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Business Models in the Product Tanker Market

A Case Study of the Business Models of Dampsskibsselskabet Norden A/S and Torm

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Abstract

This paper analyzes the business models of Norden and Torm, operating in the shipping market, in particular the product tanker segment. The purpose is to understand how the two business models differ, and how they have performed financially after the implementation of IMO 2020. In order to assess this problem statement, there has been conducted interviews with each of the case companies to collect relevant data. There has also been created frameworks to analyze the respective business models and financial metrics have been applied to measure performance. To gain an understanding of the context in which the business models operate, there has been performed an analysis of the product tanker market during the first quarter of 2020.

The main findings were that the two business models differ in chartering strategy. Torm focuses its operations on employing owned vessels in the spot market. Whereas Norden emphasis leasing of vessels on both short-term and long-term contracts, in addition to managing its tanker fleet through the Norient pool. Norden's rationale for choosing a more asset light business model was to reduce its exposure to the volatile shipping market. In contrast, Torm's decision to apply an asset heavy model was grounded in its perception that customers prefer the simplicity of using an integrated shipping company. Hence, the company believes its "one-stop shop" will contribute to capture higher earnings.

Regarding performance, there was found evidence that both companies had a strong start to 2020 with TCE earnings exceeding levels of Q1 in 2018 and 2019. In sum, Torm performed better than Norden during the first quarter of 2020 which can be attributed to Torm's asset heavy business model. Based on this research's findings, an asset heavy business model is likely to financially outperform that of an asset light model in a strong market.

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1.0 Introduction and motivation

The shipping industry is crucial for international trade, in fact 80% of all commodities in the world are traded by sea (UNCTAD, 2019). Thus, an effective and well-functioning shipping industry is important to secure growth in the global economy. This correlation between shipping and world economy makes seaborne trade highly sensitive to macroeconomic shocks. As a result, shipping is a volatile industry with many interdependencies at play.

In recent years, there has been a growing concern for the polluting emissions stemming from ships. This prompted the International Maritime Organization (IMO) to take action by implementing new regulations aiming to reduce sulphur content in ships' fuel oil. The regulations, labeled IMO 2020, was sat in full effect from 1st of January 2020, and it was expected to increase demand for certain refined oil products (Flinder & Haavaldsen, 2019). Shipping companies had to adjust their operations in order to comply with IMO 2020, in particular, the product tanker companies are anticipated to be affected as they are responsible for shipping the refined oil products.

In the shipping industry, it is possible to distinguish between asset heavy and asset light business models. Whereas many firms apply the asset light model with focus on commercial operations of vessels, others may prefer to be asset heavy, enabling them to act as both an owner and a commercial operator of ships. For this reason, companies' activities are structured differently and they may have divergent approaches of how to earn income, despite operating in the same market. With regards to IMO 2020, analysts have been eager to see how various companies choose to tackle the situation, and ultimately how it will affect their performance.

However, concurrent with the implementation of IMO 2020, the coronavirus (COVID-19) began to spread globally. This turned out to have a major effect on industry activity, and reduced global consumption of oil products. Hence, demand for product tankers and these oil commodities was severely threatened. Based on this, there are large uncertainties related to the development of the shipping market going forward.

1.1 Research question

This research intends to understand and define business models in order to explain why two companies, operating in the same market, have chosen their respective models. Accordingly, the asset heavy business model of Torm and the asset light business model of Dampskibsselskabet Norden A/S (Norden), will be assessed. Both of these companies operate in the product tanker market, which is facing readjustments due to the new regulations imposed by IMO. Therefore, it will be interesting to investigate how the two business models have performed in the first quarter, after the implementation. Drawing on this, the following research question has been developed:

"How do the two business models of Norden and Torm differ, and how have they performed financially during the first quarter of 2020?"

In order to answer the research question, there has been formulated four interlinked sub-questions to guide the thesis:

1. How do the key drivers of the product tanker market interact?
2. Why did Torm decide on an asset heavy business model, whereas Norden on an asset light business model?
3. How and why have Torm and Norden applied innovation in their business models in the years 2018-2020?
4. How did the two different business models perform financially after the implementation of IMO 2020?

The aim of the first question is to understand the dynamics of the product tanker market through an analysis of the market situation in Q1 2020. The purpose is to understand the environment in which the two business models operate. Subsequently, an evaluation of each business model will be conducted to gain insight of the companies' choice of business model. This will also entail an examination of whether any of the companies have innovated their business models during 2018-2020 to adapt to prevailing market situations. Lastly, as a means to evaluate the business models' effectiveness, a quantitative analysis of how the companies have performed financially during Q1 2020, will be carried out.

1.2 Delimitations

- The product tanker market analysis performed in chapter 4, assess the market conditions in the first quarter of 2020, therefore all data collected to conduct this analysis have been extracted from dates up until 31.03.2020. Accordingly, market events occuring after this date, have not been taken into account.
- With regards to Norden, the company operates in both the dry cargo and the product tanker market. In order to make it comparable to Torm, which solely operates in the product tanker segment, Norden's business model for the dry cargo market will not be given particular emphasis. However, when it is needed to explain the business model in a broader context, the dry bulk sector will be mentioned, though it will not be analyzed further.

2.0 Theoretical concepts

The purpose of this chapter is to define the key concepts related to the research project. There will be presented four sections, each covering relevant theory to understand the respective four sub-questions. Section 2.1 seeks to clarify the definition of a market and to gain an understanding of what elements are necessary for a market to function. The following section will review business model theory in order to create a suitable definition of the term and to develop a framework which can be used to assess business models. Likewise, section 2.3 will address business model innovation to establish a definition based on theory, which is then applied to build a framework capable of identifying innovations in business models. The last section will explain performance in relation to business models, and introduce relevant financial performance metrics that will be applied in the comparative analysis.

2.1 Market theory

2.1.1 Market definition

In reviewing literature, it becomes apparent that there is a mutual understanding of what a market is. One of the definitions is presented by Fligstein and Calder (2015) "Markets are socially constructed arenas where repeated exchanges occur between buyers and sellers under a set of formal and informal rules governing relations among competitors, suppliers, and customers" (p. 1). The perception of markets as socially constructed arenas is also adapted by Storr (2010), he emphasizes that the market is based on two phenomena: "(1) a phenomenon that is brought about by the social

actions of individuals and (2) a phenomenon that individuals come to know through their socialization into a particular community and their personal experiences with buying and selling goods and services."(p. 201). Another common denominator found in the definitions, is the emphasis on frequent exchange or trade between two parties; buyers and sellers. This aspect is highlighted by Fligstein and Mara-Drita (1996) in their definition of a market as "a social situation where trade in an item occurs and a price mechanism that determines the value of the item exists." (Fligstein & Mara-Drita, 1996).

Going forward, this thesis will adopt the viewpoint of markets as socially constructed arenas which is supported by the authors above. More precisely, the definition presented by Fligstein and Calder (2015) will be applied, they define markets as *"socially constructed arenas where repeated exchanges occur between buyers and sellers under a set of formal and informal rules governing relations among competitors, suppliers, and customers"* (p. 1). The definition includes the elements of repeated exchange and acknowledges the existence of market institutions through formal and informal rules. Additionally, it emphasizes the need for several actors in a network and is therefore viewed as sufficiently comprehensive to gain an understanding of a shipping market.

2.1.2 Market institutions

Markets have existed for several years and there has been a continuous debate of whether markets should be controlled or not. For instance, Adam Smith believed in a free market that was led by an invisible hand (Pressman, 2014). He argued that individuals acted based on their self-interest and not with a purpose of serving the public interest and generating economic growth. In spite of this, Smith claimed that the market forces would self-regulate in such a way that the society at large, would benefit from the selfish acts of individuals, thus minimizing the need for government intervention. Supporting Smith's view of a free market, was the well-known economist Milton Friedman, who argued that as long as individuals has the freedom to exchange without coercion, the market itself would match buyers and sellers, creating little need for government interference (Friedman & Friedman, 2002). Although both Smith and Friedman promoted markets with little control, they recognized that government regulation was essential in order to determine and enforce "rules of the game", such as preventing monopoly and facilitating a competitive environment (Friedman & Friedman, 2002; Pressman, 2014).

The need for market regulations has become more evident over time as the modern society has developed and markets have become more complex (Fligstein & Calder, 2015, p. 2). In order for markets to function properly, they are dependent on products to be created, evaluated and priced, which is done by institutions (Fligstein & Calder, 2015). North (1991) explains institutions as "(...) humanly devised constraints that structure political, economic and social interaction" (p. 97). Institutional theory commonly distinguishes between two main understandings which are the informal and formal perspective in which North further suggests that institutions "(...) consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights)" (North, 1991, p. 97). Accordingly, the informal way of understanding an institution revolves around the concept of how human beings form markets by social networking and interactions (Fligstein & Calder). Further, scholars argue that individuals learn informal norms and social codes through communication and interaction in social groups. Often these morals are adopted unintentionally and creates the basis of informal institutions (Mantzavinos et. al, 2004).

On the other hand, market participants (e.g. buyers and sellers) need some kind of superior ruling to regulate their behavior. As mentioned, even in free markets it has become crucial to have authorities involved to set and enforce rules. This has become apparent during the last century as nations have grown more interdependent due to globalization, thus markets are more vulnerable to crises (Fligstein and Calder, 2015). Therefore, formal institutions have developed, and consists of formal laws, regulations and actions of states that will influence the market structure. Moreover, formal institutions may contribute to minimize opportunistic behavior in order to reduce information asymmetry in transactions and encourage cooperation between players (Harrison and Kjellberg, 2014; North, 1991). Further, regulatory frameworks can help lower the cost of transactions between parties and facilitate more efficient trading (Harrison & Kjellberg, 2014).

