As pointed out in section 5 – many partnerships fail due to lack of management.

⁶⁶³ Professor of Law at Berkeley Law School in the field of law and economics.

⁶⁶⁴ Professor at Illinois College of Law, specialized in law and economics. Holds a Swanlund Chair Emeritus.

further discussed in chapter 7.⁶⁶⁵ The above procedure entails different legal measurements which will protect the parties, in the case of one of the parties defecting upon the other.

This pre-engagement procedure entails:

- Mutual Nondisclosure agreement (NDA)
- Nonconfidential Evaluation agreement (NEA)
- Evaluation/Beta test agreement⁶⁶⁶
- Letter of intent
- Materials Transfer Agreement

These five documents are part of the engagement procedure, although the “evaluation/beta test agreement” will not be applicable to the shipowner and the supplier, since the beta test agreement is in connection to software i.e. intellectual property.⁶⁶⁷ Thus, in terms of the collaboration between the shipowner and the supplier, software programs are not a part of the scope of the dissertation.⁶⁶⁸

To create a viable partnering agreement before commencement of negotiation of definitive agreements, much work is required,⁶⁶⁹ even though relatively little documentation is generated during this period. Nonetheless, those few pages i.e.

⁶⁶⁵ Cooter, R. B. & Ulen, T. (2014). *Law and economics* (6th ed., international ed.). Pearson Education Limited., p. 34-35.

Cooter and Ulen discuss defecting from a game theoretical perspective, which means that in the classical prisoners dilemma, the theory states, that parties will act a certain way, as the risk of the other party defecting is too high.

⁶⁶⁶ Beta-Test Agreement Law and Legal Definition. In terms of Intellectual Property law, beta-test agreement is a software license agreement between a software developer and a customer. The agreement allows the customer to use the software program in a “live” environment before its release to the general public. However, this will not be relevant in regards to the shipowner and the supplier.

⁶⁶⁷ This could potentially be relevant if the future product became more technological.

⁶⁶⁸ Though it would be very interesting to conduct further research within this field, especially since the aim of this dissertation is to improve innovation in the maritime industry, therefore these evaluation/Beta Test agreements could be relevant in regards to implementation of software programs as operating systems in ships or in regards to technological driven products e.g. monitoring systems to monitor performance such as the Rolls Royce . Power-by-the-hour.

⁶⁶⁹ This also refers to high ex ante costs, which will be discussed in chapter 3.

letter of intent, NDA's etc.,⁶⁷⁰ which has to be created, serve as the critical functions of protecting the confidential information of the shipowner and the supplier which determine the basic structure and terms of the deal and setting the tone for negotiation of the definitive documents.⁶⁷¹ Thus, in order for the shipowner and the supplier to be able to establish a collaborative partnership, it is essential to build up trust through legislative tools e.g. letter of intent, NDA's etc. It is far from all partnerships⁶⁷² that are completed, due to various factors which is why it is important for the shipowner and the supplier to guard themselves through contracts. As mentioned in the previous chapter, partnering agreements are legally binding in the UK and in Denmark, although in the US, a letter of intent will be enough. However, this dissertation will act as if a letter of intent is not enough.⁶⁷³ In order for the shipowner and the supplier to move forward in the partnering process, both parties are safeguarded by the four procedural documents.

Stopford discussed this situation in connection to the newbuilding of ships and, arguably, this will be used in accordance with the shipowner and the supplier. In terms of newbuilding, once the preliminary negotiations are complete, a letter of intent is often drawn up as a basis for developing the details of the design and the construction contract. This is mentioned above and this explains why the shipowner and the supplier need to complete a letter of intent. At this stage, the letter of intent is not legally binding in general, although, this can become a delicate issue, especially if the shipbuilder is devoting significant resources to working up a design to the shipowners specification. For example, the cost of

⁶⁷⁰ Based upon that the PPC2000 is approx. 60 pages long without appendices and the BIMCO's NEWBUILDCON is approx. 50 pages without appendices, a letter of intent and NDA's is a part of the pre-process, therefore, arguably, it can be numerated as a few pages.

⁶⁷¹ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer, P. II-1. (Part II)

⁶⁷² Whether it is a joint venture, strategic alliance or merger, not all gets completed, due to various reasons, therefore it is highly relevant to safeguard ones business in the process, so in the event of a failure, the business secrets of each party will be safeguarded by contracts.

⁶⁷³ See also chapter 5, section 5 regarding structuring the partnering agreement.

developing a detailed design for a ferry or a large containership can exceed \$1 million USD.⁶⁷⁴

This dissertation has pointed out several times how time and money consuming this industry is, but the processes that the maritime industry are used to are not far from a partnering process. As pointed out previously in regard to shipbuilding, shipowners often deal directly with the shipyard, *if they have an existing relationship*. This avoids time-consuming expert resources to handle the negotiation.⁶⁷⁵ This is a clear example of how the parties, i.e. shipowners, are acting differently when there is a relational context between the parties. If the shipowner in the current situation is willing to overlook the management and deal directly with the shipyard, due to a relationship, then there is a huge possibility for a successful relational collaboration between the shipowner and the supplier; given that the parties are willing.⁶⁷⁶

Since the maritime industry is a very economic pressured industry, the parties cannot afford to spend time and money unnecessarily. Chapter 2 stated that in the current maritime market, it takes approx. six months to a year to finalize the design and specification process in the process of ordering a ship.⁶⁷⁷ This adds up in connection with time-consuming elements and, even though the industry is used to these processes, it has become evident that there could be a potential for optimization. Chapter 4 discussed relational contracting and one of the main elements towards relational contracting is for the parties to define the goal of the contract, and thereby create a common goal. For the shipowner and the supplier, they should be very confident what their common goal is and the incentives to reach it. As relational contracting is a matter of building up trust between one

⁶⁷⁴ See also Stopford, M. (2013). *Maritime economics*. (3rd ed.). Routledge, p. 209.

⁶⁷⁵ For further information see chapter 2, section 8.2.1 Shipowner and Shipyards in the newbuilding market. See also Stopford, M. (2013). *Maritime economics*. (3rd ed.). Routledge, p. 208.

⁶⁷⁶ As discussed in chapter 4, Macneil emphasises that a relational element between two parties can change a given situation, and not just merely be a discrete exchange.

⁶⁷⁷ *Ibid.*, p. 209.

another, it is quite relevant for both of the parties to actually engage in the contract.

Because the construction of a merchant ship can stretch over several years, the process may not develop as expected, leading to design changes or disputes between the shipowner and the builder. The shipbuilding contract must ensure that each of these disputes can be dealt with in a fair and orderly way which does not disrupt production or commercial relations. Inevitably, the contract is more detailed than the brief containing a preamble and various articles, each of which deals with a specific, well-established area, and provides a broad summary of the issues dealt with, including procedures for resolving anticipated problems, whilst minimizing expensive legal disputes.⁶⁷⁸ Stopford states how it works within newbuilding of a ship. Due to the complexity hereof, only some of the factors within the process are relevant and applicable towards the shipowner and the supplier. However, Stopford defines a newbuilding situation where the shipowner and the supplier are heading toward a partnership – this purpose is the same, so is the concept hereof, although the partnering process differs slightly from this, due to the collaborative factors. Therefore, the take, which is relevant in connection with the newbuilding situation, is that the shipowner is used to complex situations, hence, the dissertation proposes a change in the situation by reversing the approach from the parties.

In order to complete a partnering contract, which is a complex situation, the parties' (i.e. the shipowner and the supplier) rights and obligations are not primarily fulfilled upon the "closing" of a transaction or the mere delivery of a product.⁶⁷⁹ Instead, the substance of the agreement remains to be completed, and

⁶⁷⁸ Stopford, M. (2013). *Maritime economics*. (3rd ed.). Routledge, p. 209.

⁶⁷⁹ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer., P. 1-2.

often defined, over time. Performance over time alone is an insufficient tool to define a partnering agreement. A distribution agreement or a requirements contract, for example, is also completed over time, but is not by itself a partnering agreement.⁶⁸⁰ This is an important element that the parties within a partnering agreement need to understand. For the shipowner and the supplier to interact in a partnering agreement, it is important for both of them to realize, that the agreement are not fulfilled by the delivery of the product. A partnering agreement between the shipowner and the supplier are not just a collaboration on the production of one product, it is a collaboration in which both parties are sharing knowledge, developing products and perform maintenance services on the product or several products.⁶⁸¹

3. The alliance agreements

Partnering can – as mentioned previously - also be characterized as a strategic alliance⁶⁸² and, therefore, when addressing the alliance agreements, it is important to stress that the parties need to be aware of which agreement they engage in.

When discussing The Alliance Agreements, these various forms of agreements are often components of partnering transactions:⁶⁸³

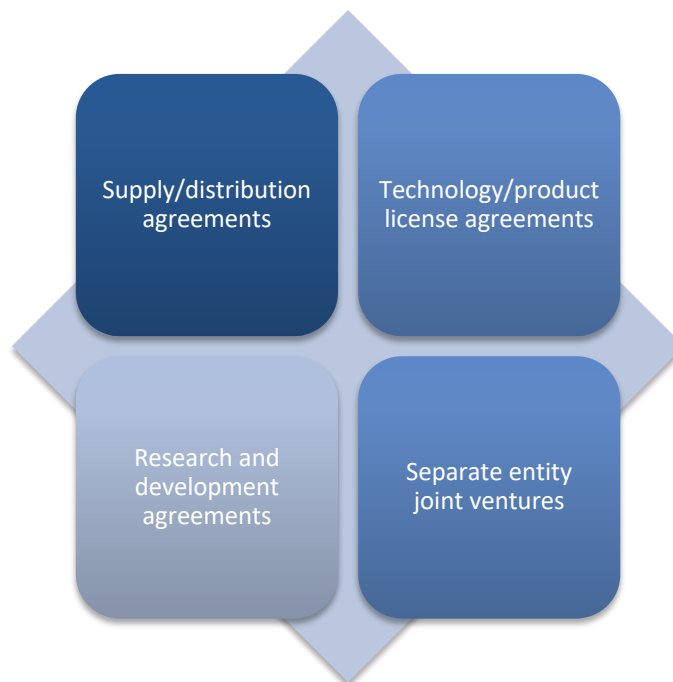
⁶⁸⁰ As discussed in chapter 5.

⁶⁸¹ See also Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*, p. 74. Original Language; Danish – Authors Translation.

⁶⁸² This was discussed in chapter 5.

⁶⁸³ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer, P. III-1.

Figure 6.1 – Alliance agreements



Source: the author's creation

In terms of the case in question, both *the supply/distribution agreements* and *research and development agreements* might be relevant. Even though the shipowner and the supplier are engaging in a different kind of strategic alliance, a combination of the two agreements might be the best option. Arguably, *the technology/product license agreement* could be relevant too, although, there should be a clear definition between the shipowner and the supplier. This means that both parties are well aware that the supplier is the manufacturing party and, therefore, the shipowner will not be participating in the manufacturing product, which means that the supplier has the product licenses.

The following will address some of the issues that typically arise in partnering transactions. Obviously, the types of definitive agreements, which constitute a partnering agreement, will vary depending on the deals structure and terms. Generally, the partnering alliance will include a combination of two or more of

the following: *a product supply/distribution agreement, a license agreement, a research and development agreement, a separate entity joint venture agreement, and/or a debt or equity financing agreement.* Supply, license, and research and development portions may be covered by separate agreements or combined into a single document.⁶⁸⁴ Hence, the partnering collaboration that this dissertation is working towards creating between the shipowner and the supplier ought to include *a supply/distribution agreement* and *a research and development agreement*.⁶⁸⁵

4. Negotiating a partnering agreement

The previous chapters have highlighted the different factors which are defining the controversy between the shipowner and the supplier. Although, this information is important, the question is what and why this is applicable to the parties involved and how this is to be applied to the subject.

For the shipowner and the supplier to engage in a partnering agreement, it is necessary to address the highlighted factors involved in the process. When looking at the partnering agreement, it involves looking into a situation between two parties. The approach is, therefore, to look at the parties both together and separately with the aim to construct a new “contract form”⁶⁸⁶ between the shipowner and the supplier, which both parties will benefit from. Both the shipowner and the supplier are within the same supply chain and hence their partnering agreement will be an ongoing interdependent relationship.

⁶⁸⁴ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer, P. III-2.

⁶⁸⁵ The dissertation will not look further into these contracts, due to the scope of the dissertation, though this is interesting for future research.

⁶⁸⁶ This new contract form, is set out from the PPC 2000 and BIMCO's contracts, thus it is not a new contract by itself, but it is a new contract form for the shipowner and the supplier.

Although, the question is whether their incentives are to structure an alliance or just to understand the operation, according to Villeneuve et al.⁶⁸⁷

When discussing the partnering agreement between the shipowner and the supplier, a distinctive feature in connection to partnering is the fact that it is a fundamentally different form of collaboration between companies, whereas plenty of the traditional concepts do not apply such as supplier, customer, buyer, or seller. These perceptions lose their importance when applying partnering, whereas the focus changes to be on perceptions as common goals, optimization, trust, and mutual respect.⁶⁸⁸

According to Villeneuve et al., for the parties to negotiate a successful partnering agreement, the parties need to identify their opponent's motivational factors.⁶⁸⁹

4.1 The shipowner vs. the supplier

Many partnering agreements have a distribution/supply agreement as a component, as mentioned previously. In other industries, such as the Tech market, often, although not always, the smaller technology company supplies the product. For the smaller company to be a supplier for the larger company, the hopes are to use the large company's distribution channel in order to create a market for its own product.⁶⁹⁰ When looking at the partnering agreement between the shipowner and the supplier, then the aim for the supplier is to get a collaboration where it has a frequent buyer, i.e. the shipowner, of its product. Thereby, the supplier will also gain a collaboration with the shipowner which provides the supplier with new knowledge regarding the shipowner's

⁶⁸⁷ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer., P. 1-3. This is further discussed in chapter 5.

⁶⁸⁸ Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*, Authors Translation – Original Language; Danish.

⁶⁸⁹ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer., P. 1-3.

⁶⁹⁰ *Ibid.*, p. IIIA-1.

requirements and a chance to plan the specific production, which can create huge savings compared to the supplier's current stock capacity.

The main concept of a *supply agreement* applies to any transaction where supply is constrained by production. This includes situations where commencing or increasing production of a product requires significant lead time or capital investment. On one hand, the seller (i.e. the supplier) needs comfort that it will not be forced into a breach and more important that it will stand a chance to regain its investment. On the other hand, the buyer (i.e. the shipowner) seeks reasonable assurance that it will be able to obtain its requirements of the applicable product one way or another.

In a supply agreement, the shipowner is committed to purchase its requirements of products (and replacement products) from the supplier. Furthermore, it is also required to provide both rolling, long-term, good-faith forecasts and short-term forecasts. The short-term forecasts are subject to limits on changes in any particular period, as well as a period-to-period variability.⁶⁹¹ The supplier, on the other hand, has certain delivery and warranty obligations and the agreement defines a product acceptance procedure. The agreement also allocates product liability, risks and responsibility for regulatory compliance between the parties.⁶⁹²

The term of the supply agreement runs for a fixed period from first commercial sale of the first "product", but will automatically continue thereafter, unless a termination notice is given. Termination by the supplier requires a one-year notice. If the shipowner wishes to terminate, its purchase obligation is scaled down over a three-year period. The shipowner may also terminate the agreement on a product-by-product basis if the shipowner can obtain a product

⁶⁹¹ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer, P. 8-1.

⁶⁹² *Ibid.*

at a price substantially lower than the price provided by the supplier and it is not willing to lower its price to reduce the price differential, or if the supplier substantially fails to supply the shipowner's forecast requirements for a significant period.⁶⁹³ Basically, the aim of the partnering agreement between the shipowner and the supplier is to spread learning and the technical knowledge.

When the shipowner and the supplier are participating in a partnering agreement, their primary focus should be on common goals, optimization, trust, and mutual respect.⁶⁹⁴ Although, as illustrated in figure 5.4,⁶⁹⁵ both parties should be aware of the risk in the agreement, which is grounded in a possibility of opportunistic behavior between the parties or perhaps knowledge leaks. Hence, in order to get a successful partnership, the contract need to incorporate the right incentives, thus the parties will act accordingly.

5. Incentives

The basic factors of the partnering agreement are incentives, trust, and information. Partnering is based on a two-party relationship which thus makes it necessary to actually outline the motivational factors of the different parties. This is also relevant in connection with the common goal of the relational collaboration. By doing so, the factors that are important for the parties, will be stressed and thereby outline which dynamics that can be changed in order to make the theory apply to a contractual relationship.

The table 6.2 below illustrates the important factors that influence the shipowner and the supplier:

⁶⁹³ *Ibid.*, P. 8-1;8-2.

⁶⁹⁴ Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*, p. 74-75. Original Language; Danish – Authors Translation. This was also discussed in chapter 5.

⁶⁹⁵ See chapter 5.

Table 6.2 – The incentives of the parties

Shipowner	Supplier
Risk	Price
Price	Time
Time	Risk
Performance	Innovation
Legislation	Legislation
	Information

Source: the author's creation

5.1 Shipowner incentives and motivational factors

Based upon the situation set out from the industry, the shipowner lacks understanding in terms of the product/components within the ship.⁶⁹⁶ The shipowner's main business is the ship and the performance hereof. Therefore, primitively speaking, the shipowner is a bit shortsighted and are lacking visions which has a negative influence on the ability to optimize the organization, due to the absence of creativity. Thus, the factors which the shipowner reacts to in a positive way are:

The price

Since the shipowner is operating in a volatile market, the price is an essential factor for the shipowner. Replacing or purchasing new components for an existing ship is or can be a costly affair, which is why it is important to choose wisely, in order to control the investment. As in any other organization, an investment needs to be profitable, meaning that the shipowner needs to be aware of whether its investment is going to provide a surplus or not and thereby be cost-effective. The volatile market is highly influenced by shifting freight rates and oil prices,

⁶⁹⁶ This was stressed in chapter 1.

since the investments can have a huge influence on the organization and, thus, the shipowner needs to be careful.⁶⁹⁷ Therefore, it is a given factor that the shipowner reacts positively towards *value-for-money*, which makes the price element a motivational factor to the shipowner.

The time

Time and price are linked to one another in terms of the value-for-money perception. In this context, the “time” factor can be divided into two; *the time of delivery* and *lifespan of the product*.