2.1.3 Dynamics of a market

Considering the market as a platform where buyers and sellers meet in order to make transactions and determine the appropriate value for different commodities and items, it is evident that the value of such items will be the result of two curves that forms the basis of any market. These two curves are frequently known as the functions of supply and demand that are largely determined by the price level of the commodity in question (Pressman, 2014). The relationship between supply and demand was first introduced to microeconomic theory by Alfred Marshall in 1890 (Aspromourgos, 2020) in

which the supply and demand graphs are presented in a diagram where the supply function slopes upward from left and the demand function slopes downward from the right (Pressman, 2014; Whelan & Msefer, 1996). The prices of different goods are marked on each curve, in which the equilibrium price is positioned at the point where the two graphs intersect (Greenman, 2002). This point will also determine the optimal amount of production for the specific commodity. Marshall further points to the tendency of consumers general response to changes in the price. Moreover, he found that when prices decreased, the demand for this commodity will increase in response (Pressman, 2014). On the other hand, when prices rise, firms would create greater amounts of this commodity to the market.

Whereas Marshall studied the supply and demand curve of each market independently and disregarded their affection on each other, Leon Walras was another economist that chose to analyze the supply and demand dynamics from a broader perspective (Pressman, 2014). Moreover, he explained how one market's balance of supply and demand, can cause ripple effects onto other markets. Hence, markets are interdependent of each other and can rarely exist in vacuum. This can be exemplified through historical events such as the financial crises of 1929 and 2008, where the crash of one market caused the collapse of several others.

2.2 Business models

2.2.1 Context and definitions of business model theory

The term business model was first used in literature in 1957 by Bellman et. al, but it was not until the late 1990s that the term started receiving significant attention (Bellman et al., 1957; Osterwalder et al., 2005). In subsequent years, the use of the term surged and by the year 2000 there were almost 500 scholar journals containing the term compared to only 7 in 1990 (Osterwalder et al., 2005, pp. 6-7). This rapid increase of business models in literature coincided with the emergence of Internet and the dotcom bubble. It is argued that the technological advancements of this era facilitated transparency among companies and its stakeholders (McGrath, 2010; Teece, 2010). This contributed to more accessible information which allowed customers to compare product prices across suppliers. Hence, customer power improved substantially (Teece, 2010). As a consequence, companies had to alter the way they created value for customers in addition to how they captured value for the company and its owners.

Although the concept of business models was developed in the technology sector, it later appeared in managerial and academic research (Moingeon & Lehmann-Ortega, 2010), and is today a widely used concept among businesses. For instance, it is typically mentioned in annual reports, journals, and new articles. Accordingly, there exists various definitions and elements to explain what a business model is (Lambert & Davidson, 2013). However, literature is scarce with regards to presenting a uniform definition of the concept. Shafer et al. (2005), claimed that scholars have different interest and come from a wide range of academic areas, thus they have diverse approaches and purposes for investigating business models. Teece (2010) supports this finding, and states that it is hard to find any theoretical foundation of the business model concept in economies or in studies related to business (p. 173).

One way to define a business model, proposed by Zott and Amit (2017) is as "a bundle of specific activities – an activity system – conducted to satisfy the perceived needs of the market. It specifies which parties within or as business partners conduct which activities, and how these activities are linked to each other." (p. 20). Hence, the definition emphasize how certain activities within a firm can contribute to create value for stakeholders. Moreover, the definition stresses the importance of the firm's relationships with partners, and how they are linked with its activity system. On the other hand, Teece (2010) presents the following definition of the concept:

> A business model articulates the logic and provides data and other evidence that demonstrates how a business creates and delivers value to customers. It also outlines the architecture of revenues, costs, and profits associated with the business enterprise delivering that value (p. 173).

In contrast, Shafer et al. (2005) examined several publications over a four-year period and found 12 different definitions. From these definitions the authors extracted 42 components that were used to describe a business model, and formulated a collective definition based on their findings: "We define a business model as a representation of a firm's underlying core logic and strategic choices for creating and capturing value within a value network." (Shafer et al., 2005, p. 204).

Although the definition among practitioners and scholars differs with regards to the divergent areas of interests and research objectives, Zott et al. (2011) manage to identify four similar topics that

authors include in their presentation of the conceptualization. First of all, it can be seen that all authors agree that the concept is relatively new to literature and is a new device to be assessed in academic studies (Zott et al., 2011, p. 1036). Secondly, the concept takes a broader perspective with regards to the analysis of a firm, than previous analyzing methods of the firm do. Hence, it aims to define more than just *what* the business does (e.g what products or services it provides), but also *how* they do it. This means that the concept includes all processes connected to how the firm does business with all parties involved. For instance, this contains defining what processes the firm undertakes to serve the needs of its customers (Zott et al., 2011, p. 1037). The third similarity is that all scholars include the activity system element in their definition, either by directly or indirectly referring to it. From the three definitions presented above, this is also evident: Zott & Amit (2017) directly points to the activity system by calling it "a bundle of specific activities", whereas Tecee (2010) indirectly refers to it as "the architecture of revenues, costs, and profits". The activity system aspect is also evident in the definition from Shafer et al., (2005) that indirectly points to it as a "value network".

A fourth similarity that Zott et al., (2011) find in their review of relevant literature, is the importance of the value creating and value capturing concept. They suggest that scholars seem to agree that the business model should include both a description on how the firm creates value for its customers, as well as a description on how it captures value to the firm, and that these two elements should be equally significant (Zott et al., 2011, p. 1037). The article further argues that the finding of these four similar topics among authors may contribute to more consistent research of the concept in future, hence a more generally accepted definition (Zott et al., 2011, p. 1037).

Based on the above discussions, this thesis will draw on the following business model definition:

A business model can be defined as the structure of how a company aims to create value for all stakeholders and how this value is captured by the firm and its owners.

Drawing on the findings from Zott et al., (2011), this definition involves both the value creating and the value capturing aspects of a business model. Further, the definition emphasizes to whom the value is created by acknowledging all stakeholders, not merely the customers as suggested by Teece (2010). Instead, the definition is inspired by Zott and Amit (2017) and Shafer et al. (2005), which

indicates the importance of value creating activities beyond the customers. Secondly, the value capturing aspect entails how the company manages to seize economic benefits from the created value. These benefits are realized by the firm itself, and ultimately by the owners.

2.2.2 Business model components

According to Clodnitchi (2017), all companies should understand and recognize the components that build its business model in order to shape a successful firm (Clodnitchi, 2017, p. 301). Hence, identifying and modifying the crucial components that the business model consists of, will be a central task for a company (Clodnitchi, 2017, p. 301). In the same way that theory lacks a uniform definition of the business model concept, it also lacks a uniform presentation of its components. However, as highlighted in the section above, a united agreement among authors to include the activity system in the definition of the conceptualization has emerged. According to the early work of Tucci and Afuah (2001), the extent to which this system is able to deliver a specified type of value, depends on the components it consists of, and the linkages between them (p. 4).

Furthermore, Tucci and Afuah (2001) present the following 10 most crucial components: profit site, customer value, scope, price, revenue sources, connected activities, implementation, capabilities, sustainability and cost structure (p. 57). Accordingly, to fully utilize these components, they cannot only be identified, but their relationship with each other must additionally be considered. For instance, in order to create customer value and earn profit, the firm must target the right market segment and offer this segment the right products with a suitable value and price (Tucci & Afuah, 2001, p. 55). Hence, the firm must undertake the appropriate activities that will support the specific value offered to customers (Tucci & Afuah, 2001).

Also mentioned under sub-section 2.2.1 Shafer et al., (2005) managed to extract as much as 42 components within 12 definitions in their research of the concept during the time 1998-2001. They found that most of these definitions relate to the study of e-businesses, but further argued that they were suitable for all types of studies on the business model (Shafer et al., 2005). The 42 components were classified into four main categories: *strategic choices, value network, create value and capture value.*

Many scholars from the early years of studying the concept concluded on relatively analogous elements (Clodnitchi, 2017, p. 301). For instance, Hamel (2001) supported the study of Tucci and Afuah and decomposed the concept into 13 components, grouped across 4 main categories: *customer interface, strategy, strategic resources and the value network*. More recent studies seemingly agree; whereas Johnson et al. (2008) suggested 18 vital components, Osterwalder & Pigneur (2010) proposed 11 elements that resembled. Both studies further classified the components into 4 main categories. The tables below display the key components accentuated by the earlier work of Shafer et al. and Hamel, as well as more recent work from Johnsen et al. and Osterwalder & Pigneur.

Table 2.2.1.*:* Crucial components of a business model proposed by Shafer et al. (2005)

Strategic choices	Value network	Value capture	Value creation
Customer Value proposition Capabilities Revenues Offering Strategy Branding Differentiation mission	Suppliers Customer information relationship Information flows Product flows	Cost Financial aspects Profit	Resources/assets Processes/activities

Source: Shafer et al. (2005, p. 202) and own production.

Table 2.2.2*:* Crucial components of a business model proposed by Hamel (2001)

Customer interface	Strategy	Strategic resources	Value network
Achievement and support Information and understanding Dynamics of relationships Price structure	Mission Product / market target Basis for differentiation	Core competencies Strategic assets Key processes	Suppliers Partners Coalitions

Source: Clodnitchi (2017, p. 301) and own production.

***Table 2.2.3**:* Crucial components of a business model proposed by Johnsen et al. (2008)

Strategy	Profit formula	Key resources	Key processes
The target (customers) Activities to be carried out Offer	Revenue model Cost structure The marginal cost model	Personnel Equipment Technology Information Distribution channels Partnerships Brand	Processes Rules Norms

Source: Clodnitchi (2017, p. 302) and own production.

***Table 2.2.4**:* Crucial components of a business model proposed by Osterwalder & Pigneur (2010)

Infrastructure	Offering	Customers	Finances
Key Activities Key Resources Partner Network	Value preposition	Customer segments Channels Customer Relationships	Cost Structure Revenue Streams

Source: Clodnitchi (2017, p. 303) and own production.

There exists no unified proposal on the exact number, classification or termination of the components. However, authors seem to agree on what their functions and content should be, in particular, the concept of value is stressed by several scholars. For instance, the term value proposition is commonly used interchangeably with words such as offering, product, service, value offering, value creation and customer value across authors (Lambert, 2012). Moreover, the value proposition should be offered to the target customers, through the architecture of the company's activities, and finally captured as income to the firm. Thus, other recurring, essential elements are *target customer segment, activity system* and *profit formula.*

2.2.3 Business models and the stakeholder perspective

Based on the above discussions of the business model concept, it is evident that authors emphasize the notion of value creating and value capturing activities to occur between the firm and its customers in a uni-directional stream (Freudenreich et al., 2019). The authors refer to this uni-directional stream as value being created from the firm to its customers in return for economic value. Freudenreich et al. (2019) further find in their review of earlier research on the concept, that elements such as partners, network, processes, suppliers, coalitions and relationships are commonly

mentioned, though rarely stressed with reference to the concept of value creation. Moreover, they discover that nearly all former examinations of the business model concept fail to involve the notion of creating and capturing value in a stakeholder perspective (Freudenreich et al., 2019). Accordingly, Freudenreich et al. (2019) claim that literature lack theory on a multi-directional value stream between the firm and its numerous stakeholders.

Lambert (2012) is among the many academics supporting conceptualization of a uni-directional value stream between customers and the business, and backs this perspective by arguing that customer value creation always has been the most significant aspect of the business model concept than other types of value creation. Among the authors loyal to the stakeholder perspective, Freeman (1984; 2010) argues that the business model can be depicted as a set of relationships that are essential to the company's performance. He proposes the following definition of stakeholders: "a stakeholder is any group or individual who can affect, or is affected by, the achievement of a corporation's purpose" (Freeman, 2010, p.vi). Consequently, in his opinion, the stakeholders are the part that provides the business with resources, influence its environment, efficiency, and impact. Thus, the essence of a business value creation will be the joint work of the stakeholder system, and the absence of contribution from any of these stakeholders may mitigate the company's feasibility (Freeman, 2010).

2.2.4 Distinction between business models and strategies

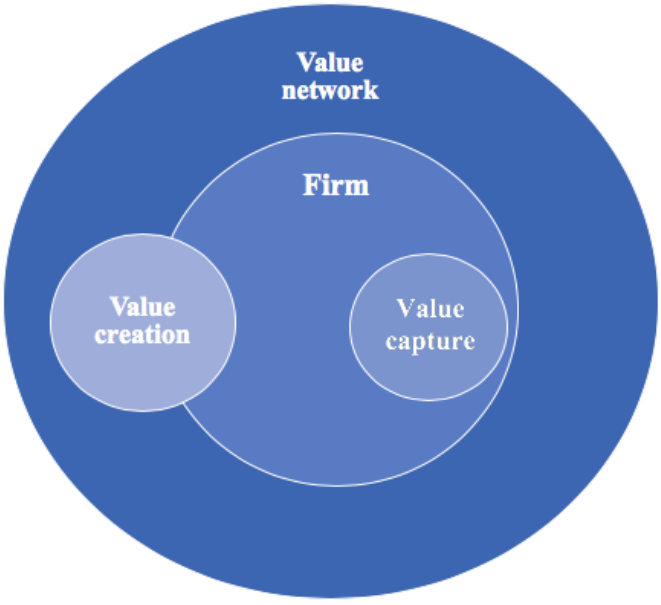
The lack of a generally accepted definition of the business model concept has caused confusion in literature and the term is frequently used interchangeably with strategy (Magretta, 2002; Morris, 2005). Although the terms appear similar, scholars emphasize the importance of differentiating between a business model and a strategy (Casadesus-Masanell & Ricart, 2010; Magretta, 2002; Teece, 2010). Magretta (2002) claims that a strategy aims to describe how a company will deal with competition by making sure it is unique compared to other businesses in the market. This relates to Porter's (1996) definition of the term: "Strategy is the creation of a unique and valuable position, involving a different set of activities" (p. 68). These descriptions draw on the fact that strategy is concerned with a competitive perspective, which is also supported by Teece (2010). He explains that a business model can easily be imitated by competitors, thus a strategy is of essence in order to gain a competitive advantage in a market. Further, Casadesus-Masanell and Ricart (2009) points out

that a strategy refers to the plan of which business model to use, hence the business model reflects a company's realized strategy.

2.2.5 Business model framework

Drawing on the theory presented in the above sub-sections, it is apparent that a company's business model evolves around several relationships, both internally and externally. To organize these relationships, there have created a model which illustrates the relationship between stakeholders, the firm itself, in addition to the business model aspects regarding value creation and value capture. The model is displayed in figure 2.2.1 below. The value network is located in the outer layer of the model as it affects all aspects of the business model. Value creation on the other hand, is positioned between both the firm and the value network as a company seeks to generate value for the entire network through its operations. Lastly, the value capture aspect is centered inside the firm because the value generated from these activities will be attributed internally to the firm and its owners. Hence, value capture will not benefit all stakeholders as it only captures parts of the total value creation.

Figure 2.2.1: Relationships in a business model

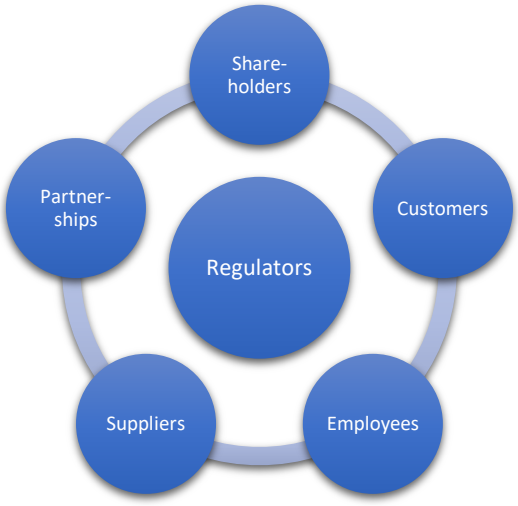


Source: Own production

Value network

In line with Freeman's (2010) definition of stakeholders, the value network comprises several stakeholders considered important for the value creating processes of a company, these are illustrated in the figure below. Regulators create the foundation for how companies can conduct their business and the rules they set forth must therefore be adhered to. For this reason, the regulators are placed at the center of the value network, whereas all other stakeholders are positioned around the regulatory environment. A company and all its stakeholders are mutually dependent on each other. The extent to which each of these stakeholders are perceived relevant for the business, will vary across companies. However, the removal of one stakeholder could severely damage the value creation for all parties (Freeman, 2010).

Figure 2.2.2: Core stakeholders in a value network.



Source: Own production.

Value creation

Value creation refers to the specific activities and processes that a company executes in order to create value for all stakeholders in the value network. Additionally, a company can deliver value through its resources, specifically if the firm develops a unique set of resources it can gain a competitive edge.

Value capture

This category involves how a company structures its revenues and costs in order to capture the value created from its operations. The most common way to capture value is through the company's

revenues and is often referred to as the revenue model. This includes how a company generates income through its activities and ability to exploit relationships within the value network. Accordingly, it is equally important for a company to consider its cost structure, as a way of capturing value. All else equal, a firm that is able to maintain low cost levels, may actually gain a competitive advantage over firms with higher costs. Therefore, the overall value capture will depend on a company's ability to balance these two components.

Grounded in the reasoning above, and the project's definition of a business model emphasizing value creation for stakeholders and value capture for the firm and its owners, there has been created a business model framework. The framework has been grouped into two categories incorporating value creation and value capture. These categories have been inspired by the work of Shafer et al. (2005) and Hamel (2001) on crucial business model components. The framework is depicted in table 2.2.5 below.

Table 2.2.5: Business model framework

Value creation	Value capture
• Resources • Core activities	• Revenue model • Cost structure

Source: Own Production

2.2.6 Business models in shipping

In this section the focus will be on two distinct business models that are common in the shipping industry.

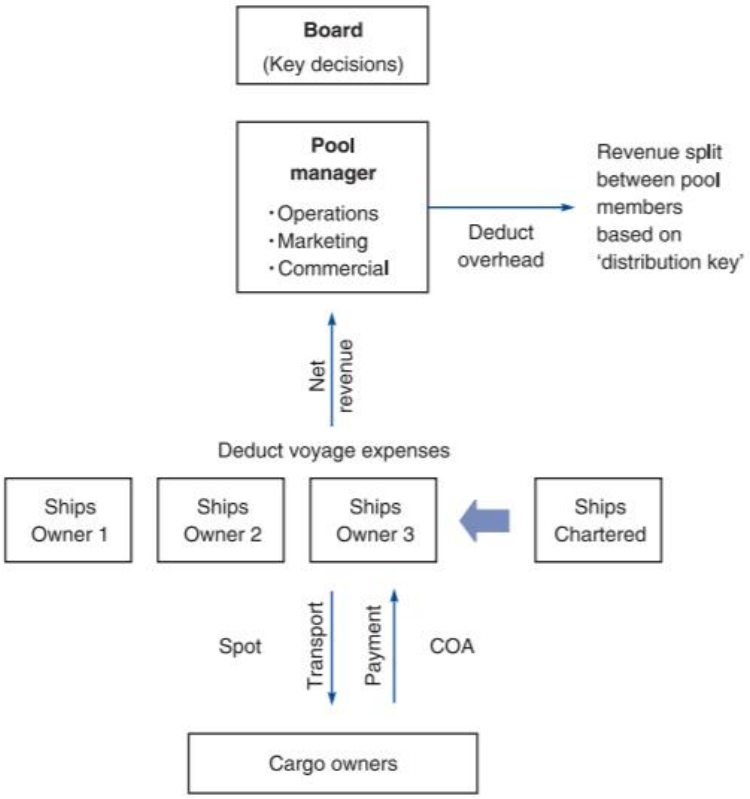
Asset-light

An asset light business model involves reducing the level of a company's asset ownership (Kachaner & Whybrew, 2014). Within the umbrella of asset light business models, there exists various approaches and the degree of asset lightness in each one will vary. Commonly, these approaches involve outsourcing or asset sharing activities, thus requiring lower capital investments (Kachaner & Whybrew, 2014). With regards to the shipping industry, an asset light model is when a company directs attention to commercial operation, and limits ownership of vessels (Iversen &

Buhl, 2020, p. 20). This is typically achieved through leasing of vessels which can be considered as a type of outsourcing (Kachaner & Whybrew, 2014). One of the advantages of this asset light approach is increased flexibility as it will allow companies to adjust to market changes relatively fast (Kachaner & Whybrew, 2014). Additionally, a lower degree of ownership can contribute to reduced risk (Zhang et al, 2019) in the sense that a firm is less exposed to potential market value losses of vessels. On the contrary, a disadvantage of outsourcing is that a company may encounter difficulties in having to pay attention to several parties and aligning their interests (Kachaner & Whybrew, 2014).