The first, *time of delivery*, is quite relevant for the shipowner, depending on whether it is replacing a component within an existing ship or purchasing a component within a newbuilding state. The time issue is a more crucial factor within a replacing situation rather than a newbuilding situation, since the shipowner and supplier are able to plan ahead in a newbuilding situation, whereas in a replacement situation, this can be quite costly if the ship is on the berth - not operational – and waiting for the specific component. The second element is *the lifespan of the product*, where it differs whether it is replacing i.e. retrofitting or newbuilding. A ship usually has a lifespan of +20 years,⁶⁹⁸ thus if a ship within its lifetime of 18 years needs replacing of a component, then the shipowner needs to consider the investment carefully, as it does not necessarily add up to purchase a component with e.g. a lifespan of +8 years, if the shipowner has calculated a demolition for the ship within the next four years or sell it on secondhand, if the component is not increasing the value of the ship.⁶⁹⁹ On

⁶⁹⁷ The Tramp Shipping Market an update of a report prepared for the European Community Shipowners' Association (ECSA)", by Clarkson Research Services Limited (CRSL), March 2015, p. 4. See also: As stressed in chapter 1 and 2, the maritime market is a highly pressured market, with huge assets and a need for huge amounts of capital, therefore banks are quite involved in the market as a majority of the parties within the market has great debts.

⁶⁹⁸ Stopford, M. (2009). "Maritime Economics", 3rd edition, p. 207. This is also mentioned in chapter 2.

⁶⁹⁹ See figure 1.1. for a market overview.

another note, it is worth mentioning that when the shipowner is purchasing a component e.g. with a lifespan of +6 years, the shipowner needs to consider whether there could be potential legislative future compliance needs which also needs to be taken into consideration.⁷⁰⁰

The performance

Performance is also indirectly linked to the *value-for-money* perception. Thus, this parameter is highly relevant, since this refers to the functioning of the product. The performance of a commodity can vary, depending on what and how it is measured. As an example, the dissertation assumes that the shipowner is looking to purchase a new engine for an existing ship.⁷⁰¹ Then, it is essential for the shipowner to value the investment. The given engine needs to have a certain performance, and here it may differ if it is an engine for a ferry or an LNG tanker, since one of the ships may be more light-weighted, and therefore the qualifications may not necessarily be the same. The heavier ship may require more horsepower than the light-weighted ship. As a contrast, the LNG tanker may have a more sophisticated operative system which may require that an engine needs the right system set-up in order to be implemented in the operative system. Performance is a broad aspect which can be measured in many ways, although, the main element is the functioning of the product. This is crucial for the shipowner.

⁷⁰⁰ This factor has been stressed in chapter 2. Arguably, this is a tricky factor, since this relies on forecasts and thereby predictions, which may or may not be relevant. Though it is a relevant factor to consider.

⁷⁰¹ In this example, it does not really matter whether it is an existing ship or whether it is a newbuild. It is all situation based, though this example does not differ between the two situations.

The legislation

The legislative area is an important factor for the shipowner to consider, even though, this may not weigh as much as the other factors. It is important for the shipowner to comply with current legislation e.g. SOLAS and UNCLOS, otherwise sanctions may occur.⁷⁰² Although, if the cheapest product is not complying with the current legislation, the shipowner might consider purchasing that product instead, if the savings in the investment is larger than the risk of being caught red handed and fined for the lack of compliance. However, it is important for the shipowner to purchase a product which is compliant with the current legislation.

The risk

The risk is a great motivational factor for the shipowner. When the shipowner invest in a new product, it will arguably expect the risks in connection with the product to be very low. Due to a volatile market, the shipowner can be very fragile, meaning that it is dealing with expensive assets and some shipowners are in great debts which means that the shipowner is not interested in unnecessary risks. To some extent it can be argued that the shipowner is risk averse.⁷⁰³

5.2 Supplier incentives and motivational factors

The suppliers are working towards changing the market by gaining new market shares by selling products with an added value. Based on the situation set out from the industry, the suppliers are feeling left out, meaning that they are merely manufacturers and deliver products, even though they believe that the shipowner

⁷⁰² However, this depends of the flag of the ship. Further discussion on the legislative area is in chapter 2.

⁷⁰³ There are three different kinds of risks – risk neutral, risk averse and risk -loving. The risk aversion – a person who are not keen on being exposed to risk and are willing to pay, to avoid it. Miceli, T. J. (2017). *The economic approach to law*. Stanford University Press, p. 33. See also Dutta, P. (1999). *Strategies and games: Theory and practice*. MIT Press, p. 441-444.

is making poor decisions and by entering into a dialogue with the shipowner, the suppliers are able to provide better services and gain market shares. In other words, the suppliers possess great expertise regarding the products, and they want to deliver this expertise to the shipowner, in the sense of extended services. Hence, a long-term business relation is the result hereof and this gives the supplier a chance to deliver better products and create new business options to the shipowner.

The price

The supplier is a manufacturer, thus their primary business. The supplier is operating in a very competitive market and, therefore, they need to be competitive on the price, as they will otherwise lose market shares. As mentioned previously, the shipowner is economically fragile and, from a supplier perspective, lacks knowledge regarding the products. Therefore, the suppliers need to be on top of things and competitive in their pricing. Even though the shipowner is motivated by the *value-for-money* perception, from the suppliers' perspective, the shipowner might not be able to perceive a real judgment hereof. The supplier's business is surrounded by manufacturing of products and, therefore, the price of the product, obviously, needs to be profitable and competitive at the same time.⁷⁰⁴ In order for the supplier to be competitive, it is important for the supplier to be cost-effective, which involves a low level of expenses by controlling their budget lines. Hence, the price is an important factor for the supplier, since this concerns their main business.

⁷⁰⁴ See also Porters Value-chain approach in chapter 5, section 2. Rationales for Collaboration. Porter, M. E. (1986). "Changing patterns of international competition." *California management review* 28.2: p. 13-14.

The time

From the supplier's perspective, time is an essential factor, even though this factor differs from the supplier's perspective. First, the time frame refers to *the time spend on manufacturing* of the product. The supplier is working within a large and slow industry, meaning that process are generally time consuming. The time spend on the manufacturing of a product can easily take several months to a year, depending on the product.⁷⁰⁵ Second, there is *time until overhaul*. The supplier needs to be aware of the performance and the durability of their product, in order to define the time frame between overhauls. By understanding the product and conduct ongoing services, it will keep the product operational for longer and will avoid the unnecessary inconveniences for its customer, i.e. the shipowner. Third, it is the *time of repair*. This is an important factor for the supplier in order to perform the best services for the shipowners.⁷⁰⁶ All three time factors are important for the supplier, and it all comes down to planning. For the supplier, the time factor is a part of being customer friendly and optimize its internal organization.

The risk

The risk is an essential factor for the supplier and around ninety-four percent of manufacturers are currently listing competition and consolidation as a risk, and some are turning to acquisitions to gain an advantage.⁷⁰⁷ For the supplier, there can be several risks associated with the manufacturing of products, e.g. time, cost and quality, which makes no room for delays. If the supplier cannot deliver

⁷⁰⁵ Stopford, M. (2009). "Maritime Economics", 3rd edition, p. 209.

⁷⁰⁶ This is highly relevant in regards to the shipowner. As stated in the discussion in chapter 5 section 3.1 Why partnering is a necessity, it can be quite costly for the shipowner if the ship is at berth and not being operational, therefore if the suppliers' product is the reason for the lack of operationality, this can influence the relationship between the shipowner and the supplier, in a negative way. See also Stopford, M. (2013). *Maritime economics*. (3rd ed.) Routledge, p. 232. Figure 6.4 illustrates maintenance cost.

⁷⁰⁷ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer, P. 1-2.

accordingly to its promises, even though it may be a consequence of a supply chain stall, there is the potential risk of losing money in potential revenue and profit. The supplier may have a third party vendor,⁷⁰⁸ which the supplier can be accountable for, which means that there is a risk associated here and, therefore, a thorough risk assessment of vendors are a necessity.⁷⁰⁹

Innovation/ New business

Innovation is a key element for the supplier, since this is in regard to product developments. It is important for the supplier to keep developing new and current products which can lead to greater market shares and a greater competitiveness. Innovation within manufacturing come in many forms, ranging from new products to process improvements. Innovation can offer various advantages for the supplier and this is often characterized as the key to become more competitive and outperform competitors. From the supplier's perspective, innovation within the maritime industry can as an example lead to better awareness in terms of customer demands, faster turnaround times, improved design and quality of the products and streamline relationships with suppliers and customers. For the supplier, the innovative parameter can be divided into four types; *outsourcing*, *manufacturing*, *management*, and *technology*.⁷¹⁰ These four types is an expression of fields within the suppliers organization, which can be altered to become more innovative. First of all, *outsourcing* may refer to a change in raw materials or third party vendors. Second, *manufacturing* refers to e.g. modifying the production of products, whereas *management* may refer to a change in the manufacturing process. Finally, *technology* refers e.g. to a change in the manufacturing process, where new technological solutions are implemented or adapted. Especially the

⁷⁰⁸ In the maritime industry, the suppliers may have sold licensee rights to third party suppliers, which grants them permission to manufacture the suppliers products. Here is a risk associated with the image of the supplier, which can be caused by this third party vendor.

⁷⁰⁹ See the PPC2000 and Newbuildcon for how their regulations.

⁷¹⁰ Authors emphasis.

technology factor is interesting, as this is the obvious way of creating more innovative products, but may also result in more innovative use of labor.

Information

Information is a key element for the supplier, since this provides it with the opportunity to plan ahead and to keep improving its efforts and product through the received information about the products' performance, but also to understand the customers i.e. the shipowners needs. The information factor can be divided into two types: *product knowledge* and *customer knowledge*.⁷¹¹ By receiving knowledge in connection with the suppliers and/or customers, the supplier is able to improve its efforts in terms of customer care, by improving services and create more innovative products. With the lack of information, the supplier is not in a position to improve its efforts or products and, therefore, information is a key element toward creating innovation. In regards to product knowledge, this is useful information for the supplier, so it can improve its products, gain knowledge about the current products in terms of performance, overhaul etc.

Legislation

The legislative area is a highly important factor for the supplier, hence the flag state of the ship, and IMO conventions in which it has ratified e.g. SOLAS. In the legislative area, the supplier can divide this into two factors: *warranty liabilities* and *legal compliance*. In connection with the warranty liabilities, the supplier is legally bounded by product guarantees, meaning that it is responsible for the product for a consistent time period. This guarantee gives the supplier great incentives to assure its product quality. On the second element, *legal compliance*, the supplier needs to make sure that the products are compliant with current

⁷¹¹ Authors emphasis.

legislation and upcoming legislation. If the products are not legally green-lighted, then the products cannot be produced, as they are illegal. See chapter 2 for discussion on flag states. It is essential for the supplier that the products are compliant with the current legislation.

6. The construction of the partnering agreement

The section before has highlighted the incentives, which the shipowner and the supplier respond to. Therefore, this section will define and discuss some of the phrases which will be relevant in a partnering agreement between the shipowner and the supplier. The discussion will be based upon some elements from the PPC2000, the BIMCO Newbuildcon and the incentives set out above. The incentives above will be used as the foundation to discuss the joint optimization between the shipowner and the supplier.

6.1 Analysis of the content of the agreement

In the partnering agreement between the shipowner and the supplier, there are a variety of parameters which are quite relevant for the parties. Some of the parameters are even relevant in each aspect. The purpose of these parameters is to create a contractual framework for the partnering agreement – meaning to pin-point some parts which the partnering agreement should contain. Therefore, the purpose of these different parameters is to create an incentive for the parties to honor the agreement and establish a successful partnership. It is worth noting that when “dividing” these clauses between the parties, the most rational way of doing it is by placing the responsibility with the party who prevent/adjust to the clauses easiest.

The figure 6.3 illustrates the relevant parameters in connection to the partnering agreement between the shipowner and the supplier. As mentioned previously,

the parameters listed below are not complete, meaning that a partnering agreement has many more clauses, although these parameters are especially relevant in connection with this case. The parameters are set out from the PPC2000, BIMCO's Newbuildcon, and the discussion on partnering agreement, as set out in chapter 4.

Figure 6.3 – Relevant parameters in a relational contract between the parties

Approvals and certificate	Representatives	Collaboration	Responsibilities	Pricing and Services	Risks
<ul style="list-style-type: none"> • Regulatory bodies 	<ul style="list-style-type: none"> • Who are they • Tasks 	<ul style="list-style-type: none"> • Expertise • Cooperation 	<ul style="list-style-type: none"> • Guarantees • Liabilities 	<ul style="list-style-type: none"> • Stage payments or milestones • Services included 	<ul style="list-style-type: none"> • Clarification of the different risks involved

Source: the author's creation

6.2 Authorizations and Certificate

For the shipowner and supplier to participate in a partnering agreement, both parties need to fulfill the general requirements. As mentioned above, it is highly relevant for both the shipowner and the supplier that they both comply with the relevant legislation. Consequently, it is important that both the shipowner and supplier perform in accordance with the contract and that both parties are complying with the regulatory bodies such as the vessel's flag state, classifications society, and any other relevant legislation which would be part of the scope of the partnering agreement.⁷¹² In order to arrange a successful collaboration between the shipowner and the supplier, it is important that both parties understand their obligations in order to comply with the regulatory

⁷¹² For further information regarding the importance of a Vessels Flag state and classification see chapter 2 section 4. The choice of flag state – the ultimate decision.

bodies, and obtain and maintain the correct approvals and certificates related to the collaboration. Both the PPC2000 and the Newbuildcon are using clauses, that secure the right authorizations and certificates.⁷¹³ Especially Newbuildcon regulates also the necessary classifications, which is relevant for the shipowner and the supplier.⁷¹⁴ The shipowner is also required to acquire and maintain approvals or certificates related to the vessel and comply with any regulatory body and the vessel's flag state.⁷¹⁵ The supplier is responsible for the products being compatible with the legislative area.⁷¹⁶

6.3 Representatives

The collaborative element is important within the partnering agreement and in order to establish a collaboration, it is important that the shipowner and the supplier each are establishing a team, - as used in the construction industry⁷¹⁷ - whose primary task is to *establish, develop, and implement* their partnering relationships.⁷¹⁸ The importance of a partnering team, consisting of members from each party, was stressed in chapter 5, where Badaracco stressed that a partnership must be led and not just managed.⁷¹⁹ It is important for the shipowner and the supplier that their partnering team consists of people in different "levels" i.e. ranks⁷²⁰ and that the team members act according to their

⁷¹³ See both the PPC2000 contract and Newbuildcon to see how their clauses has been set out.

⁷¹⁴ See the Newbuildcon contract and chapter 2, for further information on the maritime legislation.

⁷¹⁵ See also BIMCO's Newbuildcon for their approach on the approval, classification and legislation.

⁷¹⁶ Also the agreement should entail a testing of the products. See also BIMCO'S Newbuildcon for further information on the testing of products.

⁷¹⁷ Ronco, W. C. & Ronco, J. S. (1996). *Partnering manual for Design and Construction*. McGraw-Hill. , p. 10-11. See also chapter 5 for further information regarding the construction industry.

⁷¹⁸ Both the PPC and the Newbuildcon is suggesting that a team is set out to secure the collaboration. See the PPC2000 and the Newbuildcon in order to, how they have approached it.

⁷¹⁹ Badaracco, J. (1991). *The knowledge link: How firms compete through strategic alliances*. Harvard Business School Press, pp. 131-45. Also discussed in section 5.4 The risk of partnering agreements.

⁷²⁰ A team should consists of both managers, engineers, Directors etc. As it is important that higher ranked people in both companies engage positively in the partnership, as they can make management level decisions, but it is also important that lower level employees are engaged, as it is them who are supposed to work closely on the products in the partnership. Therefore it is essential that people who can effectively and positively secure a successful partnership, is a part of the team.

agreed roles, expertise and responsibilities in regard to the partnering agreement. The team members should be dedicated to the agreed common goal and, thus, it is important that the team members act as one team, treating one another with fairness, mutual trust, mutual cooperation and an understanding of each other's expectations and values.⁷²¹

Furthermore chapter 5 stressed how the construction industry is handling their partnering projects, where the key project members convene for pre-construction workshops and regularly scheduled follow-up workshops during the project.⁷²² In order for the shipowner and the supplier to have a successful partnership, they should design a structure for the collaboration – meaning to construct a set-up - which could include monthly follow-up meetings, product-performance meetings, and innovation workshops. Basically, the shipowner and the supplier need to set a partnering team in order to define the roles and procedures of the partnership and create a common goal.

6.4 Collaboration

The collaborative element is the most important within a partnering agreement, since this is the value-creating division.⁷²³ The PPC2000's main purpose is to facilitate a partnering contract with a common goal.⁷²⁴ Therefore, it is important for the shipowner and the supplier to discuss and define this collaboration and thereby define a common goal. The partnering agreement between the shipowner

⁷²¹ Tvarnø, C. D. (2015). "To bind or not to bind: It's in the contract Formalizing collaboration through partnering contracts in the US, British and Danish construction industries." *Journal of Strategic Contracting and Negotiation*, 1.4: 288-314 p. 289. See also the PPC2000 contract.

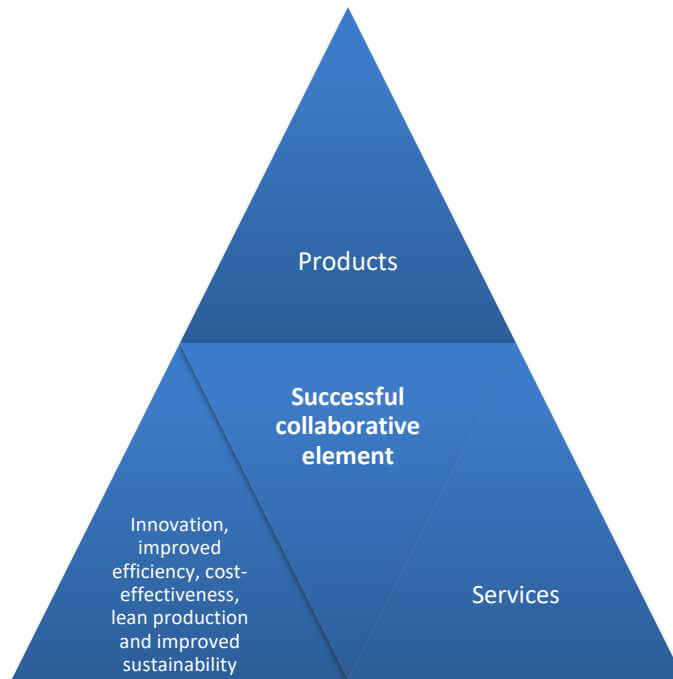
⁷²² Ronco, W. C. & Ronco, J. S. (1996). *Partnering manual for Design and Construction*. McGraw-Hill. , p. 10-11. See also chapter 5, section 3.1. Why partnering is a necessity.

⁷²³ See also chapter 4 and 5 for discussion on value creation.

⁷²⁴ See the PPC2000.

and the supplier should address several factors, in order to create a collaborative element:

Figure 6.4 – What is included in the collaborative element



Source: the author's creation⁷²⁵

In the following, the concepts of the figure 6.4 above will be discussed.

Products

In the collaboration between the shipowner and the supplier, it is important to clarify which products are involved in the partnering agreement, as the partnering agreement would then have to contain clauses only concerning the specific product that the supplier can provide, e.g. an engine. Furthermore, it is important for the shipowner and the supplier to specify the required design,

⁷²⁵ This figure is set out, based on elements from the PPC2000 and Newbuildcon.

product performance, timetables, prices, and the supply chain for the project.⁷²⁶ The shipowner and the supplier ought to clarify whether their collaboration is just in regard to one product/ship or if the collaboration is in connection to the shipowner's entire fleet.