Another variant of the asset light business model is asset sharing which can be conducted through a pool structure. This involves different shipping companies collaborating with each other by gathering leased or owned ships into a combined fleet with other companies (Lorange & Fjeldstad, 2012, p. 274). In this way, a new organization is created (the pool) which enables the parties to benefit from sharing information and reducing overheads (Kachaner & Whybrew, 2014; Stopford, 2009). The pool typically pays all voyage costs, while the pool members remains in charge of maintenance, manning and capital costs. Net earnings are distributed in such a way that each member gets a share dependent on its net revenue capacity, also referred to as the "distribution key" (Stopford, 2009, p. 85). When members enter the pool, a thorough assessment of the company's cargo capacity, equipment, consumption and speed will be done, and this will be compared with the assessment of the other members in the pool (Stopford, 2009, p. 87). Subsequently, each member's distribution key will be determined and the revenues will be shared in terms of this pre-agreement. Accordingly, to make this revenue distribution as fair as possible, most pools are limited to only include certain types of vessels (Lorange & Fjeldstad, 2012). The pool may also specialize in a specific type of trade in order to optimize net income for the members and facilitate more effective trades (Lorange & Fjeldstad, 2012). However, a downside to the pool structure can be miscommunication and conflicts of interests that may arise between the member companies (Kachaner & Whybrew, 2014; Stopford, 2009).

Figure 2.2.3: Typical pool strategy



Source: Stopford (2009).

The model above explains how a typical pool can be structured. At the head of the pool is the board that is selected by all pool members. Further, Stopford (2009) explains how the board is responsible for making key decisions, such as settling the charter contract strategy, assess new and potential members to the pool and to set the terms for the distribution key. Through the model above, he claims that the pool manager has four main tasks: to organize employment for the fleet within all charter types, to pay the voyage costs out of net earnings, to distribute the net earnings to members in accordance with the distribution key, and to manage the fleet's commercial operations. The members of the pool will then offer their vessels to different cargo owners in exchange for the freight collected that are organized by the pool manager. Moreover, Stopford (2009) states that each member continues to be responsible for the crewing and technical aspects of the ships, whereas operational control remains with the pool manager.

Lastly, Haralambides (1996) distinguishes between two main ways in which a shipping pool can be administered. These are the member-controlled and the administrational-controlled pool. The

former refers to a structure in which one of the participants controls and manages the pool. This is typically evident for pools encompassing few members with stronger relationships between the existing participants, as the manager has a stake in the pool. For the administrational-controlled pool, the manager is usually independent, and the pool usually consist of more members, where detailed contracts and control will be more pivotal for the functionality of the pool (Haralambides, 1996).

Asset-heavy

In contrast to the asset light business model, the asset heavy model emphasize a high level of asset ownership (Kachaner & Whybrew, 2014). Within this range, there can be many different ways to employ an asset heavy model. For instance, the highest level of ownership can be referred to as full vertical integration. If a company is fully integrated, it means that all activities in the value chain happens in house under the same ownership of a company. Thus, this approach is considered risky, as it is costly to implement and difficult to reverse (Stuckey & White, 1993). However, an asset heavy business model can also involve a lower degree of vertical integration where only parts of the value chain is conducted in house. For the shipping sector, a version of vertical integration can entail all ships being traded, chartered, operated and owned by the same company. It is also possible for a firm to be considered asset heavy without having to vertical integrate, for example solely through large ownership of vessels as opposed to leasing in (Lorange & Fjeldstad, 2012).

The advantage of using an asset heavy business model is that a shipping company can generate revenue from both commercial operations and from the market value of its owned vessels. In tough markets though, large ownership can be disadvantageous due to higher risk of losses on owned vessels (Lorange & Fjeldstad, 2012). Additionally, vessel ownership increases illiquidity which makes it more difficult to adhere to rapidly changing market situations (Sohn et al., 2013). On the contrary, a benefit of being asset heavy is a company's ability to maintain a higher level of control in its operations (Kachaner & Whybrew, 2014). Moreover, ownership can facilitate the opportunity to earn profits on timely buying and selling of vessels. This can be referred to as asset play, and can also prove beneficial in terms of borrowing capital as creditors can use the vessels for collateral (Stopford, 2009, p. 202).

2.3 Business model innovation

2.3.1 Business model innovation definition and concept

According to Taran & Boer (2015), there are several definitions of the term innovation, nevertheless most of them imply the act of doing something new (Taran & Boer, 2015, p. 303). Schumpeter perhaps one of the first authors of the concept, suggests numerous ways in which innovation may occur: the introduction of a new good, the introduction of a new method of production, the opening of a new market, the conquest of a new source of supply and the carrying out of a new organization (Schumpeter, 1934, as cited in Taran & Boer, 2015, pp. 303-304). Tidd & Bessant (2009) later discussed innovation with regards to product, process, position and paradigm in which the latter includes the concept of business model innovation. Accordingly, innovation relates to changes, and to the act of doing something in a different way.

Frankenberger et al. (2013) defines business model innovation as "a novel way of how to create and capture value, which is achieved through a change of one or multiple components in the business model" (p. 3). Moreover, Lindgardt et al. (2009) claim that business model innovation occurs "when two or more elements of a business model are reinvented to deliver value in a new way" (p. 2). Accordingly, these scholars disagree on the number of components that must be changed in a business model innovation. Zott and Amit (2017) on the other hand, do not emphasize the use of components in their definition, rather they refer to business model innovation as a "reconfiguration of how a company does business" (p.19-20). They further state that a well-designed innovation of a business model has the potential to increase the value for all stakeholders, including customers, suppliers and partners (Zott & Amit, 2017, p. 21), previously argued for being vital elements of the business model concept. Chesbrough (2007) also underlines the importance of business model innovation and claims that "a better business model often will beat a better idea or a better technology" (p.12). With this he believes that new technologies, products or investments in R&D's may potentially include higher costs and the increased ability of a shorter lifetime compared to innovating the business model. Commonly highlighted in literature and also discussed in sub-section 2.5.1 the emergence of internet and the dot-com bubble contributed to a substantial increase in customer power and transparency between the business and its stakeholders. The increased awareness and accessibility of products as well as information among stakeholders may result in not only products or services of a firm to become obsolete: organizational processes and systems may

also grow to be outdated, as they no longer create sufficient value for the target market segment (Zott & Amit, 2017).

Zott and Amit further argue that new ideas are obligatory in order to account for new technology in the business model, and that the business model itself may well become a founder for innovation. This latter perspective is additionally supported by Taran and Boer (2015), suggesting that business model innovation can be interpreted as either (i) a process or (ii) an outcome. They further claim that very few studies in literature actually propose any concrete answer to the question: "when can we call the changes in our organization a business model innovation?" (Taran and Boer, 2015, p. 304). Nevertheless, interpreting the concept as a process means improvements in the way a product is produced. This may for instance contain changes in the activities connected to the value chain, technology, skills or manufacturing processes (Ankush Chopra, 2016). Interpreting the concept as an outcome means that the business model innovation itself have the potential to result in the creation of something new and affect its environment. This may for instance be a new market or a new industry, which is a finding also supported by Teece (Teece, 2010, p. 187) Moreover, most studies suggest that the purpose of business model innovation in large contains taking advantage of opportunities in the environment in order to enhance a firm's market position, achieve revenue growth and improve profit margins (Zott & Amit, 2010). Giesen et al., (2009) further suggests that the way in which a company chooses to innovate its model will to a large extent depend on the firm's economic condition, the circumstances of the relevant industry, the business environment and the internal factors that affect the firm (Giesen et al., 2009).

Taking this section's discussion of the business model innovation concept into account, the following definition of a business model innovation has been created:

A business model innovation is a change in one or several business model components.

The definition draws on theory from business model components presented in sub-section 2.2.2, explaining what a business model comprises. Further, the definition is largely inspired by Frankenberger et al. (2013) and Lindgardt et al. (2009), both suggesting that business model innovation involves a change in components.

2.3.2 Business model innovation types

In literature, there exists a number of different business model innovation types (Foss & Saebi, 2017; Giesen et al., 2010; Taran et al., 2015; Teece, 2010; Zott and Amit, 2012). Giesen et al. (2010) differentiates between three distinct types and explain when they are most likely to occur: revenue model, industry model and enterprise model. The revenue model involves a company having to rethink how it generates revenues by altering its value proposition to meet customer needs. This type is typically pursued when customer demands are changed remarkably due to turbulent markets. Changing the revenue model, however, may not result in a long-term advantage, as it is often easily imitated by competitors (Giesen et al., 2010). The industry model and the enterprise model on the other hand, are considered more sustainable. The former is explained as an innovation where a company either transfers into a new industry, redefines its current industry or seek to create a completely new industry. This type is commonly more beneficial during economic recessions, conditional on a firm having the financial resources to execute such comprehensive alterations. The enterprise model, refers to innovation in how a company organize its activities and may include decisions of creating new partnerships, outsourcing or keeping activities in-house. Generally, this type is more frequent during times of economic turmoil, as it aims to reduce costs and enhance flexibility (Giesen et al., 2010).

Zott and Amit (2012) have also contributed to the literature in explaining different ways a business model innovation can unfold. Firstly, they claim that an innovation can occur through creation or supplement of new content in an activity system. Secondly, there is presented a type of innovation which refers to the structure of activities and how they can be connected in new ways. Lastly, the authors identify how the governance of a firm's activity system can be altered, affecting who performs what activities within the activity system. In resemblance with Giesen et al. (2010), Zott and Amit (2012) also mentions the revenue model, however, they do not consider it an innovation type. Rather, they claim that the revenue model naturally will complement any other business model innovation.

Another contributor to the business model innovation theory is Teece (2010). Although he does not identify any specific innovations types, he touches upon essential aspect of how innovation of business models can occur. For instance, he defines a revenue model as a business model component and explains how changes in this particular component can generate revenue in novel

ways. He also recognize that innovation can take form by changing the composition of activities in a value chain. This can involve the assessment of which activities should be integrated and which activities should be outsourced to capture value. Additionally, he argues that innovation of a business model may also occur on an industry level. He further proposes that companies normally perform this type of innovation as a result of legal restrictions, changing consumer behavior, technological developments or other interruptions to the industry. However, he recommends that firms seek to implement improvements in their business model continuously, as it is preferable over having to make alterations in response to unexpected external events.