Services

As mentioned previously, the supplier holds the expertise regarding the product and therefore, it makes sense for the supplier to conduct the maintenance on the product. Consequently, the shipowner and the supplier need to clarify this service perspective. There are several service perspectives which the shipowner and the supplier need to process. As an example, in terms of the repairing and the maintenance of the product, should the supplier organize training session, where the supplier educates the on-board crew or will the maintenance solely be the supplier's task. Another thing is the level of maintenance and the timeframe hereof. The shipowner and the supplier must agree on a timeframe for the collaboration⁷²⁷ and thereby also define the price level of services and which kind of services, e.g. if the engine breakdowns unexpectedly, even though the supplier has run continually renovations and repairs, then who will pay for the repairing of the engine.

⁷²⁶ The PPC2000 has specified this in its contract and especially the regulation regarding the product, potential defects and testing hereof.

⁷²⁷ Both a time frame in regards to the ending of the collaboration i.e. the time where the partnering contract should be re-negotiated and a timeframe guarantee in regards to how much time the supplier should have to repair or conduct maintenance on the ship/product.

Innovation, improved efficiency, cost-effectiveness, lean production and improved sustainability

The clarification of the joint collaboration gives the parties the opportunity for the partnering team to cooperate and develop products and hence be innovative. The collaboration between the parties provide an opportunity to *cooperate, share expertise, reach cost-effectiveness, improve sustainability, improve efficiency, and lean production*.⁷²⁸ By joint collaboration, the shipowner is in a position to specify its needs to the supplier and the supplier can comply to these needs, by designing the specific product to the shipowner.

By sharing expertise and information, both parties gain important information and thereby experience an increasing value creation which may be utilized in order to create better products and plan ahead. From a supplier's perspective, by entering into a dialogue with the shipowner, the supplier is able to improve its products based on the demands from the shipowner; and thereby become more competitive. Furthermore, the supplier can plan the manufacturing of its products, gain economies of scale, and thereby save storage space, since the supplier will be able to plan ahead which means that through the collaboration with the shipowner, the supplier can calculate when the shipowner will need a new product or maintenance hereof.⁷²⁹

Since the supplier can schedule the manufacturing – and therefore can create lean production and thereby save storage space - the supplier is able to be cost effective in connection with its products. Therefore, the supplier is in a position where it will be able to lower the costs on its products, due to an optimization of the supply chain. From the shipowner's perspective, not only can it achieve customized, and thus better products and cheaper products, the shipowner also

⁷²⁸ The authors emphasis.

⁷²⁹ It is worth mentioning that of course the supplier needs to be prepared for sudden replacement demands, due to failures on their products.

gets to be in a position where it can focus on its primary business and rely on the supplier. As a consequence, the key element for both the shipowner and the supplier is to create a collaboration element, where they work toward a common goal, which ultimately should end in improved efficiency.

7. Responsibilities

In order for the shipowner and the supplier to discuss the partnering agreement, not only is it necessary to discuss the cooperation between the parties, but it is also important that they discuss their responsibilities in the joint collaboration. The responsibilities, which both parties need to accept, need to be reflecting the common goal, their joint optimization, and create incentives for both parties. The parties should use this phrase to clarify the matching expectations for the collaboration. Some of the elements which the shipowner and the supplier should address are the *guarantees* and *liabilities*.

7.1 Guarantee

One of the most important aspect about a partnering agreement is that the parties end-up with a successful partnership and, therefore, both of the parties need to clarify the guarantees which both of them can rely upon.⁷³⁰ Some of the elements the shipowner and the supplier should discuss are: *the geographical aspects, time frame, design, supply and construction time, the cooperation, roles within the collaboration, expertise, and open books*.⁷³¹ This should be seen as parameters where the parties are obliged to guarantee delivery within the partnering agreement. The aim of these guarantees is to create the right incentives for both

⁷³⁰ See the PPC2000 for their take on guaranties and warranties.

⁷³¹ Tvarnø, C. D. (2015). "To bind or not to bind: It's in the contract Formalizing collaboration through partnering contracts in the US, British and Danish construction industries." *Journal of Strategic Contracting and Negotiation*, 1.4: 288-314 p. 289.

of the parties, create joint optimization and mutual trust, which is essential within the partnering agreement.

7.2 Liabilities

When discussing the partnering agreement, the contractual liabilities are just as important as the guarantees. It is important that the shipowner and the supplier have clarified each party's obligations in the partnering agreement. Some of the aspects that need to be clarified are: *defects on the products, confidentiality in regards to third parties, thereby also third party involvement, the suppliers manufacturing rights*, and, of course, *the parties' liabilities if the partnership fails* (e.g. due to one party defecting). In terms of third party involvement, this usually refers to the supplier, as it might have a third party vendor and, therefore, the shipowner and the supplier need to clarify how this should be handled. In the BIMCO Newbuildcon, the supplier often has the right to employ subcontractors, and the shipowner has the right to dismiss the subcontractor on reasonable grounds.⁷³² In the case where the supplier has a third party vendor, the supplier is responsible for the vendor's actions and remain liable in terms of the performance, according to their obligations in the partnering agreement. The contractual liabilities are thus highly important for both the shipowner and the supplier, as they may clarify likely disputes and potentially create incentives for both the parties. As mentioned above, both the supplier and the shipowner need to have defined the liabilities, as a tool to get a successful partnership. Another important factor that needs to be included is potential damages, including pollution damages. The Newbuildcon regulates potential damages and the shipowner and the supplier should also consider this.

⁷³² Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer, P. 1-19. See also the discussion in chapter 5, section 6. The risks of partnering agreements.

8. Pricing and Services

The partnering agreement between the shipowner and the supplier is based upon a common goal which is the basis for a long term collaboration. The Newbuildcon discuss the price of the shipbuilding and the payments hereof.⁷³³ Newbuildcon has divided this section, where it regulates the different kinds of payments and what is included in the price. As mentioned previously, the price is an important factor for both the parties and, as a consequence, the dissertation argues that a collaboration between both parties would impact the economy for both parties, since the collaboration could potentially lower the price of the products, increase the turnover and profit for the supplier, due to scheduling of the manufacturing and economies of scale i.e. creating a lean production.

The partnering agreement between the shipowner and the supplier consists of two elements: *products* and *services*.⁷³⁴ In regards to services, as mentioned previously, it is important that the shipowner and the supplier define what kind of services are included in the agreement and the pricing hereof. This will eliminate potential misunderstandings along the way. In the collaboration between the shipowner and the supplier, joint optimization and trust are very important. In order to gain mutual trust it is necessary to have a so-called *open books* policy.⁷³⁵ This policy entails complete and full disclosure of all relevant information between the parties. By sharing information, especially in regards to turnover and profits, both parties can see that neither party is deceitful i.e. acting false towards the other.⁷³⁶

⁷³³ For further information see PPC2000 and Newbuildcon.

⁷³⁴ See also figure 6.4.

⁷³⁵ Tvarnø, C. D. (2015). "To bind or not to bind: It's in the contract Formalizing collaboration through partnering contracts in the US, British and Danish construction industries." *Journal of Strategic Contracting and Negotiation*, 1.4: 288-314 p. 289. See also Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*, p. 74-75. Original Language; Danish – Authors Translation.

⁷³⁶ *Ibid.*

The parties should agree on whether they are operating with fixed stage payments⁷³⁷ or separate payments for products and services along the way.⁷³⁸ The parties also need to clarify whether training on-board crew is relevant and included in the price. Defining the price and the level of services (i.e. the framework of the collaboration) is a major task to undertake and both parties need to explicitly clarify their expectations to the collaboration. The partnering agreement between the shipowner and the supplier is a bit different than the examples set out from the construction and pharmaceutical industries, since those industries are dealing with partnering more on a project basis, whereas the shipowner and the supplier should use the partnering agreement to create a long term collaboration, where both of them could benefit from it, in the form of cheaper customized products, gaining valuable information, an increase in market shares, and an optimization of business structures.

9. Risks

For both the supplier and the shipowner, risk is an important factor which needs to be calculated. In order for both parties to engage in this partnering agreement, there are huge risks involved, since both parties need to create an open environment, where both of them share information and they both become interdependent on each other.⁷³⁹ Information is a key element, since knowledge is power – especially in terms of partnering agreements. For both parties to give away important information is a vulnerability, which needs to be handled in the

⁷³⁷ Stopford, M. (2009). *Maritime economics*. Routledge, p. 208. Stages payments is a common thing in the maritime industry, due to high capital demands. See also chapter 2, section 8.2.3 Newbuilding contracts, where stage payments where discussed.

⁷³⁸ Roijakkers, Nadine, and John Hagedoorn. (2006) "Inter-firm R&D partnering in pharmaceutical biotechnology since 1975: Trends, patterns, and networks." *Research policy* 35.3: 431-33. See also Tvarnø, C. D., Grith, S. Ø. & Østergaard, K. (2013). *Vækst Og Værdiskabelse via Nye Former for Innovationssamarbejder Og Partnerskaber*, p. 70. See also table 5.3 regarding milestone payments in the pharmaceutical industry.

⁷³⁹ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer., P. 1-3. See also discussion in chapter 5, section 3.3 Partnering in a practical matter.

contract. The partnering agreement needs to create an incentive for both parties to positively engage in the collaboration and work towards the common goal. By incorporating the correct incentives in the agreement, the risks are reduced for both parties. Even though the agreement would address the correct incentives, there are no guarantees that it will become a successful partnership, as risks cannot be completely eliminated, but the risk can be handled. By doing so, the parties are dealing with a calculated risk.

10. Concluding remarks

This chapter has looked further into the contractual aspects of partnering agreements between the shipowner and the supplier with a focus on the relevant clauses. As was previously mentioned, the common goal of partnering agreements is to create a common goal between the supplier and the shipowner and incentives for the parties to meet the requirements of the agreement. Therefore, it is important to formulate and negotiate a contract with the relevant clauses, which the parties need to incorporate in the contract, in order to create the incentives to reach the common goal. Arguably, the shipowner and the supplier need to build and maintain a strong relationship to do so, but in order to succeed, the parties need to acknowledge the partnership and work toward mutual trust. The content discussed is based upon the PPC2000, BIMCO's Newbuildcon, and the partnering agreement, as discussed in chapter 5.

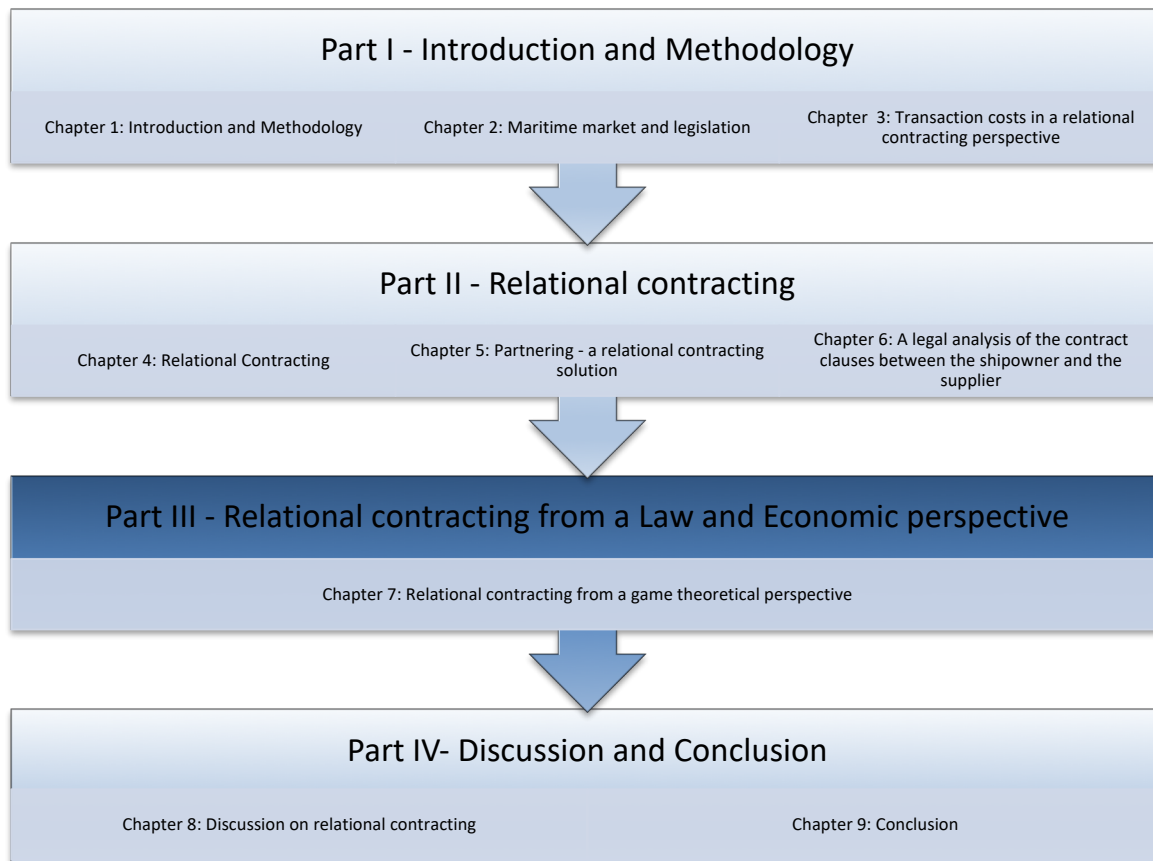
In order to formulate a contract, the parties must engage in pre-engagement procedures to avoid controversy from the beginning. Afterwards, the parties have to discuss the common risks and the incentives in relation to each party at specific parts of the production. In this connection, it was illustrated that it is important to divide the clauses between the parties by placing the responsibility in different situations. However, it is clear that both parties must necessarily comply with

both current and future legislation – and that is a mutual responsibility.

In terms of the collaborative element between the parties, it may be a solution to establish a team around the party, as it is important that the partnership is led, and not just managed. The team members on each team may provide expertise and share the responsibility when attempting to reach the common goal.

Therefore, the parties may include some specific clauses in their partnering agreement in order to ensure that the parties are aware of all responsibilities and risks in connection with their partnership. These are the negative aspects of the contract; however, the parties may also achieve a strong, long-term relationship based on mutual trust and full disclosure of information. In this way, the contract may contribute to the success of the partnership, as it will reduce the potential risk of disputes between the parties.

Part III – Relational contracting from a Law and Economic perspective



Part III summary

The third part of the dissertation, consists of one chapter; Chapter 7: Relational contracting from a game theoretical perspective.

The previous parts has discussed the maritime industry; relational contracting and how to apply relational contracting to the shipowner and the supplier. The purpose of this part is to clarify – from a law and economic perspective – whether relational contracting is a possibility.

Therefore this part will discuss game theory and apply game theory to the relational contract between the shipowner and the supplier.

Chapter 7: Relational contracting from a game theoretical perspective

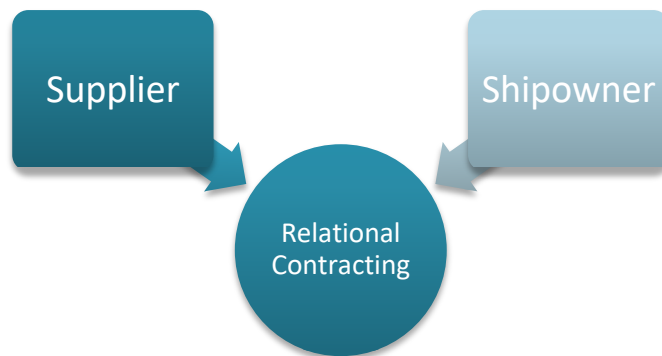
1. Introduction

Chapter 3 set the framework for the market and the parties' behavior based on the assumptions of behavioral economics.⁷⁴⁰ The transaction costs theory focused on the two situations in order to clarify the optimal situation in which the conditions for the behavioral economy were also applied. This chapter should be seen in conjunction with chapter 3 and chapter 6 and, therefore, the results and assumptions will be continued in this chapter.

This chapter focuses solely on the game perspective on the contractual situation between the shipowner and supplier, as illustrated in figure 7.1, where game theory will be used to illustrate - from a game theoretical point of view - what the parties will be able to achieve as output based on their collaboration and how this can be assured through a contract.

⁷⁴⁰ See chapter 3, section 2.1. Behavioral economics.

Figure 7.1 – Parties in the relational contract



Source: the author's creation

Before applying game theory to the case, the dissertation will take a necessary step back, to take a closer look upon what game theory is and the assumptions hereof.

2. What is game theory

*The first purpose of contract law is to enable people to convert games with inefficient solutions into games with efficient solutions.*⁷⁴¹

Game theory is the study of human conflict and cooperation within a competitive situation. In some respects, game theory is the science of strategy, or at least the optimal decision-making of independent and competing actors in a strategic setting. The key pioneers of game theory were mathematicians John von Neumann⁷⁴² and John Nash,⁷⁴³ as well as economist Oskar Morgenstern.⁷⁴⁴

⁷⁴¹ Cooter, R. B. & Ulen, T. (2014). *Law and economics* (6th ed., international ed.). Pearson Education Limited, p. 278.

⁷⁴² Hungarian mathematician (1903-1957), who made great contributions to the field of game theory. He was regarded as one of the foremost mathematicians of his time.

⁷⁴³ John Forbes Nash (1928-2015), an American mathematician and Nobel prize for Economics receiver. He was a former student of Neumann and he too had a great impact to the field of game theory and is the father of the Nash Equilibrium.

⁷⁴⁴ German economist and the founder of the mathematical field of game theory.

As mentioned previously in chapter 1, game theory is the science of strategy. It attempts, both from a mathematical and logical perspective, to determine the actions that “players” should take, in order to secure the best outcomes for themselves in a wide array of “games.” In other words, which actions the shipowner and supplier should take to secure the best outcome for themselves. The games, i.e. game theory in general studies, range from *chess to custody of children* and from *tennis to takeovers*.⁷⁴⁵ Although, all the games share the common feature of interdependence which means that the outcome for each participant depends on the choices and strategies of all parties. In so-called zero-sum games⁷⁴⁶, the interests of the players totally conflict, so that one party’s gain always will result in another party’s loss. The more classically defined games concern the potential for mutual gain (positive sum) or mutual harm (negative sum), as well as some conflict.⁷⁴⁷

Leading academics have stressed the point that, sometimes, within the decision phase of a game, strategy and rationality clash⁷⁴⁸ which is also set out by the fact that games are fundamentally different from decisions made in a neutral environment. On this note, the simpler the game, the more compatible strategy and rationality becomes. Avinash K. Dixit⁷⁴⁹ and Barry J. Nalebuff⁷⁵⁰ (hereinafter, referred to as, “Dixit and Nalebuff”) illustrates this point:

⁷⁴⁵Dixit, Avinash K., Nalebuff, Barry J. (2010) *The Art of Strategy: A Game Theorist’s Guide to Success in Business and Life*. W. Norton & Company, p. VII. See also Eide, Erling, Stavang, Endre. (2018). *Rettsøkonomi*. Cappelen Damm AS. (2nd ed), authors translation – Original language: Norwegian, p. 124.

⁷⁴⁶ In game theory and economic theory, a zero-sum game is a mathematical representation of a situation in which each participant’s gain or loss of utility is exactly balanced by the losses or gains of the utility of the other participants. If the total gains of the participants are added up and the total losses are subtracted, they will sum to zero. Thus, cutting a cake, where taking a larger piece reduces the amount of cake available for others, is a zero-sum game if all participants value each unit of cake equally. Dutta, P. (1999). *Strategies and games: Theory and practice*. MIT Press., pp. 7-8; 139-140.

⁷⁴⁷ *Ibid*.

⁷⁴⁸ Mariotti, M. (1995). “Is Bayesian Rationality Compatible with Strategic Rationality?” *The Economic Journal*, 105(432): 1099-1109, p. 1101. See also Von Neumann, John, & Morgenstern, Oskar. (2007). *Theory of Games and Economic Behavior* (60th anniversary ed., Princeton Classic Editions). Princeton University Press p. 8-12 and chapter 11.

⁷⁴⁹ Professor of Economics Emeritus at the Department of Economics at Princeton University.

⁷⁵⁰ Milton Steinbach Professor of Management at Yale School of Management. An expert in business strategy and Game theory.

*“Think of the difference between the decisions of a lumberjack and those of a general. When the lumberjack decides how to chop wood, he does not expect the wood to fight back; his environment is neutral. But when the general tries to cut down the enemy’s army, he must anticipate and overcome resistance to his plans.”*⁷⁵¹

Like the general, a game player must recognize his interaction with other intelligent and purposive people. His choices must allow for both conflict and for possibilities of cooperation.⁷⁵² In this connection, Prajit K. Dutta⁷⁵³ (hereinafter, referred to as, “Dutta”) defined game theory as:

*“(…) a study of interdependence. It studies interaction among a group of players who make rational choices based upon a strategic analysis of what others in the group might do.”*⁷⁵⁴

Even though, the assumption of the players’ decision-making is based on complete rationality, this very definition of rationality can become a problem when it comes to games. The rationality of a player’s decision depends on the behavior of the other players, whose rationality in turn depends on the players’ choice. This kind of interdependence is absent in the case of individual decision-making in non-strategic situations.⁷⁵⁵

The cornerstone of game theory is the so-called *Bayesian approach* which uses an axiomatic theory of rational individual behavior under uncertainty in order to model rational choices in a game. According to Marco Mariotti⁷⁵⁶ (hereinafter, referred to as, “Mariotti”):

“(…) a Bayesian rational agent is an agent whose choices obey Savage’s axioms, or some equivalent set of axioms. Such an agent represents his uncertainty about states of the world

⁷⁵¹ Dixit, Avinash K., Nalebuff, Barry J. (2010) *The Art of Strategy: A Game Theorist’s Guide to Success in Business and Life*. W. Norton & Company, p. 2.

⁷⁵² *Ibid.*

⁷⁵³ Professor in microeconomics at Columbia University.

⁷⁵⁴ Dutta, P. (1999). *Strategies and games: Theory and practice*. MIT Press, p. 12.

⁷⁵⁵ Newman, P. (1998). *The new Palgrave dictionary of economics and the law*. Vol. 2: E-O. Macmillan, p. 188-89.

⁷⁵⁶ Professor of Economics at the School of Economics and Finance at the Queen Mary University of London.

by means of a subjective probability measure, evaluates consequences by means of a utility function, and chooses the act that maximizes expected utility."⁷⁵⁷

In other words, the Bayesian approach manages to subject the behavior of an agent in a game to the same kind of analysis used for non-strategic decision-making.⁷⁵⁸

The essence of a game is the interdependence of the players' strategies. The theory is operating with two distinct types of strategic interdependence: *sequential*⁷⁵⁹ and *simultaneous*.⁷⁶⁰ In the first type, the players (e.g. a shipowner and a supplier) move in sequence which means that each of them is aware of the others' previous actions. In the second strategy, the players act at the same time, and where each is ignorant in terms of the other's actions. A general principle for a player in a sequential-move game is to look ahead and reason back. Both the shipowner and the supplier should figure out how the other party will respond to his current move, how he will respond in turn, and so on. The player anticipates where his initial decisions will ultimately lead and uses this information to calculate his current best choice. When thinking about how others will respond, he must put himself in their shoes and think as they would; he should not impose his own reasoning on them.⁷⁶¹

In this dissertation, game theory will be applied in order to predict the outcome of the relational contract between the shipowner and the supplier. In order to predict the outcome, the game theory will initially look at the outcome of a

⁷⁵⁷ Mariotti, M. (1995). "Is Bayesian Rationality Compatible with Strategic Rationality?" *The Economic Journal*, 105(432): 1099-1109, p. 1099.

⁷⁵⁸ Newman, P. (1998). *The new Palgrave dictionary of economics and the law. Vol. 2: E-O*. Macmillan, p. 189.

⁷⁵⁹ The sequential games, is played by the players taking turns.

⁷⁶⁰ The simultaneous game is a game where each player chooses their actions without the knowledge of the actions chosen by the other player. Hendrikse, G. (2003). *Economics and management of organizations: co-ordination, motivation and strategy*. McGraw-Hill, p. 26-29. See also Knudsen, C. (1997). *Økonomisk metodologi. Bd. 2: Virksomhedsteori og industriøkonomi* (2nd ed.). Jurist- og Økonomforbundets Forlag, p. 91-94.

⁷⁶¹ *Ibid.*

standard contractual situation. This theory will set the scene using the simultaneous strategy.

2.1 Nash Equilibrium

In game theory, the Nash equilibrium⁷⁶² is a proposed solution of a non-cooperative game involving two or more players in which each player is assumed to know the equilibrium strategies of the other players, and no player has anything to gain by changing only its own strategy.⁷⁶³ The definition of a Nash equilibrium is:

*"A game equilibrium when no player can increase his or her payoff by changing strategy, so long as the other players do not change their strategies."*⁷⁶⁴

The prediction of the outcome of a game is called equilibrium. This can be a complicated affair, because each player takes the actions and reactions of the other players into account. There are many possible actions and reactions. An equilibrium concept formulates certain requirements which a strategy has to satisfy in order to be an equilibrium strategy.

A general, simple requirement which equilibrium choices have to satisfy is the *Nash criterion*; a player's choices should not harm his or her own interest. Such behavior is called rational behavior.⁷⁶⁵ It entails consistent behavior, i.e. the choices exhibit a certain pattern, which (possibly) belongs to an underlying goal, like utility- or profit maximization.⁷⁶⁶ A Nash equilibrium specifies a payoff-

⁷⁶² Named after the late mathematician John Forbes Nash Jr.

⁷⁶³ Cooter, R. B. & Ulen, T. (2014). *Law and economics* (6th ed., international ed.). Pearson Education Limited, P. 196.

⁷⁶⁴ *Ibid.* See also Hendrikse, G. (2003). *Economics and management of organizations: co-ordination, motivation and strategy*. McGraw-Hill, p. 29.

⁷⁶⁵ Sen, A.K: (1987) 'Rational Behaviour', Eatwell, J., M. Milgate and P. Newman.(1987) *The New Palgrave; A dictionary of economics*. Macmillan, London, Vol. 4, p. 68-76. See also Hendrikse, G. (2003). *Economics and management of organizations: co-ordination, motivation and strategy*. McGraw-Hill, p. 29.

⁷⁶⁶ Hendrikse, G. (2003). *Economics and management of organizations: co-ordination, motivation and strategy*. McGraw-Hill, p. 29.

maximizing strategy for each player, given the choice of strategy of the other players. Thinking in terms of equilibrium behavior provides insight into the decisions of others and the behavior of organizations. The consequent application of this equilibrium concept provides regularly surprising insights regarding the relationship between individual motives of players and aggregate, or collective behavior of the organization. The most famous example is the *prisoner's dilemma*, which will be further elaborated in section 2.2.

Nash equilibrium can at the simplest be determined by using the strategic form. The game matrix⁷⁶⁷ illustrates a change in strategy which increases the payoff of the player, given the strategy of the other player.⁷⁶⁸ Therefore in terms of game theory, if each player has chosen a strategy, and no player can benefit by changing strategies (while the other players keep its strategy unchanged), then the current set of strategy choices and the corresponding payoffs constitutes a Nash equilibrium.⁷⁶⁹ In game theory, a Nash equilibrium is an essential factor and, therefore, this is quite relevant in the situation between the shipowner and the supplier. Consequently, this will be further analyzed in the following section.

2.2 The prisoner's dilemma

Some call this the “*Grand daddy*” of simple games.⁷⁷⁰ According to Dutta, this first analysis of this game was in 1953 at the Rand Corporation, which could be seen as the foundation for much of the early work in game theory by Melvin Dresher⁷⁷¹ and Al Tucker.⁷⁷²

⁷⁶⁷ See table 7.2.

⁷⁶⁸ Hendrikse, G. (2003). *Economics and management of organizations: co-ordination, motivation and strategy*. McGraw-Hill, p. 29-31.

⁷⁶⁹ *Ibid.*

⁷⁷⁰ Dutta, P. (1999). *Strategies and games: Theory and practice*. MIT Press, p. 11.

⁷⁷¹ Polish-born American mathematician. Developed the Prisoner's dilemma with Merrill Flood.

⁷⁷² Albert William Tucker, Canadian mathematician. Made important contributions in game theory. Dutta, P. (1999). *Strategies and games: Theory and practice*. MIT Press, p. 11.

One way to describe a game is by listing the players that are participating in the game, and for each player list the alternative choices, i.e. actions or strategies, available to that player. In the case of a two-player game, the actions of the first player form the rows and where the actions of the second player will form the columns which will altogether create a matrix (see table 7.2). The entries in the matrix are two numbers that represent the utility or payoff to the first and second player respectively.

In the prisoner's dilemma, the two players are partners in a crime who have been captured by the police. Each suspect is placed in a separate cell and offered the opportunity to confess to the crime. The game can be represented by the following matrix of payoffs:⁷⁷³

Table 7.2 – Prisoner's dilemma

Prisoner 1/ Prisoner 2		
	Not confess	Confess
Not confess	-1/2, -1/2	-4, 0
Confess	0, -4	-3, -3

Source: Tvarnø⁷⁷⁴

Note that in the game above, the utility or payoffs represents the parties' utility of a given strategy. Utility is not equal to money, but shows the value of the strategy to each player. The Nash Equilibrium occurs when the players simultaneously make their best reply to the strategy choices of the other player. Thus, the Nash

⁷⁷³ Dutta, P. (1999). *Strategies and games: Theory and practice*. MIT Press, p. 11. See also Robert Cooter and Thomas Ulen; *Law and Economics*, Second edition, p. 33-35.

⁷⁷⁴ C. Tvarnø, To bind or not to bind: It's in the contract Formalizing collaboration through partnering contracts in the US, British and Danish construction industries, *Journal of Strategic Contracting and Negotiation*, p. 305. See also Cooter, R. B, & Ulen, T. (2014). *Law and economics* (6th ed., international ed.). Pearson Education Limited, p. 34 for exact same game, but with other payoffs.

equilibrium illustrates that there are a pair of payoffs reflecting the strategy chosen by two rational players.⁷⁷⁵

If neither suspect confesses, they will both get half a year in prison, and split the proceeds of their crime which is represented by $-1/2$ units of utility for each suspect. However, if one prisoner confesses and the other does not, the prisoner who confesses will according to the game testify against the other in exchange for going free, and this player will get 0 units of utility, while the prisoner who did not confess goes to prison which results in the low utility of -4. If both prisoners confess, both are given a reduced term, but both are convicted, which is represented by -3 unit of utility to each. This game represents a better option than the game where the other prisoner confesses, but it is not as good as going free.

This game has fascinated game theorists for a variety of reasons. First, it is a simple representation of a variety of important situations. For example, instead of *confess/not confess*, the strategies could be labeled '*contribute to the common good*' or '*behave selfishly*'.⁷⁷⁶ This captures a variety of situations which economists describe as 'public goods problems'.⁷⁷⁷ An example is the construction of a bridge. It is best for everyone if the bridge is built, but the it represent a better option for each individual if someone else builds the bridge. This is sometimes referred to in economics as an *externality*.⁷⁷⁸ Similarly, this game could describe the alternative of two firms competing in the same market, and instead of *confess/not confess* the dissertation could label the strategies '*set a high price*' and '*set a low price*.' Naturally, it is best for both firms if they both set high prices, but

⁷⁷⁵ Bagley, C. E., & Tvarnø, C. D. (2014). "Pharmaceutical public-private partnerships: Moving from the bench to the bedside." *Harvard Business Law Review*, 4(2): 373-401, p. 386-389.

⁷⁷⁶ Wensley, Robin. (2013) *Effective management in practice: Analytical insights and critical questions*. Sage, p. 97.

⁷⁷⁷ *Ibid.*

⁷⁷⁸ *Ibid.* In economics, externality is a cost or gain that people outside of the financial transaction on the market are applying. An externality is negative if it lowers the welfare of the other. There are typically negative externalities associated with a shared resource. In other words a consequence of an industrial or commercial activity which affects other parties without this being reflected in market prices, such as the pollination of surrounding crops by bees kept for honey.

best for each individual firm to set a low price, while the opposition sets a high price.⁷⁷⁹

A second feature of this game is that it is self-evident how an intelligent individual should behave. In regards to the prisoner example, no matter what a suspect believes his partner is going to do, it is always the best option to confess. If the partner in the other cell is not confessing, it is possible to get 0 instead of $-1/2$. If the partner in the other cell is confessing, it is possible to get -3 instead of -4. Yet, the pursuit of individual, sensible behavior will result in each player receiving -3 unit of the utility, which is much more than the $-1/2$ units that the players would have gotten each if neither confessed. This conflict between the pursuit of individual goals and the common good is at the heart of many game theoretic problems. A third feature of this game is that it changes in a very significant way if the game is repeated, or if the players will interact with each other again in the future. The dissertation will examine this in section 4.

3. Game theory in the maritime industry

Before engaging further into the game of the shipowner and supplier, it is necessary to set out the rules of the game:

1. *Who is playing*
2. *What are they playing with*
3. *When each player gets to play, in what order (simultaneously or sequential)*
4. *How much – what are the gains and losses in the game.*⁷⁸⁰

In game theory, it is standard to assume that every player knows the rules of the game and that fact is commonly known,⁷⁸¹ although, this does not mean that all

⁷⁷⁹ *Ibid.*

⁷⁸⁰ Dutta, P. (1999). *Strategies and games: Theory and practice*. MIT Press, p. 17. See also Cooter, R. B, & Ulen, T. (2014). *Law and economics* (6th ed., international ed.). Pearson Education Limited, p. 33.

⁷⁸¹ By using the term *Common knowledge* then the reader must be aware, that this term has several layers to it. Firstly it states that everybody knows that the rules are available to all. Secondly, everybody knows that everybody knows that the

players are equally well-informed or equally influential, it simply states that every player are aware of the same rules.⁷⁸² There are two principal representations of the rules of the game, which are called the *normal*⁷⁸³ (or strategic) form and the *extensive form*.⁷⁸⁴ In other words, these are two ways to represent a game.⁷⁸⁵ The simplest game to play is a one-time simultaneous move game such as the prisoner's dilemma.⁷⁸⁶

Therefore, according to the rules, the game between the shipowner and the supplier will be set out as follows:

1. The players are the shipowner and the supplier.
2. They are playing with utility in a standard contractual situation.
3. The game will be played simultaneously in a one-time move game.
4. The allocation of utility is set out in table 7.3.

With the rules in place, the matrix can be illustrated as follows:

rules are widely available and third, everybody knows that everybody knows that everybody knows, *ad infinitum*. To why this has to be elaborated this much, is that, knowing the rules, there might be certain behaviours that a player will normally not undertake. Though, if a player is unsure about whether or not the others know that he knows the rules, he will consequently be unsure about whether the others realize that he will not undertake those behaviors. This sort of doubt in players' minds can have a dramatic and unreasonable impact on what they end up doing, hence the need to assume every level of knowledge. Dutta, P. (1999). *Strategies and games: Theory and practice*. MIT Press, p. 18; See also M Mariotti, M. (1995). "Is Bayesian Rationality Compatible with Strategic Rationality?" *The Economic Journal*, 105(432): 1099-1109, p. 1099, "... A Bayesian rational agent is an agent whose choices obey Savage's (1954) axioms, or some equivalent set of axioms. A game theoretically rational agent is usually thought to obey the same axioms. In game theory, moreover, some form of common knowledge of rationality is assumed... which in a Bayesian framework takes the form of common knowledge of the axioms."

⁷⁸² Dutta, P. (1999). *Strategies and games: Theory and practice*. MIT Press, p. 18.

⁷⁸³ The normal form is the matrix form.

⁷⁸⁴ The extensive form is a pictorial representation of the rules. Its main pictorial form is called the *game tree*.

⁷⁸⁵ These two representations are interchangeable; every extensive form game can be written in strategic form and, likewise, every game in strategic form can be represented in extensive form.

⁷⁸⁶ Dutta, P. (1999). *Strategies and games: Theory and practice*. MIT Press, p. 22.

Table 7.3 – The shipowner and supplier dilemma

Supplier / Shipowner	Not Cooperate (Confess)	Cooperate (Not confess)
Not Cooperate (Confess)	0, 0	7, -2
Cooperate (Not confess)	-2, 7	5, 5

Source: Dutta⁷⁸⁷

As illustrated in table 7.3, the parties have two strategies to choose from within this scenario, namely *to cooperate* or *not cooperate*.

According to the theory of the prisoner's dilemma, which is mentioned previously in this section. In table 7.2, the Nash equilibrium was the utility of (-3;-3), which was the *confess* strategy, also characterized as the dominant strategy. In the game between the supplier and the shipowner (as illustrated above by table 7.3),⁷⁸⁸ the Nash equilibrium is the utility of (0,0), therefore the *not cooperate* strategy is compatible to the *confess* strategy of the prisoner's dilemma. Conversely, the *cooperate* strategy is equivalent to the *not confess* strategy.

The exact same rationality, which applied to the prisoner's dilemma, is applicable in the situation between the shipowner and the supplier. The prisoner's dilemma game illustrates that two individuals (i.e. the shipowner and the supplier in this case) will *not cooperate*, even when it is obvious that it is in their best interest to do so.⁷⁸⁹ Both the shipowner and the supplier have the same knowledge, and

⁷⁸⁷ Prajit K. Dutta's Prisoners Dilemma, Reuer, J. (2009). *Strategic Alliances: Theory and Evidence* (Oxford Management Readers). Oxford University Press, p. 210.