Foss and Saebi (2017) evaluates business model innovation types based on their scope and novelty. Novelty refers to whether an innovation is new to a firm or new to the industry, whereas scope involves the extent to which a business model is impacted by an innovation. It can either be modular or architectural, modular entails a change in one or several components of a business model, whereas the architectural scope encompasses a change in the composition of a business model. In literature, there is an ongoing debate concerning the scope required to label a change in a business model as a business model innovation. Some academics claim that it is sufficient to change one business model components (Frankenberger et al., 2013; Giesen et al., 2010; Teece, 2010; Zott and Amit, 2012), while others require at least two components of the business model to be changed (Lindgardt et al., 2009). In their framework, Foss and Saebi (2017) have accounted for all these aspects and identified four different business model innovation types, which are depicted in the table below.

Table 2.3.1: Business model innovation types

Novelty	Scope		
		Modular	**Architectural**
	New to firm	Evolutionary BMI	Adaptive BMI
	New to industry	Focused BMI	Complex BMI

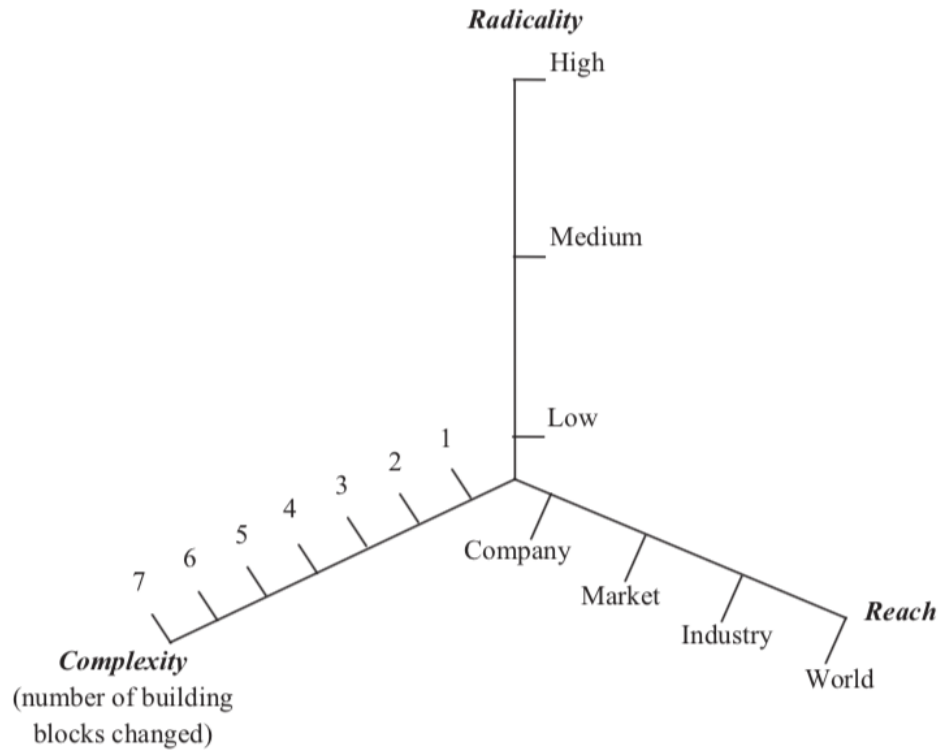
Source: Foss & Saebi (2017). Own production.

The evolutionary innovation type describes a process of incremental changes in singular components of a business model. On the contrary, the adaptive type relates to modifications in the composition of a business model which is novel to a company. However, if the composition is new to the industry, it can be characterized as a complex business model innovation, disrupting the

entire industry. Such disruptions may also occur solely in one part of a business model and is then labeled a focused business model innovation.

Taran et al. (2015) measures a business model innovations' reach and complexity, similar to the scope and novelty presented by Foss and Saebi (2017). However, in explaining an innovation's reach, Taran et al. (2015) distinguish between four ranges; company, market, industry and world. Regarding complexity, it is defined as the number of building blocks that are changed in business model. The authors use building blocks as a synonym to business model components (Taran et al., 2017, p. 303). They further argue that an alteration in one component is relatively simple form of innovation and that the degree of complexity increases proportionately with number of changed components. Additionally, they use a third dimension to assess business model innovativeness, which is referred to as radicality. This is the level of newness measured in terms of low, medium and high radicality. A low degree of radicality involves an enhancement of one or multiple components, thus according to Taran et al. (2015) any change in a business model component can be considered an innovation.

Figure 2.3.1: Three-dimensional scale of business model innovativeness



Source: Taran et al. (2015)

2.3.3 Business model innovation triggers

Although new technologies historically have been a large trigger for business model innovation, Teece (2010) finds that this is not necessarily the only cause or necessity for innovating the business model, also supported by the work of other authors, such as Giesen et al. (2009) and Chesbrough (2007). While Teece (2010) states that the inventors of business models, or his precise words business model "pioneers" commonly hold some kind of awareness of what he calls the "deep truth" of customer needs and requirements that competitors may not understand or are able to satisfy in the same way (Teece, 2010, p. 188). Accordingly, these pioneers may not necessarily use new technology, or be driven by technology in order to satisfy customers but they must understand their needs, technological opportunities as well as the "industrial logic" of their organisation (Teece, 2010, p. 188).

Giesen et al. (2009) propose a framwork of potential business model innovation triggers, and distinguish between the external and internal factors. The internal factors will in large contain changes related to the offering of a new product or service in the market, e.g: are adjustments related to the financial aspects of the firm necessary? Do we need to alter our human capabilities, resources or technology, or more importantly: do we need to modify our value proposition? (Giesen et al., 2009, p.7). They further underline the prominence of product and service innovation as a key driver for business innovation.

The proposed external factors may relate to changes in the business environment, industry or market, such as changes in target market segement, regulators, competitiors or other external stakeholders.

Table 2.3.2 Business model innovation triggers

External factors and industry information	To consider
Value chain	Have there been shift in your value chain such as the introduction of "direct" models or value migration along the value chain?
New entrants	Are new market entrants introducing models that would disrupt your industry?
Competitors	Do you see competitors introducing innovative propositions or models impacting your business?
Customer preferences	Are customer preferences for goods, services or channels changing?
Customer segments	Do you see new customers segments emerging that would require delivery of different products, services or delivery through new models?
Technology	Are there disruptive new technologies emerging?
Regulatory/Legal	Has there been significant change to regulatory environment, either by industry or geography, that impacts your current business model?
Environment	Are there social environment sustainability factors that impact your current model?
Internal factors	**To consider**
Product/service Innovation	Are you taking a new product or service to market that requires a new set of skills, capabilities and processes which leads to a new value proposition and pricing strategy?
Performance	Are you in a period of declining or negative growth relative to yor industry?
Resource availability	Are you delivering economic returns that provide the financial resources to make bold moves? Can you leverage the right skills and capabilities?

Source: Giesen et al. (2010, p.8). Own production.

2.3.4 Business model innovation framework

The theories presented in the above sub-sections will be applied to create a framework for business model innovation. Grounded in this thesis' definition of business model innovation, components are a vital part of an innovation, thus it is reasonable to use them in developing a framework to identify business model innovation types. Furthermore, the framework will include the level of an innovation's impact depending on the number of components changed. This is further supported by several scholars (Frankenberger et al., 2013; Giesen et al., 2010; Taran et al., 2010; Teece, 2010; Zott and Amit, 2012).

After reviewing academics' and practitioners' work of business model innovation types, similarities and disparities among them have been uncovered. Hereby, three innovation types have been identified. These types have been organized to illustrate which authors' work supports the different forms of innovation. Additionally, the degree of impact will vary between the types, as displayed in the framework below.

Table 2.3.3: Overview of identified innovation types in literature.

		Authors				
Innovation type	Impact	Foss and Saebi, 2017	Giesen et al., 2009	Taran et al., 2009	Teece, 2010	Zott and Amit, 2012
Component innovation	Low/Medium	X	X	X	X	X
Structure innovation of business model components	Medium	X			X	X
Industry innovation	High	X	X	X	X	

Source: Own production

The first innovation type identified entails alterations to one or more components of a business model, which is in line with the research's definition of a business model innovation. This type is

often associated with a lower degree of newness and it therefore has a lower impact on a company's business model, especially if only one component is altered. Component innovation can also have a higher degree of impact, depending on the number of components being changed in the business model. The second innovation type includes rearranging the value creating and value capturing activities in the business model. This will typically have an effect on more than one component, and the impact of this innovation is often regarded at a medium level compared to the two other innovation types in the framework. What distinguishes the component innovation from the structure innovation is that the former views changes of components in isolation, whereas the latter emphasize more comprehensive alterations to the composition of components in a business model. Lastly, the third innovation type, industry innovation, relates to how business model components can be changed in such ways that it affects a company's competitive environment. Naturally, this innovation will necessitate a high degree of impact.

In addition to recognizing the type and level of impact of a company's business model innovation, one should also identify what triggered the change and how far it reached. However, the latter two can not be generalized, therefore they must be determined based upon the context of the specific innovation to be analyzed. For this project, reach will include the assessment of whether an innovation is new to a company, market or an industry inspired by Taran et al. (2009). Whereas triggers can be provoked by either internal or external factors as described in subsection 2.3.3.

2.4 Business model performance

2.4.1 Performance

Performance is a widely used concept and is considered pivotal in management research (Selvam et al., 2016). Scholars have differing interpretations of the concept based on their research objectives, therefore performance have been subject to debate in literature (Haggegé et al., 2017; Pucci et al., 2017). Haggegé et al. (2017) acknowledges the difference between static performance and dynamic performance in business models. The former emphasize how a company's business model is able to compel customers to willingly pay for its product, ultimately generating economic profit. This performance is often measured on a firm level through ratios such as net income, return on assets (ROA) and real profits (Haggegé et al., 2017, p. 6). On the other hand, the dynamic performance evolves around creating a sustainable business model, in which performance is robust to changes in

the environment in a longer time perspective. Further, the authors claim that the two performance types combined is a prerequisite to facilitate superior performance of a business model.