⁷⁸⁸ Table 7.3 and table 7.2 are the same figure, though the strategies in the matrix have been moved around, meaning that the strategies come in a reverse situation. This does not inflict the game and both games are exactly the same, it is purely a matter of illustration. However the utilities are different.

⁷⁸⁹ Tvarnø, C. D. (2015). "To bind or not to bind: It's in the contract Formalizing collaboration through partnering contracts in the US, British and Danish construction industries." *Journal of Strategic Contracting and Negotiation*, 1.4: 288-314, p. 305.

know the outcome of this game, even though it is in their best interest to choose the cooperate strategy, as it would result in a joint optimization. Despite of the possibility of joint optimization, i.e. (5,5) in the matrix, both parties will choose the dominant strategy and, hence, end in the Nash equilibrium (0,0). Furthermore, the prisoner's dilemma illustrates that defecting is always chosen in preference to cooperation because a rational, self-interested party evaluates its own options in comparison with the party's possible choice, knowing that the rational self-interested counterparts do the same.⁷⁹⁰ Therefore, the risk of the other part defecting is too high,⁷⁹¹ which is why both the shipowner and the supplier will choose to *not cooperate*.

3.1 The consequence of one-time games

The theory of the prisoner's dilemma – as discussed above - stated that the conflict between the parties' pursuit of individual goals and the common good is at the heart of many game theoretical problems. Therefore, in theory, the lack of *trust* between the parties in a one-time game results in the Nash equilibrium. The question here is, how to build trust between the parties in order to move from *not cooperate* to *cooperate*?

Also, the prisoner's dilemma game illustrates that defecting is always theoretically chosen in preference to cooperation, because a rational, self-interested party evaluates its own options in comparison with the other party's possible choice, knowing that the rational self-interested counterparts do the same. In this scenario, the only possible outcome is therefore not to cooperate,

⁷⁹⁰ Tvarnø, C. D. (2015). "To bind or not to bind: It's in the contract Formalizing collaboration through partnering contracts in the US, British and Danish construction industries." *Journal of Strategic Contracting and Negotiation*, 1.4: 288-314, p. 305.

⁷⁹¹ Cooter, R. B. & Ulen, T. (2014). *Law and economics* (6th ed., international ed.). Pearson Education Limited, p. 34-36. Cited in Tvarnø, C. D. (2015). "To bind or not to bind: It's in the contract Formalizing collaboration through partnering contracts in the US, British and Danish construction industries." *Journal of Strategic Contracting and Negotiation*, 1.4: 288-314, p. 305.

but to defect. Therefore, the pursuit of individual goals is always going to be the dominant factor in a one-time prisoner's dilemma.

The prisoner's dilemma is a single game; thus it is not repeated. This dissertation will examine whether there is a possibility for the shipowner and the supplier to end up choosing the cooperative strategy. However, to answer the question above, the parties need to build trust with one another. From a game perspective, it can be argued that one solution could be that to play the game more than once, i.e. pursue a long-term relationship with multiple purchasing/selling situations. Therefore the dissertation will look further into repeated games.

4. Repeated games

In game theory, repeated games - also known as super games - are those that play out over and over for a period of time, and therefore are usually represented using the extensive form.⁷⁹² As opposed to one-time games, repeated games introduce a new series of incentives, as the possibility of cooperating means that the parties may decide to compromise in order to carry on receiving a payoff over time, knowing that if they do not uphold their end of the deal, the opponent may decide not to either. Their offer of cooperation or their threat to defecting the cooperation has to be credible in order for the opponent to uphold their end of the bargain. In this case, the parties have to decipher what creates the most value to them: the payoff which they gain if they break the pact at any given moment for an exceptional, one-off payoff, or the continued cooperation with lower payoffs

⁷⁹² Prajit K. Dutta's Prisoners Dilemma, Reuer, J. (2009). *Strategic Alliances: Theory and Evidence* (Oxford Management Readers). Oxford University Press, p. 214-15.

which may - or may not - add up to more over a given time. Therefore, each player must consider the opponent's possible punishment strategies.⁷⁹³

This means that the strategy space is greater than in any regular simultaneous or sequential game. Each player will determine its strategies or moves considering all previous moves up until that moment. Also, since each player will consider this information, it will play the game based on the behavior of the opponent, and must therefore also consider possible changes in the behavior when making choices.⁷⁹⁴

Suppose that the prisoner's dilemma were to be played not just once, but a number of times by the same players; would that change the analysis of the game. If the same players play the same game according to the same rules repeatedly, it is possible that cooperation can arise and that the players have an incentive to establish a reputation, as - in the case of the prisoner's dilemma - it is about trustworthiness. Suppose for example that after this game is over, and the suspects are either freed or released from jail, a new game option will arise and as the players commit another crime, the game will be played again. In this case, initially, the suspects may reason that they should not confess, as their partner will know not confess in the second game. Strictly speaking, this conclusion is not valid, since in the second game, both suspects will confess no matter what happened in the first game. However, repetition opens up the possibility of being rewarded or punished in the future for current behavior, and game theorists have provided a number of theories to which attempt to explain the obvious intuition that if the game is repeated often enough, the suspects ought to cooperate.⁷⁹⁵

⁷⁹³ Ibid. p. 211-215. See also Wensley, Robin. (2013) *Effective management in practice: Analytical insights and critical questions*. Sage, p. 97-98. See also Cooter, R. B, & Ulen, T. (2014). *Law and economics* (6th ed., international ed.). Pearson Education Limited, p. 35.

⁷⁹⁴ Cooter, R. B, & Ulen, T. (2014). *Law and economics* (6th ed., international ed.). Pearson Education Limited, p. 35.

⁷⁹⁵ Cooter, R. B, & Ulen, T. (2014). *Law and economics* (6th ed., international ed.). Pearson Education Limited, p. 35-36.

An important aspect of a repeated game is whether the game will be repeated a fixed number of times or an indefinite number. To see the difference, suppose that the prisoner's dilemma above is to be repeated exactly ten times. Each player's optimal strategy must now be considered across games, not just for one game at a time. As an example, suspect 2 may consider, before the first game is played, what strategy he ought to follow for each game. He may consider that he and his partner, if they are caught after each crime, will learn or agree to keep quiet rather than to confess. But, then, suspect 2 thinks ahead to the final game, the 10th, and even if the players have learned or agreed to keep quiet through game 9, things will be different in game 10. Because this is the last game to be played, suspect 1 has a strong incentive to confess. If Suspect 1 confesses on the last game and Suspect 2 sticks to the agreement not to confess, suspect 2 will spend 7 years in prison in comparison to Suspect 1 half year. Knowing that Suspect 1 has this incentive to cheat on an agreement not to confess in the last game, the best strategy for Suspect 2 is also to confess in the final game. However, this means that the 9th game to some extent becomes the final game. Therefore, when the parties have to decide on the optimal strategy for that game, - i.e. the 9th game - exactly the same logic applies as it did for the 10th game – both players will confess in game 9 too. Suspect 1 will realize this too, and will realize that the best thing to do is to confess in game 8, and so on. In the terminology of game theory, the game unravels so that confession takes place by each player every time the game is played, if it is to be played a fixed number of times.⁷⁹⁶

Things may be different if the game is to be repeated an indefinite number of times. In those circumstances, there may be an incentive to cooperation. Robert Axelrod⁷⁹⁷ (hereinafter, referred to as, "Axelrod") has shown that, in a game like the prisoner's dilemma repeated an indefinite number of times, the optimal

⁷⁹⁶ *Ibid.*

⁷⁹⁷ American political scientist. Professor of Political Science and Public Policy at the University of Michigan.

strategy is tit-for-tat – if the other player cooperated on the last play, you cooperate on this play; if the other player did not cooperate on the last play, you do not on this play.⁷⁹⁸ These considerations of a fixed versus an indefinite number of game repetitions may seem removed from the concerns of the law, but they really are not. As an example, consider the relation between a creditor and the debtor. When the debtor's affairs are going well, the credit relations between the creditor and the debtor may be analogized to a game played an indefinite number of times. But if the debtor is likely to become insolvent soon, the relations between debtor and creditor become much more like a game to be played a fixed - and perhaps only a few - number of times.⁷⁹⁹

In order to see what equilibrium will be reached in a repeated game of the prisoner's dilemma, the dissertation must analyze both of the two scenarios the game repeated, namely *a fixed number of times* and *an infinite number of times*. When the prisoners know the number of repetitions, it may be interesting to operate a backwards induction to solve the game. In this context, it is relevant to consider the strategies of each player when they realize the next round is going to be the last. They behave as if it was a one-time game and, thus, the Nash equilibrium will be chosen, and the equilibrium would be confess-confess, which is similar to a one-time game.⁸⁰⁰ Now, consider the game before the last. Since each player knows that in the next, final round they are going to confess, there is no advantage in lying (cooperate with each other) on this round either. The same logic applies to prior moves. Therefore, confess-confess is the Nash equilibrium for all rounds. Repeated games provide different payoffs at each repetition, depending on each player's moves. Since these payoffs are given at different

⁷⁹⁸ See Robert Axelrod, *The evolution of cooperation*, 1984. Cited in Cooter, R. B, & Ulen, T. (2014). *Law and economics* (6th ed., international ed.). Pearson Education Limited, p. 36.

⁷⁹⁹ *Ibid.*

⁸⁰⁰ *Ibid.*

points in time, in order to analyze repeated games, the parties must compare each player's discounted sum of payoffs.⁸⁰¹

4.1 Fixed games

Consequently, if the shipowner and the supplier where to play this game five times based on table 7.3, due to backwards induction, both of the parties would end up in the Nash equilibrium. This is illustrated by table 7.4.

Table 7.4 – Total utility of a fixed game

Parties Utility/Round	1	2	3	4	5	Total Utility
Supplier	0	0	0	0	0	0
Shipowner	0	0	0	0	0	0

Source: the authors creation⁸⁰²

Both of the parties would end up with a total of 0 utility each because of the lack of trust and the awareness of a restricted amount of games. This game would have the exact same outcome whether the shipowner and the supplier played it three times or a 1000 times, ultimately, the Nash equilibrium will prevail. Although, arguably, if the parties created a partnering contract build upon mutual understanding and trust, the parties could potentially avoid the Nash equilibrium.

The purpose of having common goals in the partnering contract is to create mutual benefits of joint utility by creating a legally binding contract, which makes the parties choose the right strategy without being caught in the dilemma

⁸⁰¹ *Ibid.*

⁸⁰² Based upon Backward induction and the theories on repeated games set out by Prajit K. Dutta's Prisoners Dilemma, Reuer, J. (2009). *Strategic Alliances: Theory and Evidence* (Oxford Management Readers). Oxford University Press, pp.7; 214-15.

between joint optimization and self-optimization.⁸⁰³ This is also a significant condition in order to reach the benefit from joint utility. If the parties do not share all relevant information with each other and cannot trust the other party to reveal relevant information, self-optimization will occur at once. Full information for only one party will increase the possibility to cheat and self-optimize. Tvarnø notes that the higher the degree of shared information, the larger is the possibility to achieve joint utility.⁸⁰⁴ Information also decreases moral hazard and adverse selection and the risk of hold up.⁸⁰⁵ As mentioned in chapter 6, information is a key element to increase the output of the transaction. The more the legally bound parties are revealing the information regarding the transaction, the closer the joint utility the parties get.

According to Tvarnø, the partnering contract can be defined as an exogenous change to the preferences of the players in the prisoner's dilemma game. Hence, the content of the partnering contract is significant. The content of the partnering agreement must on one hand make the parties prefer to cooperate instead of self-optimize while, on the other hand, bind the parties to joint-optimization through cooperation.⁸⁰⁶ The inefficient Nash equilibrium must be avoided through the partnering contract.⁸⁰⁷

In this connection, the contract becomes the most important tool in obtaining joint utility and cooperation, and to ensure that self-optimization does not occur. Furthermore, economic literature argues that creating appropriate incentives for cooperative interaction could alter the orientation of the partner's collaboration,

⁸⁰³ S. Shavell, *Contracts: The New Palgrave Dictionary of economics and the Law*, 1996, p. 433. Cited in Tvarnø, C. D. (2015). "To bind or not to bind: It's in the contract Formalizing collaboration through partnering contracts in the US, British and Danish construction industries." *Journal of Strategic Contracting and Negotiation*, 1.4: 288-314, p. 305.

⁸⁰⁴ *Ibid.* Chapter 5 discussed the content of the partnering agreement and the primary goal of the partnering agreement is to build mutual trust, in order to create a successful collaboration.

⁸⁰⁵ *Ibid.*

⁸⁰⁶ This was discussed in chapter 5 and 6.

⁸⁰⁷ Tvarnø, C. D. (2015). "To bind or not to bind: It's in the contract Formalizing collaboration through partnering contracts in the US, British and Danish construction industries." *Journal of Strategic Contracting and Negotiation*, 1.4: 288-314, p. 305.

and thus improve the joint utility in the game.⁸⁰⁸ Hence, the partnering contract must change the parties' behavior by creating incentives through a written and explicit contract which obliges the parties to reward collaboration in the interest of both parties.⁸⁰⁹

In a partnering context, the joint utility is a win-win perspective, although this does not mean that all parties will win the same amount of money, as shown in the table 7.3. Neither does it mean that all parties must achieve the same award in percent due to the incentive clause. The win-win perspective means that the transaction itself is improved by the collaborative partnering contract and that all parties gain more from the partnering contract compared to a traditional construction contract.⁸¹⁰ Thus, the gain from the result in the prisoner's dilemma game (which is 0, 0 instead of 5, 5) could be divided differently between the shipowner and the supplier e.g. due to the negotiations, the initial investments, and/or the risk allocation.⁸¹¹ Therefore, this is the outcome of the game between the shipowner and the supplier, even though both parties know that they can gain more by joint optimization. The crucial aspect of this game is the lack of trust.

Hypothetically, in a partnering agreement between a supplier and a shipowner where each party has mutual trust in one another, and thereby complete confidence in the other party's strategy, they may choose *not to confess/cooperate*.

⁸⁰⁸ James Jr., H. (2002). "The trust paradox: A survey of economic inquiries into the nature of trust and trustworthiness." *Journal of Economic Behavior and Organization*, 47(3): 291-307. Also Tvarnø, C. D. (2015). "To bind or not to bind: It's in the contract Formalizing collaboration through partnering contracts in the US, British and Danish construction industries." *Journal of Strategic Contracting and Negotiation*, 1.4: 288-314, p. 305.

⁸⁰⁹ Tvarnø, C. D. (2015). "To bind or not to bind: It's in the contract Formalizing collaboration through partnering contracts in the US, British and Danish construction industries." *Journal of Strategic Contracting and Negotiation*, 1.4: 288-314, p. 305.

⁸¹⁰ Cox A, The problem with the Win-Win, White Paper 10/3, International Institute for Advanced Purchasing and Supply 2010. See also Tvarnø, C. D. (2015). "To bind or not to bind: It's in the contract Formalizing collaboration through partnering contracts in the US, British and Danish construction industries." *Journal of Strategic Contracting and Negotiation*, 1.4: 288-314, p. 305. See also Wensley, Robin. (2013) *Effective management in practice: Analytical insights and critical questions*. Sage, p. 97-98.

⁸¹¹ Tvarnø, C. D. (2015). "To bind or not to bind: It's in the contract Formalizing collaboration through partnering contracts in the US, British and Danish construction industries." *Journal of Strategic Contracting and Negotiation*, 1.4: 288-314, p. 305.

In this example, both parties would choose joint optimization, by both choosing the same strategy, which will overall be in their best interest.

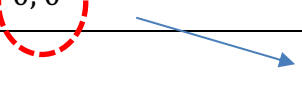
According to Constance E. Bagley⁸¹² and Christina D. Tvarnø (hereinafter, referred to as, “Bagley and Tvarnø”) on partnering:

“(…) arrangement will move the parties away from an inefficient prisoner’s dilemma Nash equilibrium to a pareto Optimal Frontier. This is in contrast to a traditional arm’s length contract, which often consists of each party’s optimizing its own rewards and minimizing its own risks while allocating the cost of future breaches.”⁸¹³

Hence, in this situation, Bagley and Tvarnø argues that the collaboration created in the partnering agreement will build up the trust between the shipowner and the supplier, which will result in both choosing the cooperate strategy – which illustratively means to move the parties from the (0,0) to (5,5) as illustrated in table 7.5.

Table 7.5 – The shipowner and supplier dilemma from a partnering perspective

Supplier / Shipowner	Not Cooperate (Confess)	Cooperate (Not confess)
Not Cooperate (Confess)	0, 0	7, -2
Cooperate (Not confess)	-2, 7	5, 5



Source: Dutta⁸¹⁴

⁸¹² Former Professor and Senior Research Fellow at Yale University.

⁸¹³ Bagley, C. E., & Tvarno, C. D. (2014). "Pharmaceutical public-private partnerships: Moving from the bench to the bedside." *Harvard Business Law Review*, 4(2): 373-401 p. 384.

⁸¹⁴ This is the same table 7.3. Dutta, P. (1999). *Strategies and games: Theory and practice*. MIT Press, p. 210.

However, based on a fixed repeated game, both the shipowner and the supplier would end up using the dominant strategy, since they are aware that the game would be played a fixed number of times. Even though this game was played several times, this did not create the trust between the parties, which should move the parties from the Nash equilibrium to the utility of (5,5). Consequently, infinite games may be the solution to the dissertation.

4.2 Infinite games

The infinite game works similarly to the fixed game. The situation with an infinite number of repetitions is different, since there will be no last round, which means that backwards induction reasoning does not work here. At each round, both prisoners reckon there will be another round and therefore there will always be benefits arising from the cooperate strategy i.e. not confess. However, the prisoners must consider the punishment strategies, in case the other player confesses in any round. Thus, in regards to the shipowner and the supplier, the infinite game would result in a collaboration between the parties, meaning that they would choose the cooperate strategy. By playing a game infinite times, each of the parties keep learning about each other and learn how to cooperate.⁸¹⁵ Therefore, the best solution for both the shipowner and the supplier would eventually be to joint optimize, even though there is a possibility for one of the parties to punish the other, which ultimately would “restart” the game – meaning that the trust between both of the parties will be eliminated. Consequently, in the following game (i.e. the game after a punishment), the parties will choose the

⁸¹⁵ Dutta, P. (1999). *Strategies and games: Theory and practice*. MIT Press, p. 211-12. See also Cooter, R. B, & Ulen, T. (2014). *Law and economics* (6th ed., international ed.). Pearson Education Limited, p. 36-37.

dominant strategy again until the trust has been rebuild again.⁸¹⁶ The outcome of the infinite game could be illustrated in the Table 7.6:

Table 7.6 – Total utility of an infinite game

Parties Utility/Round	1	2	3	4	5	...	x
Supplier	5	5	5	5	5	...	x
Shipowner	5	5	5	5	5	...	x

Source: the author's creation⁸¹⁷

The matrix has not taken eventually punishments into considerations. Therefore, the infinite game could be the solution for the shipowner and the supplier. However, the infinite game is a hypothetical theory, since an infinite game does not exist in practice, as a game would always have an end.⁸¹⁸ Although, from a hypothetical perspective, an infinite game could potentially create a collaboration between the shipowner and the supplier, and thus create a joint optimization.