Drawing on the business model definition presented in subsection 2.2.1, performance can be measured both through value creation for all stakeholders, in addition to value capturing for the firm and its owners. This separation of performance based on who the value is intended for is also supported by Zott and Amit (2007). Due to the different interests of each stakeholder, a company must distinguish between various parameters to measure performance for the respective stakeholders (Connolly et al., 1980; Freeman, 1984; Selvam et al., 2016). For instance, measuring performance for customers, employees and regulators may involve non-financial methods (Lambert & Davidson, 2013) such as "customer and employee satisfaction as well as social and environmental responsibility" (Pucci et al, 2017, p. 224). Whereas measuring performance for a firm itself and its owners commonly require financial methods (Lambert & Davidson, 2013) that can provide information about "profitability, market value and growth" (Pucci et al. 2017, p. 224).

2.4.2 Financial performance measures

When it comes to business model performance, the literature is scarce in explaining exactly why certain business models perform better than others. However, several empirical studies have investigated the relationship between business models and firm performance and found that choice of business model design did have an effect on firm performance (Lambert & Davidson, 2013; Morris et al., 2013; Pucci et al., 2017; Wei et al., 2017). To assess business model performance, this research will employ various financial parameters relevant to explain the value captured by a firm and its owners.

TCE

Time charter equivalent (TCE) per day can be used as a measure to compare shipping companies' performance and is one of the most common metrics applied in the shipping industry (Alizadeh & Nomikos, 2009). The daily TCE provides information about a vessel's average earnings per day and is calculated by taking the total revenues from a voyage, subtracting the voyage expenses, and then dividing by the number of days in the voyage (Stopford, 2009, p. xxiv). Voyage revenues are obtained from the spot-market, whereas voyage expenses typically include bunkers, port charges

and canal expenses, these may vary depending on the vessel and the details of the voyage (Lyridis & Zacharioudakis, 2012, p. 210; Stopford, 2009).

$$TCE = \frac{Voyage\ revenue - Voyage\ expenses}{Number\ of\ days\ in\ a\ voyage}$$

Share price

In publicly listed companies the owners are shareholders having invested equity in the company, thus to measure the value attributed to them the share price is a suitable measure. The share price reflects the market value of a company measured per share and is stated in a company's financial reports. In comparing share price between companies, analysts should be aware of their comparability with respect to size, industry and financial reporting standards, in order for the performance measure to be meaningful (Robinson et al., 2015, p. 296).

$$Share\ price = \frac{Market\ value}{Average\ number\ of\ shares\ outstanding}$$

Profitability ratios

Profitability ratios provides information about a company's return in a specific time period (Robinson et al., 2015). Among the many ratios, a common return measure is return on sales which is relevant to understand a company's ability to convert renvenues into earnings (Fridson & Alvarez, 2011). Three frequently used margins are earnings before interest and tax (EBIT), earnings before interest, tax, depreciation and amortization (EBITDA) and net profit, each of these values are viewed in relation to a company's revenues (Brealey et al, 2017). In applying these margins as opposed to solely evaluating a company's EBIT, EBITDA and net profit, it will facilitate comparison across companies as it removes differences in reporting standards and firm size (Robinson et al., 2015).

$$EBIT\ margin = \frac{EBIT}{Revenue}$$

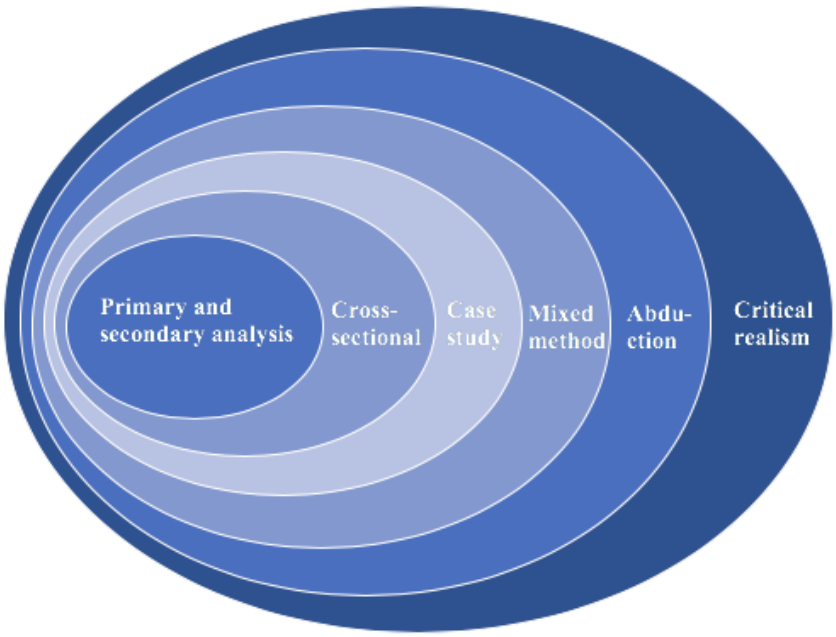
$$EBITDA\ margin = \frac{EBITDA}{Revenue}$$

$$Net\ profit\ margin = \frac{Net\ profit\ (loss)}{Revenue}$$

3.0 Methodological review

In this chapter, the methodology of this study will be presented and there will be given a detailed justification for the methods applied. Methodology relates to the theoretical approach of a research, whereas a method can be defined as concrete measures employed to collect and analyze data (Saunders et al., 2016, p. 4). In order to explain the structure of the paper, the research onion will be utilized as a metaphor to describe the methodological procedure (Saunders et al., 2016). The research onion consists of several layers; the research philosophy, approach, choices, strategies, time horizon and techniques and procedure (Saunders et al., 2016), that creates the foundation for this chapter. The figure below depicts our choices within each layer of the onion.

Figure 3.1: The research onion



Source: (Saunders, Lewis, & Thornhill, 2016)

3.1 Methodology

3.1.1 Research purpose

The purpose of our research project is to understand the business models of Norden and Torm and to measure their performance in the product tanker market. Therefore, we have conducted a descriptive analysis of the market as a precursor to explain the environment in which the business models operate. According to Saunders et al. (2016) this accrues to a descripto-explanatory study.

However, our project also entails an evaluative element as we are seeking to assess and compare the two distinct business models. The aim is to answer why the companies chose their respective models, and how they performed under the market conditions that prevailed. In this sense, our research involves more than one purpose, and can be characterised as a combined study (Saunders et al., 2016).

3.1.2 Research philosophy

Among the five major philosophies proposed by Saunders et al.(2016), we find that critical realism is the most optimal philosophy for this thesis. It can be evident that studies often take the stand between two opposing approaches, however we do not see our research questions being properly answered by solely applying one of them. The two approaches include the option between the objective standpoint, frequently applying quantitative methods, and the subjective standpoint, commonly employing qualitative procedures (Vincent & O'Mahoney, 2016). Moreover, scholars in support of critical realism recognize that people's frequent disability to align a true fact with their own subjective perception of that particular fact, is a potential weakness to research (Saunders et al., 2016). Therefore, a critical realist will argue that in order to minimize such flaws, research should ideally be conducted through a combination of the objective and the subjective methodological approaches.

With regards to our first research question, the collection of data will in large be qualitative, although we seek to acquire this literature as objectively as possible. Hence, we are aware of the subjective viewpoints of the different authors, as well as our own perception of different topics. For this reason, we will strive to lessen any biases that may affect our results to the extent that this is possible. For instance, our information will be gathered from a wide range of sources in order to make sure that the viewpoint on divergent topics is justified across several authors, and that their ability to suggest their own opinion is limited. With regards to the second and third research questions, these are largely founded on the interviews of two specific firms, and will therefore be highly influenced by each of the interviewees' own thoughts and experiences. However, these findings are entrenched by the collection of quantitative results, which will enable us to base our discoveries on a stronger footing of data.

3.1.3 Approach

According to Saunders et al. (2016) there are two main approaches to theory development when answering a research question. First, the deductive approach involves using existing theory to test collected data, second, the inductive approach entails gathering data which is then used to formulate new theory. Lastly, there is an abductive approach which is a middle road between the two poles, allowing the researcher to move freely between data and theory in a more iterative process.

In order to answer our research question, we intend to modify existing theory about markets, business models and performance to make it more applicable for the shipping industry. Hence, we are employing collected data to develop and use theory which coincides with an inductive research approach (Saunders et al., 2016). However, the project will also contain some abductive components, in the sense that we plan to move back and forth between theory and data throughout the process. Especially with regards to sub-question two and three we will create frameworks, inspired by existing theory to make them more suitable for the shipping industry. Additionally, we will adjust the performance theory to fit with relevant metrics necessary, to explain financial performance in the shipping industry. Based on the above reasoning, we can characterize our research approach as inductive.

3.1.4 Methodological choice

There are mainly three types of methods to apply when conducting a research, these are the quantitative, the qualitative and a mixed method of the two (Saunders et al., 2016). In order to separate between the two former approaches, it is necessary to distinguish between the methods' content of data. Whereas the qualitative method includes the collection of numerical data, the quantitative includes the assortment of the non-numerical figures, such as the words of people, videos, images etc. (Saunders et al., 2016). Our thesis will largely be based on qualitative data, involving interviews, articles and analyzes presented by writers. Because our project involves the philosophy of a critical realist, we will strive to remain objective ourselves, despite collection of qualitative data which may be influenced by the subjective opinions of the data sources. Conducting semi-structured interviews for our qualitative data collection will give us flexibility to ask follow-up questions or receive expanded explanations from the interviewees, whenever they feel this is necessary. On the contrary, if we choose to base our findings exclusively of quantitative data, e.g. through surveys, it is likely that our answers would be much less rich and comprehensive. Despite this, we recognize how the input of numerical information would strengthen our findings and will

therefore supplement our data collection with some degree of quantitative figures. Thus, our methodological choice is that of a mixed method, typically applied by a critical realist (Saunders et al., 2016).