Hence, the fixed game would not be the solution to table 7.5 and the infinite game is a possible - but a hypothetical - solution and, therefore, the dissertation will take a different approach. As mentioned previously, a game can have several Nash equilibriums and some do not have any. Some academics are operating with *the modified prisoner's dilemma*,⁸¹⁹ which is why the dissertation will look further into this game.

⁸¹⁶ *Ibid.*

⁸¹⁷ Same as with table 7.4. Based upon Backward induction and the theories on repeated games set out by Prajit K. Dutta's Prisoners Dilemma, Reuer, J. (2009). *Strategic Alliances: Theory and Evidence* (Oxford Management Readers). Oxford University Press, pp.7; 214-15.

⁸¹⁸ Dutta, P. (1999). *Strategies and games: Theory and practice*. MIT Press, p. 211-12. See also Cooter, R. B, & Ulen, T. (2014). *Law and economics* (6th ed., international ed.). Pearson Education Limited, p. 36-37.

⁸¹⁹ Dutta, P. (1999). *Strategies and games: Theory and practice*. MIT Press, p. 210.

5. The modified prisoner's dilemma

The modified prisoner's dilemma is set out from the classical prisoner's dilemma, which was discussed in the sections above. However, the modified game has added a third strategy, namely to *partly confess*, whereas the classical game only have to strategies, namely to *confess/not confess*.⁸²⁰ Table 7.7 below illustrates the modified game between the shipowner and the supplier, where the third potential strategy is named *profit sharing* instead.

Table 7.7 – The modified prisoner's dilemma

	Confess	Not Confess	Partly confess
Supplier/Shipowner	Not Cooperate	Cooperate	Profit sharing
Not Cooperate	0, 0	7, -2	3, -1
Cooperate	-2, 7	5, 5	0, 6
Profit sharing	-1, 3	6, 0	3, 3

Source: Dutta⁸²¹

In the modified game, there are two Nash equilibriums: (0,0) and (3,3).⁸²² The modified game is a repeated game and not the usual one-time game. This modified game is based upon the shipowner and the supplier within a partnering agreement – meaning that both the parties have agreed to cooperate throughout the game which means that this is set out in the contract. Therefore, within the modified game, the shipowner and the supplier have agreed on the outcome which means that if both parties cooperate, they share the profit at the end.

Nonetheless, arguably, an illustration hereof is necessary. As an example, the shipowner and the supplier could play the game seven times. In connection to the

⁸²⁰ *Ibid.*

⁸²¹ *Ibid.*

⁸²² *Ibid.*

repeated fixed games as set out above in table 7.4, backwards induction would apply and, therefore, the Nash Equilibrium (0,0) would prevail. However, in this modified game, the shipowner and the supplier have agreed to cooperate throughout the entire game. Nevertheless, it is worth mentioning that - despite the partnering agreement - from an economic perspective, there is still a risk of punishment strategies in the modified game.⁸²³

If the shipowner and the supplier play this game seven times, the parties can challenge the backward induction, by collaborating with each other and with a potential profit in the end. If the shipowner and the supplier choose to cooperate throughout the game, i.e. choosing the *cooperate strategy* (5,5), then both of them will get a bonus in the 7th game, as they would arguably choose the *profit sharing strategy* (3,3).

Table 7.8 – Modified prisoner’s dilemma, total utility of 7 games example 1

Parties								
Utility/Round	1	2	3	4	5	6	7	Total Utility
Supplier	5	5	5	5	5	5	3	33
Shipowner	5	5	5	5	5	5	3	33

Source: the author’s creation

Table 7.8 illustrates the modified game as if it was played seven times - and if both of the parties stick to the plan, they both end up with a total utility of 33. The collaborative element must maintain the trust between the parties and, as mentioned previously in this chapter, the parties are rational and they are aiming for the payoff-maximizing strategy. Therefore, in the 7th game, the shipowner and

⁸²³ *Ibid.*

the supplier have agreed on choosing the *profit sharing* strategy, even though one of the parties could potentially punish the other by choosing the weaker *not cooperate* strategy. If the shipowner chooses to *not cooperate* and the supplier chooses the *profit share* strategy, the shipowner would end up with a utility of 3 in that game, where the supplier would end up with 0, or vice versa, as illustrated in table 7.9 below. Consequently, it does not make sense for either of the parties to defect from the strategy, since they have both honored the agreement throughout the entire game.

Table 7.9 - Modified prisoner's dilemma, total utility of 7 games example 2

Parties Utility/Round	1	2	3	4	5	6	7	Total Utility
Supplier	5	5	5	5	5	5	0	30
Shipowner	5	5	5	5	5	5	3	33

Source; the author's creation

As mentioned above, there is still a risk for punishment strategies, although if this applies, the party will punish the other party for defecting from the agreed strategy which means that the total utility for each party of the game would arguably be as follows:

Table 7.10 - Modified prisoner's dilemma, total utility of 7 games example 3

Parties Utility/Round	1	2	3	4	5	6	7	Total Utility
Supplier	5	5	5	5	7	0	0	27
Shipowner	5	5	5	5	-2	0	0	18

Source: the author's creation

When the supplier is acting opportunistic in game 5, the supplier gets a higher utility and the shipowner is punished. However, now the shipowner knows that the supplier cannot be trusted anymore and, therefore, the shipowner would punish the supplier in the next games by choosing the *not cooperate* strategy. The supplier is well aware of this, since they know that they punished the shipowner in the previous game, which is why the shipowner will not choose to cooperate in the next game. Hence, the supplier will also choose the *not cooperate* strategy in the last games and, therefore, the total utility of both parties will be less than if they cooperated.

6. Concluding remarks

This chapter has discussed game theory and the output of a game between the shipowner and the supplier. The dissertation discussed how the parties in a one-time prisoner's dilemma, as illustrated by table 7.3, would always end in the Nash equilibrium (0,0), even though the parties had the chance to joint optimize. The reason is that, from a game theoretical perspective, both parties are rational and seek to profit maximize and, therefore, each party will always act more self-interested. The prisoner's dilemma illustrated a possibility for joint optimization, which was how the dissertation discussed the possibilities for a change to the end in the inefficient Nash equilibrium. The fixed repeated game was not a solution to the equilibrium, since backwards induction would result in the inefficient Nash equilibrium. In terms of the infinite game, this was regarded a hypothetical solution, as the parties will always have an end game in practice. Even though those two games showed that there may be a possibility for a change in the game, if the parties cooperate.

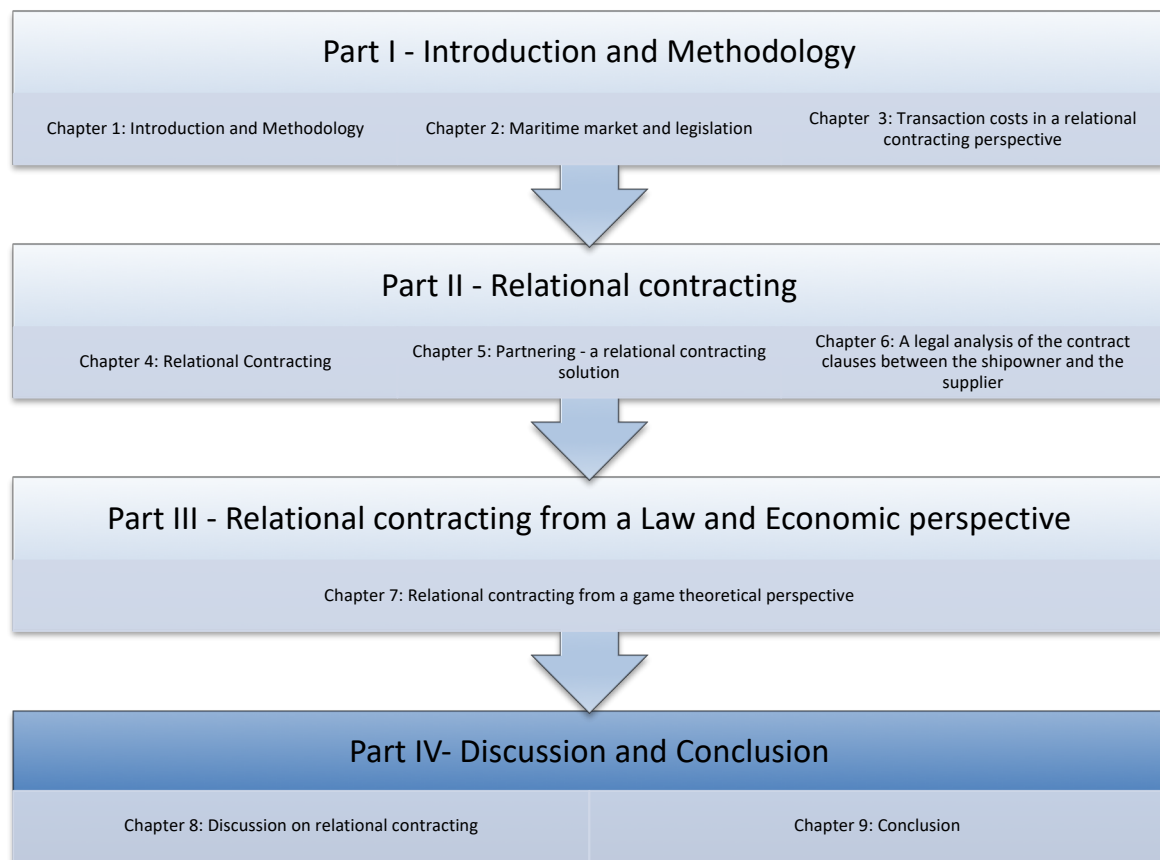
On the other hand, the modified prisoner's dilemma showed that it was possible to overcome the inefficient Nash equilibrium by getting the parties to collaborate in the games with the promise of a profit in the end. From a game theory perspective, the modified dilemma presented a partnering agreement between the shipowner and the supplier and illustrated that the parties could joint optimize the utilities for both parties, and, thus, from an economic perspective, the partnering agreement could be a solution to the inefficient Nash equilibrium.

Thus, by using the modified game, there is a possibility to build trust between the shipowner and the supplier and, therefore, they can joint optimize. The partnering agreement set out the collaborative element and, as mentioned previously, Tvarnø argued that the content of the partnering agreement must on one hand make the parties prefer to cooperate instead of self-optimize, while on the other hand, bind the parties to joint-optimization through cooperation.⁸²⁴ The inefficient Nash equilibrium must be avoided through the partnering contract,⁸²⁵ and by using the modified prisoners dilemma, the partnering agreement can change the game for the parties, by moving them from the inefficient Nash equilibrium to a more efficient Nash equilibrium. Therefore, in this connection, the contract becomes the most important tool in obtaining joint utility and cooperation in order to ensure that self-optimization does not occur.

⁸²⁴ See also discussion in chapter 5.

⁸²⁵ Tvarnø, C. D. (2015). "To bind or not to bind: It's in the contract Formalizing collaboration through partnering contracts in the US, British and Danish construction industries." *Journal of Strategic Contracting and Negotiation*, 1.4: 288-314, p. 305.

Part IV – Discussion and Conclusion



Part IV summary

The fourth part is divided into two chapters: Chapter 8: Discussion on relational contracting and Chapter 9: Conclusion.

The purpose of the fourth and final part is to summarize the project and conclude on the findings.

The purpose of chapter 8 is to discuss relational contracting between the shipowner and the supplier, based on the different findings in the previous parts. Furthermore, the chapter reflects on the management party – which was eliminated in chapter 3 – therefore this chapter discuss possible new functions for the management.

Chapter 9 is the final conclusion to the dissertation and will seek to answer the objectives set out in the purpose statement in chapter 1.

Chapter 8: Discussion on relational contracting

1. Relational contracting as a strategic alliance

The previous chapters have discussed relational contracting. Instead of using the existing contract models and framework agreements in the shipping industry, this dissertation purposes that the shipowner and the supplier use a different and alternative contract model. This dissertation has focused on partnering contracts which is a relational type of contract. Partnering contracts have been used in other industries, like the pharmaceutical industry and the construction industry, to ensure a partnership between two or more separate enterprises. Thus, partnering is an alternative contract solution between the shipowner and the supplier, to be used instead of a servitization model. Partnering can, as analyzed in the previous chapters, increase the joint utility and innovation, where the latter is key factor in regard to the competitive situation in the maritime sector.

As stated several times, the maritime industry is a very old industry, with a vast potential for innovation. In the recent years, the maritime industry has struggled with the decrease in the freight rates, due to the increase in oil prices. Hence, the maritime industry is an economic pressured market which is why new business models and alternative contractual solutions is needed in order to change the rules of the game; improve competitive advantages; reducing cost; and improve the go green element. However, strategic alliances are not a new thing to the

maritime industry, even though it is not as common as in other industries such as the airline industry⁸²⁶ e.g. Rolls Royce⁸²⁷ or route networks.⁸²⁸

In the container shipping industry, there have been a number of multi-national mergers,⁸²⁹ such as the one between British-based P&O and the Dutch line Nedlloyd, and the acquisition of the US line APL by NOL of Singapore. This is affecting a broader cross-section of the industry which have been the establishment of global alliances of which five are the most important:

1. Sealand-Maersk⁸³⁰
2. the Grand Alliance (Hapag-Lloyd, P&O-Nedlloyd, MISC, OOCL)
3. the United Alliance (Hanjin, DSR-Senator, Cho Yang)
4. the New World Alliance (HMM, APL, MOL)
5. the Grouping of COSCO, Yangming and K-Line⁸³¹

Although, many of the examples set out above is actual mergers or acquisitions and - as stated previously - there is a fine line between joint ventures and collaborations, based on Stigler's view, where he argued that the collaborative relationship between two firms are an incomplete form of merger.⁸³² However, as has become evident throughout the dissertation, the relational contracting between the shipowner and the supplier are not meant to be a merger, but a

⁸²⁶ Debbage, K. G. (1994). "The international airline industry: globalization, regulation and strategic alliances." *Journal of Transport Geography* 2.3: 190-203. Cited in Slack, B., Comtois, C. and McCalla, R. (2002). "Strategic alliances in the container shipping industry: a global perspective." *Maritime Policy & Management*, 29.1: 65-76.

⁸²⁷ This is in reference to the Rolls Royce Power-by-the-Hour, which was discussed in chapter 1 and chapter 4. Ng, I. CL, David Xin Ding, and Nick Yip. (2013). "Outcome-based contracts as new business model: The role of partnership and value-driven relational assets." *Industrial Marketing Management*, 42.5: 730-743, p. 731.

⁸²⁸ Debbage, K. G. (1994). "The international airline industry: globalization, regulation and strategic alliances." *Journal of Transport Geography* 2.3: 190-203, p. 190. The airlines are dealing with international route networks, which has become an important strategic objective of the largest carriers.

⁸²⁹ According to Slack et al., there have been formations of strategic alliances and equity partnerships in the maritime industry, though some of the groupings that have evolved have been quite complex, and in some cases, companies have merged through acquisition and then joined larger alliances, or have entered an alliance, only later to merge. Strategic alliances in the container shipping industry: a global perspective, by. Slack, B., Comtois, C. and McCalla, R. (2002). "Strategic alliances in the container shipping industry: a global perspective." *Maritime Policy & Management*, 29.1: 65-76.

⁸³⁰ This has later changed its name to SeaLand, a Maersk Division. Last visited January 14th 2019. https://www.sealandmaersk.com/welcome?gclid=CjwKCAiA9efgBRAYEiwAUT-jtAQ02V3duaQGH4CoJlQryFUkcP5AJuXCUtToarjp3t6XRAidQCaSPBoCBg4QAvD_BwE&gclidsrc=aw.ds.

⁸³¹ Slack, B., Comtois, C. and McCalla, R. (2002). "Strategic alliances in the container shipping industry: a global perspective." *Maritime Policy & Management*, 29.1: p. 66.

⁸³² Stigler, G. (1955). "Mergers and Preventive Antitrust Policy." *University of Pennsylvania Law Review*, 104(2): 176-184 and also discussed in chapter 5 section 3.4 Partnering in other industries.

collaboration through an alternative contract model. The common element between the mergers and acquisitions; the strategic alliances in the aircraft industry; and the relational collaboration between the shipowner and the supplier is the possibility for optimization of each party's business and gain a competitive advantage. In connection with the aircraft industry, Keith Debbage⁸³³ (hereinafter, referred to as, "Debbage") argued that:

*"As such innovations diffuse spatially, the most efficient air transport systems to emerge first from this transition will achieve a competitive advantage in the global economy in terms of the ability to move people, goods and services."*⁸³⁴

Hence, Debbage are initiating that the companies who are the most innovative and create more efficient solutions will be competitively strongest. Consequently, a joint collaboration between the shipowner and the supplier could through innovation create a competitive advantage for both parties.

In the maritime industry, there are other solutions to the competitive situation. One could be that a single company will own the ships, and all of the operation, maintenance etc. regarding the ship, will all be outsourced to more specialized companies. In this way, all parties will still play a role in the market and the parties will engage in a role, where they are actually experts. If this situation will occur, the market as of what is known today will have completely vanished and a new one has arisen. If the market change to such a model, it will force the involved parties to actually cooperate, since they will all have their share of the risk in connection with the ship, and thereby all of the parties will arguably be willing to engage in some kind of long-term collaboration.

⁸³³ Professor of Geography at University of North Carolina at Greensboro.

⁸³⁴ Debbage, K. G. (1994). "The international airline industry: globalization, regulation and strategic alliances." *Journal of Transport Geography* 2.3: 190-203, p 190.

Another solution to the maritime market could be illustrated through an example with Amazon,⁸³⁵ which is a huge online platform. Arguably, it would be cheaper for the large online company to enter into the freight market and buy a ship to transport all of their products from Asia to United States, instead of using the current shipping companies.⁸³⁶ Online shopping is a huge success and, therefore, many of the online platforms may need to take their freight costs into account, in order to optimize their own company structure. Amazon would - as a new market player - change the equilibrium and the game in the maritime industry.

Since the maritime business is as cost-extensive as it is,⁸³⁷ the industry has not seen any large, international companies which just enter the market, since the market entry requires a huge amount of capital. However, these online companies are new, in a completely new online industry, and are actually potential competitors to the shipowners in the industry. Although the shipowner might not feel threatened, due to high entry barriers,⁸³⁸ companies such as Amazon or Alibaba could potentially be a huge threat. Furthermore, the growth of world trade – a direct outcome of the internationalization of the economy, which Amazon and Alibaba is also a part of – has made it essential for container

⁸³⁵One of the things that are Amazon strengths compared to the shipowner, even though that they are operating different products than Amazon wants to cut out the shipping party, in order to optimize the business, it is that Amazon is so adaptable, that they keep adapting to the market and their customers demand.

⁸³⁶Rumor has it that Amazon has considered this business model and are currently trying build their own delivery service as a result of big losses in the shipping area. Thus Amazon is cutting costs and profit optimizing, as a part of their optimization strategy. If Amazon is considering this strategy, so might Alibaba – the largest Chinese Online platform – this would definitely be a game changer. For further information on the rumor Amazon delivery strategy see; <https://www.wsj.com/articles/amazon-to-launch-delivery-service-that-would-vie-with-fedex-ups-1518175920> and <http://fortune.com/2018/02/09/amazon-delivery-service/>. Both pages last visited January 14th 2019. Amazon is very aggressive in their strategies on land delivery and their same-day-delivery was rolled out a few years ago and today covers most of the US. Another thing is Amazons cloud service - AWS. Amazon cloud service has recently been chosen by Samsung Heavy Industries, to be the preferred cloud provider. Samsung Heavy Industries is one of the largest shipbuilders in the world and AWS' cloud services shall support their digital transformation. This is primarily in regards to autonomous shipping platforms, where the collaboration between Samsung and Amazon, hope to rapidly innovate. Source; Press Release from Amazon, "Samsung Heavy Industries Selects AWS as its preferred Cloud Provider", August 8th 2018. In an interview with Bloomberg (February 12th 2018), CEO of Maersk, Søren Skou, expressed his concern regarding Amazon and Alibaba. He stated that Maersk need to do a good job otherwise "Amazon is a threat if we don't do a good job for them." Source: <https://www.bloomberg.com/news/articles/2018-02-12/amazon-threat-has-maersk-racing-to-stop-clients-becoming-rivals>.

⁸³⁷Stopford, M. (2009). *Maritime economics*. Routledge. p. 269. This was also discussed in chapter 1, section 1 Introduction.

⁸³⁸As mentioned in chapter 2, section 2.2 Supply and Demand, the maritime industry is defined as a market with relatively few entry barriers, however, it requires a great amount of capital to enter, which is meant by this. "The Tramp Shipping Market an update of a report prepared for the European Community Shipowners' Association (ECSA)", by Clarkson Research Services Limited (CRSL), March 2015, p. 6.

shipping companies to extend their market coverage globally. At the same time, the costs of providing such global services have been increasing because of the need to deploy ever larger and more costly vessels.⁸³⁹ With increasing demands and costs for the shipowner, a collaboration with the supplier would benefit the shipowner, since the supplier would help complete its demands.

Since the shipowner is facing greater demands, as an extended market; decrease in freight rates; and more expensive vessels, it would be both cost and time efficient for the shipowner to engage in a collaboration with the supplier. For the shipowner to focus on its actual business and rely on the supplier's services and products, it would lower the risk for the shipowner and could potentially help the shipowner in the everyday business, e.g. through fast pace maintenance and reliable services. For the shipowner to collaborate with the supplier on everything from product innovation to maintenance services, it could save the shipowner money, since the shipowner would no longer have to worry about the ships potentially not being fully operational.⁸⁴⁰ Due to increasing demands in transport of goods, the shipowner might require more ships. An expansion in the fleet does also require added maintenance which is also why an outsourcing of this to the supplier would be of great value to the shipowner.

On the supplier's side, an increase in the fleet on the shipowner's side signifies more business for the supplier. Although, for the supplier to handle the maintenance on a regular basis and become the permanent supplier to the shipowner, it would be of tremendously great value economically to the supplier. Thus, the collaboration will result in more business and greater revenue, and the supplier would too have the benefit of being able to plan its production, due to the collaborative element between the shipowner and the supplier.

⁸³⁹ Slack, B., Comtois, C. and McCalla, R. (2002). "Strategic alliances in the container shipping industry: a global perspective." *Maritime Policy & Management*, 29.1: 65-76, p. 66.

⁸⁴⁰ Another money-saver is the elimination of the management party, since the shipowner will not need to pay the management for their services, but rather do the job themselves or get the supplier to do it.

In order to create a successful collaboration, both parties need to engage completely in the collaboration, otherwise it will fail.

Badaracco stated – among others - that alliances must be led purposely and that the parties must trust each other.⁸⁴¹ Furthermore Harrigan stated that the parties' decision to embark upon a partnering agreement should only be made after a careful assessment of the other parties' strengths and weaknesses, the cost and benefits of the alternative to the partnering agreement.⁸⁴² It is crucial that both the shipowner and the supplier have assessed one another and found a “match” in one another; thereon, it is important that they actually lead the alliance and are aware of the benefits and down sides to the collaboration. It is worth noting – as mentioned previously - that a joint collaboration is not for every company, since it brings along significant costs - particularly opportunity costs - and potentially high levels of risk that are not always justified.⁸⁴³ For both the supplier and the shipowner, the risk is an important factor – as discussed in chapter 6 – although, the risk between the parties need to be calculated and handled in the relational contract. In order to get a successful joint collaboration, it is very important that both parties share knowledge and gaining mutual trust.

According to Brian Slack,⁸⁴⁴ Claude Comtois⁸⁴⁵ and Robert McCalla⁸⁴⁶ (hereinafter, referred to as, “Slack et al.”), due to the increase in the market demand and a possibility to create an alliance, then:

⁸⁴¹ Badaracco, J. (1991). *The knowledge link: How firms compete through strategic alliances*. Harvard Business School Press, pp. 131-45. Also discussed in section 6. The risk of partnering agreements.

⁸⁴² Harrigan, K. (1986). *Managing for joint venture success*. Lexington, mass, p. 25. Also discussed in section 5.4. The risk of partnering agreements.

⁸⁴³ Villeneuve, T. F., Gunderson Jr., R. V., Chapman, C. D., Sharrow, D. P., Ehrlich, T. H. (2016). *Corporate Partnering – Structuring & Negotiating Domestic & International Strategic Alliances*, (5th ed.) Wolters Kluwer, P. 1-14. This was also discussed in section 6. The risks of partnering agreements.

⁸⁴⁴ Professor Emeritus at Concordia University, Montreal. Research field: Maritime transport.

⁸⁴⁵ Professor of Geography at the Université de Montréal.

⁸⁴⁶ Researcher at Univeristy of Wisconsin-Madison.

*"Faced with these circumstances, the shipping lines have moved to restructure. This, in turn, has impacted on their operations. The vessels deployed have been re-assigned, the service networks have been reconfigured, and the ports of call adjusted, changes that ultimately affect every facet of the maritime industry."*⁸⁴⁷

Furthermore Slack et al., argued:

*"Although alliance services account for a minority of joint offerings by individual companies in all but one grouping, the results indicate that the companies that have sought membership in alliances have been those that have tended to be already involved with others in joint activities. In turn, this has made possible an expansion of services. Established carriers can continue to serve existing markets with lesser capacity commitment because of vessel sharing, and can, thus, divert capacity to add new services and possibly, exploit, new markets."*⁸⁴⁸

Even though Slack et al. is referring to carriers and alliances in between, this does also apply for an alliance between a shipowner and a supplier. As Slack et al. points out, it is that the collaborative element – the sharing of vessels – which gives the parties a chance to focus on their business, but, at the same time, explore new markets. For the shipowner and the supplier to engage in a procurement alliance, i.e. relational contract, it allows for a reduction in costs through bundling purchases in order to take advantage of volume discounts.⁸⁴⁹ For the parties to engage in a relational context, both will have to optimize their situation. An optimization of their situation is difficult to define, although, in this context, the purpose of the relational contract is ultimately to create a joint collaboration between both parties. In this situation, the parties are moving from a classic manufacturing/purchasing situation, where the suppliers are selling

⁸⁴⁷ Slack, B., Comtois, C. and McCalla, R. (2002). "Strategic alliances in the container shipping industry: a global perspective." *Maritime Policy & Management*, 29.1: 65-76, p. 66.

⁸⁴⁸ *Ibid.* p. 69.

⁸⁴⁹ Nistor, F. (2012). "Strategic Alliances in Container Lines." *Scientific Bulletin of the Naval Academy* No. 1: 89-91.

their products to a shipowner, and into a new customizing situation, where the shipowner defines its demands and needs to the supplier, and, then, the supplier will fabricate the given product to the shipowner.⁸⁵⁰ This change of situation is a huge step for both parties – from a supplier's perspective, this change does not happen overnight, as it requires that the supplier has the right capacity for it and needs to be adaptable. From the shipowners' perspective, they get to be in a position where they can customize the product in question (to a certain level), which means that all their uncertainties and problems with the products are being handled.

A collaborative relationship between the shipowner and the supplier could give the supplier the opportunity to explore new markets, by designing new products or deliver new services, based on the demands and knowledge from the shipowner. The supplier could potentially expand its geographical service ability, as a part of completing the shipowners' demands. On the shipowners side, a joint collaboration with the supplier could be cost-effective for the shipowner, due to better and cheaper products. Also, the shipowner could potentially expand its globally services, due to greater performance; lower costs in terms of maintenance; and fewer berth days. In the maritime industry, everything costs money and is time consuming, hence, for a shipowner, the fewer berth days, the better, due to the immense costs on a daily basis, when a ship is not operational.

⁸⁵⁰ Chapter 1 discussed servitization – a product with a service agreement – thus by creating a joint collaboration, the parties are taking things a bit further.

2. Relational contracting between the shipowner and supplier

The dissertation has its starting point in the one-off transaction between the shipowner and the supplier, where the management party also had a part to play. Although, the transaction cost analysis in chapter 3 eliminated the management party, since this party was considered redundant in connection with a relational contracting situation. Thus, the dissertation has analyzed and discussed relational contracting between the shipowner and the supplier.

While a relational contract comes with various benefits for both parties, it is important that both parties are positively engaged towards it. Therefore, the contract between the parties is the utmost important tool in order to create a collaboration, since the risk of one of the parties defecting is high, unless they are bound by the right incentives.

According to Bagley and Tvarnø:

*"If the contract objectives are joint utility, efficiency, innovation and commercial optimization, the fulfillment obligations must balance the needs and interests of all the parties."*⁸⁵¹

Hence, the relational contract between the shipowner and the supplier must – not only – contain a common goal, but it is vastly important that the contract reflects both parties' needs and interests.

Some of the motivational factors for the shipowner and the supplier were discussed in chapter 6, where some of the incentives for the shipowner and the supplier were highlighted (table 6.2). The parties shared some common incentives: risk; price; and legislation. These three factors are highly relevant for

⁸⁵¹ Bagley, C. E., & Tvarno, C. D. (2014). "Pharmaceutical public-private partnerships: Moving from the bench to the bedside." *Harvard Business Law Review*, 4(2): 373-401, p. 384.

each party and, therefore, these should be included in the partnering contract. For the shipowner and the supplier, they should be very confident in each other when writing a contract obligating the parties to seek common goals. Also, by adding clauses supporting the main objectives in the contract, the relational clauses will ensure that the parties is bound by the contract and by the positive incentives in the contract to fulfil the common goal. As relational contracting is a matter of mutual trust, it is thereby quite relevant for both of the parties to actually engage in the contract.

According to Bagley and Tvarnø:

*"Contract negotiation, collaboration management, funding, timelines, the production of deliverables, confidentiality, the sharing of intellectual property, and understanding the differences among the parties are all crucial contractual elements that must be considered to make the partnership work effectively."*⁸⁵²

Thus, the success of an effective collaboration lies within the construction of the contract, since this is what the parties can rely upon, and know how they and the other party is legally bound. The common goal must be negotiated in order to optimize the transaction.⁸⁵³ Therefore, the contractual elements are very important and, thereby, both of the parties' needs and interests must be considered in order to achieve a successful collaboration. Thus, the parties are obliged to fulfill the contract requirements of mutual goals, collaboration, trust, open books, and positive incentives, as stated in the partnering contract.⁸⁵⁴

⁸⁵² *Ibid.*

⁸⁵³ Tvarnø, C. D. (2015). "To bind or not to bind: It's in the contract Formalizing collaboration through partnering contracts in the US, British and Danish construction industries." *Journal of Strategic Contracting and Negotiation*, 1.4: 288-314, p. 306.

⁸⁵⁴ *Ibid.*

Chapter 6 discussed the partnering contract between the shipowner and the supplier and the analysis emphasized that some elements were relevant to include in the contract. Some of these elements were the geographical aspects, the time frame, the design, the supply and construction time, the cooperation, the roles within the collaboration, and the expertise. The geographical aspect is highly relevant, since the supplier should be able to do maintenance on a global basis. Rolls Royce's "TotalCare" package have dealt with the geographical complexity, and due to its development with the product, Rolls-Royce is able to monitor the performance on its engines at all times. Consequently, Rolls-Royce can calculate when maintenance is needed and required.⁸⁵⁵

Although the suppliers' products may not be as sophisticated as Rolls-Royce's, it would make sense for the shipowner and the supplier to find inspiration there. In terms of the time frame, the design, and the supply and construction time, all this is a part of the collaboration between the parties, and they need to establish these elements. Also, it is very important that the shipowner and the supplier have defined their individual roles within the collaboration, e.g. in reference to the alignment of their expectations to the collaboration. The elements of the contract will arguably define the collaboration between the parties by sharing expectations with each another. Therefore, by incorporating the correct incentives in the agreement, the risks are reduced for both parties. Although, even if the agreement addresses the correct incentives, there are no guarantees that it will become a successful partnership, as risks cannot be completely eliminated, but the risks can, arguably to some extent, be controlled.

Basically, if the shipowner and the supplier can create a collaboration with one another, they are both able to optimize their business structures and may

⁸⁵⁵ Baines, T. S., and H. Lightfoot. (2013). *Made to Serve: How Manufacturers Can Compete through Servitization and Product Service Systems*. John Wiley & Sons, p. 205-207.

thereby gain increasing value. The success of the collaboration lies within the contract and the parties' ability to comprehend and pursue this collaboration.

3. The game theoretical perspective on relational contracting

Chapter 7 discussed relational contracting in a game theory perspective and within the classic prisoner's dilemma, both parties – each acting individually - would choose the dominate strategy, which means that the collaboration between the parties would not be a success, due to opportunistic behavior. However, within the modified prisoner's dilemma, there was a possibility for joint optimization. This joint optimization was due to a collaborative element between the shipowner and the supplier, meaning that the parties could agree on collaborating throughout the game. Both parties would then - in the end - be rewarded for choosing the profit-sharing strategy.

Thereby, a partnering agreement is possible according to economic theory, although, it all comes down to one thing – collaboration. Collaboration is the basic element within the relational contracting and if the parties can successfully collaborate, then they can build mutual trust. If the parties trust one another, then they are likely to play by the rules, instead of focusing on a self-optimization strategy that may be only short-term. Therefore, the partnering agreement must both make the parties prefer to cooperate instead of self-optimization and, on the other hand, bind the parties to joint-optimization. By doing so, the inefficient Nash equilibrium can be avoided through the partnering agreement. The partnering contract obliges the parties to fulfill the negotiated and clauses agreed upon – including each party's commitment and intention to collaborate, joint optimize, and share information, trust, and responsibilities. Hence, from a game perspective, it is in both in the shipowner and the supplier's interest that they are required to fulfill the obligation of joint utility. The obligation to collaborate will minimize the risk of the parties choosing to self-optimize and the partnering

contract will ensure that the parties will avoid the inefficient Nash equilibrium, due to the obligation to negotiate and share the gains in the last game, i.e. the output from the joint utility.⁸⁵⁶

Hence, based on the economic perspective, the partnering agreement between a supplier and a shipowner is a possibility due to collaboration. As a consequence, the collaborative element is the essential purpose of the relational contract, since this is where the value creation begins, although, the contract is also essential as it is used to control and structure the collaboration by creating incentives and create liabilities for both parties. Therefore, the partnering contract will guide the parties toward the optimal transaction, where the parties' obligations in the contract will ensure the joint utility. This means that ultimately, the collaborative element is the utmost important part of the agreement, in order for the collaboration to succeed. By engaging in a relational contract, the collaboration between the shipowner and the supplier, can optimize and create value for both parties.

4. Structuring the maritime industry around the management

Chapter 3 eliminated the management party from the supply chain, in order to optimize the situation between the shipowner and the supplier. This raises the question - in connection with the use of managements - what is their position then?

As stated several times, the maritime industry is a huge and complex industry, with different markets and plenty of players within the market. The different players in the market are competing to keep their market shares and/or gain new ones by delivering new products. In this situation, where a relational contracting

⁸⁵⁶ Tvarnø, C. D. (2015). "To bind or not to bind: It's in the contract Formalizing collaboration through partnering contracts in the US, British and Danish construction industries." *Journal of Strategic Contracting and Negotiation*, 1.4: 288-314, p. 306.

between the shipowner and the supplier is changing the supply chain, their collaboration means that a newbuilding situation has changed. The management's role within this new market can be divided into three different options:

1. **The management as the mediator in a newbuilding situation:** This means to be in the same position as before, as the collaboration between the shipowner and the supplier is just concerned with one product line and, in a newbuilding situation, there are thousands of different components, which is why it may still be beneficial to use a management for the shipowners. Thus, the management can be the project manager when designing and ordering new ships and may, therefore, be the mediator and negotiator with the shipyards. This relational contracting between the shipowner and the supplier are concerned with e.g. one or few products, depending on the supplier. Hence, if the shipowner has several different suppliers (with different products), the management can be the project manager, i.e. the party who facilitates the shipbuilding situation by communicating and coordinating with the shipyards and the suppliers, in terms of the building of the ship. However, the management can also develop its current situation by providing a mediation role, where it provides the shipowner with the required information. This situation is a change in the supply chain, where the management is shifting from being the mediator between the shipowner and the supplier, to be the mediator between the suppliers and the shipyard.⁸⁵⁷

⁸⁵⁷ See figure 1.1.

2. **The management can redefine its position:** the management engages in a different market with other services. This would require an innovative thinking from the management's perspective, since this should be seen as a redefinition of its business model and provide it with a possibility to keep up with the future market.
3. **The management as an outsourcing party:** As a part of the large industry, the management party is multi-functional to the shipowner which is why it may not be part of the newbuilding, as this situation is changed.⁸⁵⁸ Previously in this chapter, a possible new competitive situation was discussed, where one party owns the ship and all other functions are outsourced. In this situation, the management would still have its justification and be a huge part of the industry, as the management could function as an outsourcing party. In this scenario, the management will need to follow the development in the market and adapt to the new and future markets.

These three ways are possibilities for the management to stay in the market, and, therefore, the management should consider its organization and how adaptable it is. Either way, the management needs adapt to the market and will thus have to redefine its business in order to have a part to play within the maritime industry in the future. Whether the management chooses any of the three ways mentioned above or finds another solution is indifferent – the important element is the

⁸⁵⁸ "The Tramp Shipping Market an update of a report prepared for the European Community Shipowners' Association (ECSA)", by Clarkson Research Services Limited (CRSL), March 2015, p. 7. As mentioned in chapter 2, section 2.2. the management can handle the ship for a fee. However, this is more in regards to the operation of the ship, which too could be relevant for the management.

management's ability to adapt and willingness to face the new market challenges in terms of its own competitiveness.