3.1.5 Strategies

A research strategy can be identified as a plan for how to answer a research question (Saunders et al., 2016). The purpose is to incorporate the researcher's philosophy with the methods used to gather and analyze data. There exist various strategies suitable for qualitative and mixed research methods, among the most common are case study, archival and documentary research, action research, and ethnography.

We have primarily decided that a case study supplemented by documentary research will be sufficient to answer our problem statement. In a case study there is a subject of research which is studied within a certain context in attempt to understand the relationship between the two (Saunders et al., 2016). Our research aims to understand the business models of Norden and Torm (subjects) and how they operate in the product tanker market (context). Considering that there are two companies being studied, this is a multiple case study.

The case study will draw on a combination of strategies that will enable us to obtain in-depth data. First, we acknowledge the importance of conducting interviews with the case companies. However, as the interviewees from each company may be biased, it is imperative to complement our research with additional data in order to ensure objectivity. Principally, this will be achieved through secondary documents in terms of digital reports and articles. Utilizing this archival and documentary research strategy can be challenging because the documents are originally developed for other purposes. Thus, we must employ a critical view to assure that we are cautious in forming generalizations based on the retrieved data. Aside from this, documents are convenient, specifically for the quantitative part of our thesis, promoting comparison in performance between Norden and Torm (Saunders et al., 2016).

3.1.6 Time horizon

Theoretically, the time frame can be distinguished between the cross-sectional, "snapshot" horizon and the longitudinal, "diary" perspective (Saunders et al., 2016). Whereas the former is suggested to

be more suitable for the research of a specific phenomenon, for instance through the application of a survey, the latter is proposed to have a greater effect on the study of a change or development within an organization (Saunders et al., 2016). The time period of such an approach is not clearly stated, and may therefore range from lasting for weeks, years or even decades, depending on the type of study. With regards to our research project, a longitudinal approach could be ideal to assess how Norden's and Torm's business models performed after the implementation of IMO 2020. However, as IMO 2020 was sat in effect 1st January of 2020, the time frame of this project will be restricted to the first quarter. Accordingly, this thesis will apply a cross-sectional time horizon.

3.2 Method

3.2.1 Primary data

Interview

The interview is based on a semi-structured approach, that facilitates us with a certain degree of flexibility in our conduction. Thus, the interview guide is structured into three main parts which leaves room for follow-up questions and expanded explanations whenever this might be suitable. Each of the three sections will include queries that cover the topics related to our research questions. The interview guide will be sent to the two respondents in a reasonable amount of time before the interviews, in order for them to prepare and organize their answers. We believe that this will help us to get the most out of the time with each interviewee, especially with regards to the inquiries involving historical aspects. Furthermore, each question is carefully assessed with regards to avoiding leading queries, misunderstandings and confusion. For example, we aimed to keep them relatively open and objective, letting the interview subjects explain as much as possible, or provide us with supplementary facts. Additionally, we sat out to avoid the use of ambiguous or theoretical phrasings that may be difficult to understand and to provide a reasonable feedback to.

Sample selection

As we are conducting a multiple case study, we found it necessary to interview individuals from the case companies, Norden and Torm. It was vital that these interviewees possess in-depth knowledge about the company's business model and strategy in order to provide sufficient answers to our questions. To ensure this, we will require the interviewee to work at a management level within the respective firm. We believe that one employee from both Norden and Torm, will be a suitable sample to gain insight regarding the companies' business model. This can be classified as purposive

sampling using extreme cases, because the interviewees have been selected based on their ability to provide extreme or unique information about our research (Saunders et al., 2016). We have been meticulous in assuring that both interviewees currently work within strategy at their respective firm, as they will have a superior foundation for answering our interview questions in detail.

To approach the interviewees, contact was first established with the human resource (HR) department in Torm through email. We explained our research project, the particular topics we sought to get answered and the requirements we had to the interviewee. Subsequently, HR referred us to the Vice President of Tankers, which were considered to have the relevant knowledge and experience. In establishing contact with Norden, we reached out to the communication department via email, requesting them to introduce us to the person in charge of strategy within the product tanker segment. Hence, we were given the contact details to the Strategy and Investor Relations Manager, which we thereafter emailed to schedule an interview. We assured that the interviewee was provided with the necessary information about our thesis well before the interview was conducted.

Conduction of interviews

The interviews were conducted in real-time through the online video calling service Skype, which is labeled as an electronic interview according to Saunders et al., (2016). We were both present during the entire interview and incurred different roles: one of us was in charge of leading the interview and asking questions, whereas the other was focused on taking notes. The purpose was to ensure continuity for the interviewee and avoid confusions so that the interview object felt comfortable. Further, to gain trust and relax the interviewee, we initiated a brief conversation and exhibited curiosity by asking questions about his or her background and work experience within the company. Going forward, we were careful to keep a neutral tone during the interview and to summarize responses to test our understanding. The latter is particularly important to minimize bias on our part, or faulty interpretations (Saunders et al., 2016).

One downside with electronical interviews is the risk of technical issues appearing, which can affect the flow of the interview. However, due to thorough planning and our experience with Skype and the equipment, we did not encounter any technical difficulties. Both interviewees were also familiar with Skype, as they practice it frequently in their jobs to communicate with colleagues around the

world. Thus, we do not view this interview method as inferior compared to one conducted face-to-face. Actually, because the interview was electronical, the interviewees were able to participate from a place of own choosing, enabling them to select a spot where he or she felt comfortable.

The length of each interview was approximately 40 and 50 minutes. Nevertheless, we did have to perform a shorter follow-up interview with Torm as additional information regarding performance in quarter one was requisite. All interviews were recorded on audio, with the consent of the interviewees. Audio recording of the interview allowed us to concentrate on paying attention to the interviewees' answers and ask follow-up questions where necessary. As mentioned, we also took notes during the interview, this made it easier to stay focused, as well as the notes were a safety if the recordings were to get lost.

3.2.2 Secondary data

For this part of our data collection, we have strived to obtain information as objectively as possible. Moreover, our sources are gathered from a variety of articles, webpages, books, media news as well as reports from brokerage firms and companies, in which all have been carefully selected. With regards to our theory section, the collected articles and journals are peer reviewed and provided by Copenhagen Business School's database Libsearch. Related to the analysis of the product tanker market, Martin Stopford's book of Maritime Economics has to a large extent been employed, especially related to the shipping market model. Additionally, we used web pages such as Lloyd's List, Reuters and Bloomberg to provide us with knowledgeable and updated insight. These web pages have been supplemented with figures collected from reports and analyzes from Pareto Securities and Clarksons Research, that we perceive to be particularly competent within the field of shipping. Annual Reports and information provided on the company webpages of Norden and Torm have also assisted the primary data utilized in the business model analysis

3.2.3 Analysis of data

Primary data

To analyze the interview, we largely depended on audio recordings. Directly after an interview was completed, we started the work of transcribing it in a highly accurate manner. In doing so, we were able to avoid bias that may had incurred if transcription was done solely out of memory and notes. Thereafter, we used the transcription to highlight relevant findings such as specific themes or

patterns which we found useful to analyze further. More precisely, we applied existing theory to identify interesting themes derived from the interview, whilst also using the interview data to search for relevant topics or patterns, which we then used to adjust theory as we continued to work through our data. This search for themes and patterns is consistent with a thematic analysis (Saunders et al., 2016). Subsequently, all findings from each interview were summarized in one document which made it easier to assess and discover similarities and dissimilarities among Norden and Torm's business models.

Secondary data:

In the process of analyzing our secondary data, we aimed to assess all of our sources thoroughly before we applied them. This was due to the fact that some of the collected secondary data, may have had different purposes than that of our analysis. Accordingly, if we found informative topics introduced by one particular source, we would seek to compare this information across more sources and authors, in order to assure that the presented material was relevant for our research purpose, in addition to make sure that there was a unified perception of the topic discussed among the sources. Moreover, the secondary data applied in our analysis, varied between discussions of topics and numerical information that was either represented as numbers, or through the presentation of graphs, tables and figures, in order to simplify or highlight important findings to potential readers.

3.2.4 Evaluation of research method

Reliability

Reliability involves the research being consistent, a prerequisite for this is that the findings from a research must be repeatable for another researcher applying the same research design (Saunders et al., 2016). Considering that our primary data was based on semi-structured interviews, there will be certain constraints related to the replication of these interviews, thus affecting the research's reliability. Firstly, the conduction of the interviews was, to some degree, influenced by the researchers themselves, the point in time they were executed and other contextual surroundings. However, we devoted a great deal of effort in providing detailed information about sampling, how the interviews were conducted, and subsequently analyzed. Hence, we believe this information will contribute to increase the reliability of our research. Moreover, the interview guide was developed thoroughly which is likely to assist future researchers in obtaining the same empirical findings as us.

Another aspect affecting reliability relates to how each interviewee experienced the interview and if they felt comfortable sharing information with the interviewers. We therefore emphasized making the interviewees feel safe by opening the interview with information about us and the research, then allowing the interviewees to introduce themselves as well. We were also cautious to inform and ensure the interviewees' anonymity throughout the process, hopefully encouraging them to speak as freely as possible without feeling the need to withhold information. It must also be recognized that the use of audio recording could have stressed the interviewees and may have made them reluctant to share information that could have been useful for our research. Yet, they were free to skip questions as they saw fit, and to stop the interview whenever they wanted to. Lastly, after the interviews was conducted, we compared the gathered data with information provided in each of the company's annual reports, in order to assure coherence in our findings.

To ensure consistency, both of the authors participated in all the interviews that were conducted. This enabled us to reflect on the data gathered and to assess whether we had reached the same understandings. We also used transcriptions to analyze primary data, although this can be viewed as a threat to the reliability because the researcher can be biased in recording the interviewees responses (Saunders et al., 2016). Thus, we were careful to transcribe verbatim and to describe the context of which things were said. This included body language, tone of voice, laughter and ironic elements, which we believe aided in minimizing the possibility of incorrect interpretations that could have threaten the reliability.