5. Concluding remarks

This chapter has discussed relational contracting between the shipowner and the supplier, in regards to what the parties should be aware of. A partnering agreement is highly relevant for both parties, in order to gain competitive advantages. However, as this chapter has stated, a partnership is not a solution for every company and those who enter into a partnership must be aware of the potential failures that could lead to a failed partnership. In order to create a successful collaboration, the parties need to lead the collaboration and positively engage in it, by cooperating. In order for both parties to cooperate, they need to gain mutual trust and create incentives through the contract, otherwise the risk of failure is too high. This chapter outlined the results of the game theoretical analysis, which proved that – from a game theoretical perspective – a relational contract is a possibility but only if the parties collaborate. Therefore this dissertation strongly stresses the important of the collaborative element.

Since chapter 3 eliminated the management party from the case, leaving it only with the supplier and the shipowner. This chapter found it relevant to discuss the managements future business model in the maritime market. Three different options were outlined and all three possibilities should be taken into consideration. However, if the management can adjust to the new market and redefine its role, then the management – as a market player – has a chance to succeed in a new or current market.

Chapter 9: Conclusion

The purpose of the dissertation was to analyze how relational contracting can optimize the situation for the shipowner and the supplier in regards to the current market situation in the maritime industry, thus to clarify how relational contracting can create joint optimization and create value between the shipowner and the supplier.

The maritime industry is huge and complex which means that even the slightest changes may result in a massive change to the industry. Chapter 2 of this dissertation has discussed the maritime industry in order to clarify how complex an industry it is and the legislative area in which the parties must comply. As set out in chapter 2, the legislative area is depending on the flag state of the ship and the legislative area - which the shipowner and the supplier need to comply with - depends on the different member states and the conventions the member states have ratified. However, it is up to each member state to enforce the conventions.

The legal *de lege lata* analysis discussed relational contracting in connection with the shipowner and the supplier as market players within the maritime industry. As argued in chapter 1, the suppliers are proposing servitization as a new concept to the shipowners. This dissertation suggests that instead of servitization to use a relational contract to ensure innovation and increasing the turn of investment of the transaction.

The relational contract is proposed as an alternative contract model in order to create a collaboration between the shipowner and the supplier. The relational contract is meant to ensure a successful collaboration between the parties and, thereby, to create and increase the value creating aspect for both parties in the maritime sector.

To illustrate the relationship between the parties, a supply chain was set out in chapter 1 (figure 1.3). This figure included the management, although, management was later eliminated in chapter 3 as the transaction cost theory proposed the elimination of the management party in order to optimize the situation between the shipowner and the supplier by proposing a dialogue directly between these parties, instead of using a third party i.e. the management. For the shipowner and the supplier to engage in a dialogue with each other, there has been an optimization of the transaction cost in the transaction. This was the first step. The next step was to clarify the relational contract between the parties.

Chapter 4 and chapter 5 discussed relational contracting, whereas chapter 6 discussed relational contracting between the shipowner and the supplier. The dissertation argues, based upon Macneil, that within a transaction, there must be some kind of relational impact, stating that the parameters of the transaction changes with a social impact. The relational contract is based upon collaboration and the contract is used to obligate both parties to honor this collaboration, by using incentives to keep the parties to stick to the contract. First of all, the contract must ensure to fulfill both parties' needs and clarify the collaboration between them and together create a common goal. The incentives are used to get both parties to positively engage in the collaboration. By getting both parties to collaborate in connection with the products, then both parties can gain value.

The relational collaboration between the shipowner and supplier is not a classical buyer-manufacturer relationship, but rather a customizable situation. The collaboration between the parties are set out to be a situation, where the parties are collaborating in connection with current products, but also future products. If both the supplier and the shipowner share knowledge - and vice versa - in terms

of their needs and demands, then both parties are in a situation where products can be customized and joint innovation occur. This means that the shipowner obtain products which are customized to his demands, and the supplier obtain a position where he can develop new products with the help from the shipowner and, thereby, perhaps, gain new market shares by being innovative. All in all, this is a matter of joint collaboration and creating better and cheaper products.

Chapter 8 stressed the importance of a collaboration and argued, that in order to create a successful partnership between the shipowner and the supplier, collaboration is essential.

For the shipowner and the supplier to collaborate, they can both save time and money, as they are dividing the expert skills between them and, therefore, both parties are doing what they do best.

Besides the theories on transaction costs, traditional theories on game theory – which was discussed in chapter 7 - also illustrated how this collaboration could successfully result in joint optimization. Even though the classical Prisoner's dilemma would theoretically always end in betrayal, the modified prisoners dilemma illustrates that – not only would the parties be able to collaborate – the parties would gain advantages individually, if they trust each other and ensure full disclosure. This economic theory thus supports the remaining assumptions concerning relational contracting.

The scientific contribution of this thesis was to analyze and propose an alternative contract model – relational contracts – between the shipowner and the supplier. The alternative contract model has been analyzed through legal and economic theory to support the idea of contracting on relational terms - and not through the traditional contracts and servitization in the maritime sector - to create joint optimization and promote the innovative aspect of the maritime industry.

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Appendix V: List of IMO members

	Member states	Member since
1	Albania	1993
2	Algeria	1963
3	Angola	1977
4	Antigua and Barbuda	1986
5	Argentina	1953
6	Armenia	2018
7	Australia	1952
8	Austria	1975
9	Azerbaijan	1995
10	Bahamas	1976
11	Bahrain	1976
12	Bangladesh	1976
13	Barbados	1970
14	Belarus (Republic of)	2016
15	Belgium	1951
16	Belize	1990
17	Benin	1980
18	Bolivia (Plurinational State of)	1987
19	Bosnia and Herzegovina	1993
20	Brazil	1963
21	Brunei Darussalam	1984
22	Bulgaria	1960
23	Cabo Verde	1976
24	Cambodia	1961
25	Cameroon	1961
26	Canada	1948
27	Chile	1972
28	China	1973
29	Colombia	1974
30	Comoros	2001
31	Congo	1975
32	Cook Islands	2008
33	Costa Rica	1981
34	Côte d'Ivoire	1960
35	Croatia	1992
36	Cuba	1966
37	Cyprus	1973

38	Czechia	1993
39	Democratic People's Republic of Korea	1986
40	Democratic Republic of the Congo	1973
41	Denmark	1959
42	Djibouti	1979
43	Dominica	1979
44	Dominican Republic	1953
45	Ecuador	1956
46	Egypt	1958
47	El Salvador	1981
48	Equatorial Guinea	1972
49	Eritrea	1993
50	Estonia	1992
51	Ethiopia	1975
52	Fiji	1983
53	Finland	1959
54	France	1952
55	Gabon	1976
56	Gambia	1979
57	Georgia	1993
58	Germany	1959
59	Ghana	1959
60	Greece	1958
61	Grenada	1998
62	Guatemala	1983
63	Guinea	1975
64	Guinea-Bissau	1977
65	Guyana	1980
66	Haiti	1953
67	Honduras	1954
68	Hungary	1970
69	Iceland	1960
70	India	1959
71	Indonesia	1961
72	Iran (Islamic Republic of)	1958
73	Iraq	1973
74	Ireland	1951
75	Israel	1952
76	Italy	1957
77	Jamaica	1976
78	Japan	1958

79	Jordan	1973
80	Kazakhstan	1994
81	Kenya	1973
82	Kiribati	2003
83	Kuwait	1960
84	Latvia	1993
85	Lebanon	1966
86	Liberia	1959
87	Libya	1970
88	Lithuania	1995
89	Luxembourg	1991
90	Madagascar	1961
91	Malawi	1989
92	Malaysia	1971
93	Maldives	1967
94	Malta	1966
95	Marshall Islands	1998
96	Mauritania	1961
97	Mauritius	1978
98	Mexico	1954
99	Monaco	1989
100	Mongolia	1996
101	Montenegro	2006
102	Morocco	1962
103	Mozambique	1979
104	Myanmar	1951
105	Namibia	1994
106	Nauru	2018
107	Nepal	1979
108	Netherlands	1949
109	New Zealand	1960
110	Nicaragua	1982
111	Nigeria	1962
112	Norway	1958
113	Oman	1974
114	Pakistan	1958
115	Palau	2011
116	Panama	1958
117	Papua New Guinea	1976
118	Paraguay	1993
119	Peru	1968

120	Philippines	1964
121	Poland	1960
122	Portugal	1976
123	Qatar	1977
124	Republic of Korea	1962
125	Republic of Moldova	2001
126	Romania	1965
127	Russian Federation	1958
128	Saint Kitts and Nevis	2001
129	Saint Lucia	1980
130	Saint Vincent and the Grenadines	1981
131	Samoa	1996
132	San Marino	2002
133	Sao Tome and Principe	1990
134	Saudi Arabia	1969
135	Senegal	1960
136	Serbia	2000
137	Seychelles	1978
138	Sierra Leone	1973
139	Singapore	1966
140	Slovakia	1993
141	Slovenia	1993
142	Solomon Islands	1988
143	Somalia	1978
144	South Africa	1995
145	Spain	1962
146	Sri Lanka	1972
147	Sudan	1974
148	Suriname	1976
149	Sweden	1959
150	Switzerland	1955
151	Syrian Arab Republic	1963
152	Thailand	1973
153	The former Yugoslav Republic of Macedonia	1993
154	Timor-Leste	2005
155	Togo	1983
156	Tonga	2000
157	Trinidad and Tobago	1965
158	Tunisia	1963
159	Turkey	1958
160	Turkmenistan	1993

161	Tuvalu	2004
162	Uganda	2009
163	Ukraine	1994
164	United Arab Emirates	1980
165	United Kingdom of Great Britain and Northern Ireland	1949
166	United Republic of Tanzania	1974
167	United States of America	1950
168	Uruguay	1968
169	Vanuatu	1986
170	Venezuela (Bolivarian Republic of)	1975
171	Vietnam	1984
172	Yemen	1979
173	Zambia	2014
174	Zimbabwe	2005
	Associate Members:	
175	Faroes	2002
176	Hong Kong, China	1967
177	Macao, China	1990

Source: The IMO⁸⁵⁹

⁸⁵⁹ The information is gathered from the IMO's website. Last visited December 27th 2018.
www.imo.org/en/about/membership/pages/memberstates.aspx

Appendix VI - Overview over the IMO Conventions that Denmark has ratified

	IMO Conventions	Denmark		IMO Conventions	Denmark
1	IMO Convention 48	x	31	INTERVENTION Convention 69	x
2	SOLAS Convention 74	x	32	INTERVENTION Protocol 73	x
3	SOLAS Protocol 78	x	33	CLC Convention 69	d
4	SOLAS Protocol 88	x	34	CLC Protocol 76	x
5	SOLAS Agreement 96	x	35	CLC Protocol 92	x
6	LOAD LINES Convention 66	x	36	FUND Protocol 76	x
7	LOAD LINES Protocol 88	x	37	FUND Protocol 92	x
8	TONNAGE Convention 69	x	38	FUND Protocol 2003	x
9	COLREG Convention 72	x	39	NUCLEAR Convention 71	x
10	CSC Convention 72	x	40	PAL Convention 74	
11	CSC amendments 93		41	PAL Protocol 76	
12	SFV Protocol 93	x	42	PAL Protocol 90	
13	Cape Town Agreement 2012	x	43	PAL Protocol 02	x
14	STCW Convention 78	x	44	LLMC Convention 76	d
15	STCW-F Convention 95	x	45	LLMC Protocol 96	x
16	SAR Convention 79	x	46	SUA Convention 88	x
17	STP Agreement 71		47	SUA Protocol 88	x
18	Space STP Protocol 73		48	SUA Convention 2005	x
19	IMSO Convention 76	x	49	SUA Protocol 2005	x
20	INMARSAT OA 76	x	50	SALVAGE Convention 89	x
21	IMSO amendments 2006		51	OPRC Convention 90	x
22	IMSO amendments 2008	x	52	HNS Convention 96	
23	FACILITATION Convention 65	x	53	HNS PROT 2010	x

24	MARPOL 73/78 (Annex I/II)	x	54	OPRC/HNS 2000	x
25	MARPOL 73/78 (Annex III)	x	55	BUNKERS CONVENTION 01	x
26	MARPOL 73/78 (Annex IV)	x	56	ANTI FOULING 2001	x
27	MARPOL 73/78 (Annex V)	x	57	BALLASTWATER 2004	x
28	MARPOL Protocol 97 (Annex VI)	x	58	NAIROBI WRC 2007	x
29	London Convention 72	x	59	HONG KONG CONVENTION	x
30	London Convention Protocol 96	x			

x=ratified

d=Denunciated

Source: The IMO⁸⁶⁰

⁸⁶⁰ This information is gathered from the IMO's website, where they have listed "Excel chart listing ratifications by State" Date of update on the excel chart is November 16th 2018 and the website was last visited December 27th 2018. [Www.imo.org/en/About/Conventions/StatusOfConventions/Pages/Default.aspx](http://www.imo.org/en/About/Conventions/StatusOfConventions/Pages/Default.aspx).

Appendix VII: List of top ten flag states' ratifications

As at 07/01/2019	Bahamas	China	Greece	Japan	Liberia	Malta	Marshall Islands	Panama	Singapore	Hong Kong, China
IMO Convention 48	X	X	X	X	X	X	X	X	X	X
SOLAS Convention 74	X	X	X	X	X	X	X	X	X	X
SOLAS Protocol 78	X	X	X	X	X	X	X	X	X	X
SOLAS Protocol 88	X	X	X	X	X	X	X	X	X	X
SOLAS Agreement 96										
LOAD LINES Convention 66	X	X	X	X	X	X	X	X	X	X
LOAD LINES Protocol 88	X	X	X	X	X	X	X	X	X	X
TONNAGE Convention 69	X	X	X	X	X	X	X	X	X	X
COLREG Convention 72	X	X	X	X	X	X	X	X	X	X
CSC Convention 72	X	X	X	X	X		X			X
CSC amendments 93							X			
SFV Protocol 93					X					
Cape Town Agreement 2012										
STCW Convention 78	X	X	X	X	X	X	X	X	X	X
STCW-F Convention 95										
SAR Convention 79		X	X	X	X	X		X	X	X
STP Agreement 71			X							X
Space STP Protocol 73			X							X
IMSO Convention 76	X	X	X	X	X	X	X	X	X	X
INMARSAT OA 76	X	X	X	X	X	X	X	X	X	
IMSO amendments 2006										
IMSO amendments 2008										
FACILITATION Convention 65	X	X	X	X	X	X	X	X	X	X
MARPOL 73/78 (Annex I/II)	X	X	X	X	X	X	X	X	X	X
MARPOL 73/78 (Annex III)	X	X	X	X	X	X	X	X	X	X
MARPOL 73/78 (Annex IV)	X	X	X	X	X	X	X	X	X	X
MARPOL 73/78 (Annex V)	X	X	X	X	X	X	X	X	X	X
MARPOL Protocol 197 (Annex VI)	X	X	X	X	X	X	X	X	X	X
London Convention 72		X	X	X		X		X		X
London Convention Protocol 196		X		X			X			X
INTERVENTION Convention 69	X	X		X	X		X	X		X
INTERVENTION Protocol 173	X	X			X		X			X
CLC Convention 69	d	d	d	d	d	d	d	d	d	d
CLC Protocol 76	X	d	X	X	X	d	X		X	d
CLC Protocol 192	X	X	X	X	X	X	X	X	X	X
FUND Protocol 76	X		X	X	X	d	X			d
FUND Protocol 192	X		X	X	X	X	X	X	X	X
FUND Protocol 2003			X	X						
NUCLEAR Convention 71					X					
PAL Convention 74	X	X	d		X		d			X
PAL Protocol 76	X	X	d		X		d			X
PAL Protocol 190										
PAL Protocol 102			X			X	X	X		
LLMC Convention 76	X		X	d	X		X		X	X
LLMC Protocol 196			X	X	X	X	X			X
SUA Convention 88	X	X	X	X	X	X	X	X	X	X
SUA Protocol 188	X	X	X	X	X	X	X	X		X
SUA Convention 2005			X				X	X		
SUA Protocol 2005			X				X	X		
SALVAGE Convention 89		X	X		X		X			X
OPRC Convention 90	X	X	X	X	X	X	X		X	X
HNS Convention 96					X					
HNS PROT 2010										
OPRC/HNS 2000		X	X	X	X	X			X	
BUNKERS CONVENTION 01	X	X	X		X	X	X	X	X	X
ANTI FOULING 2001	X	X	X	X	X	X	X	X	X	X
BALLASTWATER 2004	X		X	X	X	X	X	X	X	
NAIROBI WRC 2007	X	X			X	X	X	X	X	
HONG KONG CONVENTION								X		

Source: IMO⁸⁶¹

⁸⁶¹ Pdf. Document on IMO's website. Last visited February 2nd 2019.

<http://www.imo.org/en/About/Conventions/StatusOfConventions/Pages/Default.aspx>

TITLER I PH.D.SERIEN:

– *a Field Study of the Rise and Fall of a Bottom-Up Process*

2004

1. Martin Grieger
Internet-based Electronic Marketplaces and Supply Chain Management
2. Thomas Basbøll
*LIKENESS
A Philosophical Investigation*
3. Morten Knudsen
*Beslutningens vaklen
En systemteoretisk analyse af moderniseringen af et amtskommunalt sundhedsvæsen 1980-2000*
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*Organizing Consumer Innovation
A product development strategy that is based on online communities and allows some firms to benefit from a distributed process of innovation by consumers*
5. Barbara Dragsted
*SEGMENTATION IN TRANSLATION AND TRANSLATION MEMORY SYSTEMS
An empirical investigation of cognitive segmentation and effects of integrating a TM system into the translation process*
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Et socialkonstruktivistisk casestudie af partnerskabsaktørers virkelighedsopfattelse mellem identitet og legitimitet*
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9. Annemette Kjærgaard
Knowledge Management as Internal Corporate Venturing
10. Knut Arne Hovdal
*De professionelle i endring
Norsk ph.d., ej til salg gennem Samfundslitteratur*
11. Søren Jeppesen
*Environmental Practices and Greening Strategies in Small Manufacturing Enterprises in South Africa
– A Critical Realist Approach*
12. Lars Frode Frederiksen
*Industriel forskningsledelse
– på sporet af mønstre og samarbejde i danske forskningsintensive virksomheder*
13. Martin Jes Iversen
*The Governance of GN Great Nordic
– in an age of strategic and structural transitions 1939-1988*
14. Lars Pynt Andersen
*The Rhetorical Strategies of Danish TV Advertising
A study of the first fifteen years with special emphasis on genre and irony*
15. Jakob Rasmussen
Business Perspectives on E-learning
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17. Lene Nielsen
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18. S.J Valstad
*Organisationsidentitet
Norsk ph.d., ej til salg gennem Samfundslitteratur*

19. Thomas Lyse Hansen
Six Essays on Pricing and Weather risk in Energy Markets
 20. Sabine Madsen
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