Validity

To increase the validity in our data collection, we believed that a triangular technique would be useful. This included the gathering of data from more than one source, or method, and helped us to confirm our findings (Saunders et al., 2016). The technique was particularly appropriate regarding our plan of a mixed method research design, as the results from one method may have been endorsed by the findings from the other (Saunders et al., 2016). The triangular technique also enhanced the validity of our secondary sources, as the different informants may conduct research with divergent purposes, dissimilar from the purpose of this project (Saunders et al., 2016). Furthermore, the validity of each individual source was assessed, thus we only applied those sources in possession of sufficient competence within the areas we aimed to cover. For our theory

section, this contained literature that are peer reviewed and widely accepted at the databases from Copenhagen Business School (CBS), whereas the analysis section contained articles and news from Bloomberg, Lloyd's List and Reuters, also largely approved and applied at CBS.

With regards to our interviews, validity was ensured through a number of ways. Firstly, a crucial component was for us as researchers to obtain sufficient skills within the field of conducting an interview. This involved a thorough assessment of efficient interview techniques as well as the creation of a properly established interview guide, that enabled us to collect more precise information. Additionally, acquiring the appropriate knowledge within the topics to be discussed further helped us to ensure that the correct questions was raised. Another aspect to validity in our interviews, was the level of expertise that the interviewees possessed. In our view, establishing contact with an experienced manager of the firm, preferably working in the strategy department, is considered satisfactory to cover this level of expertise. Lastly, the interview guide was sent a in a decent amount of time before the actual interviews took place, in order to increase the likelihood that they would provide us with more correct, thus valid information.

4.0 Key drivers of the product tanker market

The aim of this chapter is to answer the first sub-question regarding the key drivers of the product tanker market. Firstly, however, it is useful with a brief introduction to the product tanker market explaining relevant features of the market. Subsequently, the shipping market framework consisting of ten key drivers, will be explained and applied to perform an analysis on how each of them affect supply and demand in the product tanker market. To understand the interaction of these drivers, section 4.4, the sub-conclusion, will summarize the balance of supply and demand. The analysis will be conducted with the purpose of explaining the market situation of the first quarter in 2020.

4.1 Introduction to the product tanker market

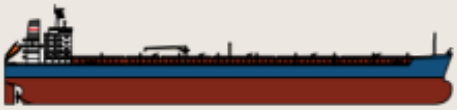
4.1.1 Product tanker fleet

The fleet (sometimes also referred to as the merchant fleet), is a terminology used when referring to the collection of ships that are registered under a specified industry, segment, company or geographic area (flag of registration). The product tanker fleet primarily consists of four different vessel segments. Among the smallest ship classes is the Handysize tanker with a carrying capacity ranging from 25.000 - 39.999 dwt (dead weight ton), followed by the Medium Range (MR) tanker

carrying approximately 40.000 dwt and up to 54.999 dwt (Clarksons Research, 2019). Moreover, the largest vessel classes includes the Long Range (LR1) and Long Range 2 (LR2), which have a carrying capacity from 55.000 dwt - 84.999 dwt and 85.000 dwt - 124.999 dwt, respectively (Clarksons Research, 2019).

Typically, product tankers carry various types of processed oil products from refineries to customers. The most common products shipped are clean oil products such as gasoline, naphtha, jet fuel, diesel and gas oils. However, the largest vessels, LR1 and LR2, due to their size and construction, are able to transport dirty oil products, although this requires thorough cleaning in between loadings. Thus, this chartering strategy will only be pursued if the market for these products are more compelling than the market for clean oil products (Opensea, 2020).

Table 4.1.1: Product tanker overview

Capacity (dwt)	Length	Cargo	Vessel	
25.000 - 39.999 dwt	175-185 m	Only clean products	Handysize	
40.000 - 54.999 dwt	180-185 m	Only clean products	Medium Range (MR)	
55.000 - 84.999 dwt	220-225 m	Dirty and clean products	Long Range 1(LR1)	
85.000 - 124.999 dwt	250 m	Dirty and clean products	Long Range 2 (LR2)	

Source: Norden annual report (2018) and own production.

4.1.2 Types of charter contracts

The contractual agreements that includes the level of freight to be paid can be distinguished between four main types. The main distinction between them are that two of them have a freight that will be paid per ton of cargo, while the other two will be paid a freight level per time unit, for example per day or week. The four contract descriptions below draw on the explanations from Martin Stopford's (2009) book called Maritime Economics.

Voyage charter: In this contract, the freight is settled per ton of cargo and the ship-owner takes all costs and responsibilities for the specified voyage for the specified ship that will trade the entire route.

Contract of Affreightment (COA): This is a variant of the above contract, where all costs and responsibilities are carried by the shipowner. However, the COA usually involves a long-term contract and is a bit more complicated than the voyage charter, as it leaves most details of the trip to the shipowner. This may for instance include changing ships during the trip if the shipper believes this will be more efficient. Accordingly, this type is more common for the major dry-bulk segment that trades on longer routes; hence they are dependent on efficiently trading and more service for their voyages.

Period charter (Time – charter): This contract can be distinguished from the other two, as these vessels are hired and paid per time unit, meaning daily, monthly or annually. Accordingly, the shipowner earns money per time unit determined in the contract. Another difference is that the charterer pays all the voyage costs and additionally instructs the shipowner on how to operate and man the voyage.

Bare boat charter: Under these contracts the shipowner does not need to be an experienced person, but an investor that only pays for the ship and gives full responsibility and operational freedom to the charterer.

4.1.3 Shipping market framework

The shipping market model proposed by Stopford (2009) will be applied as a framework to explain the key drivers of a shipping market (p.137). The framework will be a helpful tool to analyze the different market drivers and how they interact. The shipping market model consists of three key components: supply, demand and the freight rate mechanism. The first two components comprises 5 variables each, these are illustrated in the table 4.1.1 below. In sum, the balance between the supply and demand forms the basis for the ultimate level of freight rates.

Table 4.1.1: Key drivers of a shipping market

Key drivers of a shipping market	
Demand	Supply
World economy	Global fleet
Seaborne commodity trade	Fleet productivity
Average haul	Newbuilding
Random shocks	Scrapping
Transport costs	Freight revenues

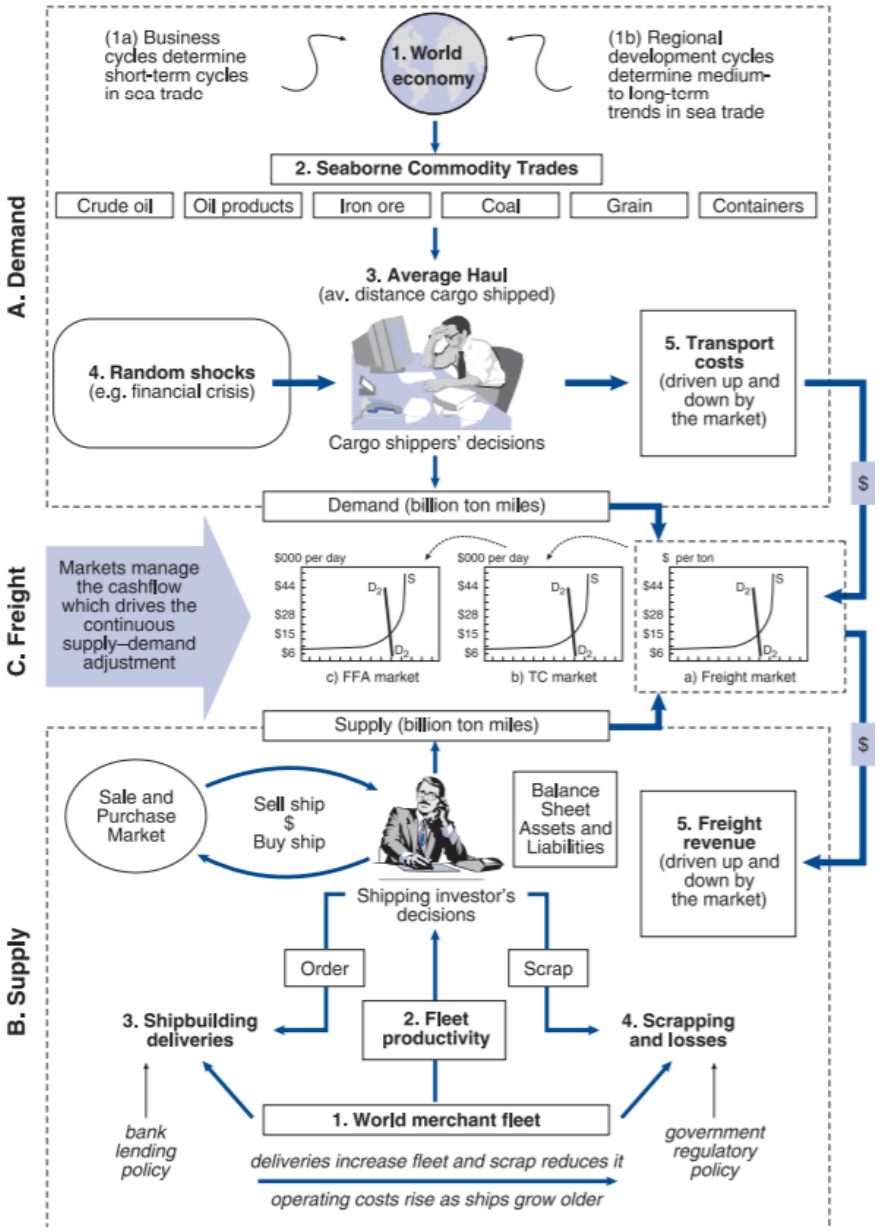
Source: Stopford (2009). Own production.

In simple terms, the demand side of the model first affect the freight market through the global economy that determines the commodities that needs to be traded and shipped by sea. This demand will also be affected by the global economic growth trends and the prevailing stage of the shipping cycle, that the market is in. Moreover, changes in economic growth trends influence the average haul, measured in ton-miles, which is the amount of cargo shipped per mile in tons. The term average haul can be explained as the distance effect that changes in specific trading routes for certain cargo types. This will have an effect on the demand for ships carrying this cargo. Accordingly, altering the length of trading routes resulting from new regulations, closing of ports or other incidents in the global economy, leads to changes in the average haul, and finally the demand for ships. Furthermore, unforeseen incidents that affect global trading (e.g. financial crisis, piracy, political instability, wars etc.) in addition to the cost of transporting the different cargoes, additionally contribute to a higher or lower demand for commodities, hence the total demand for ships (Stopford, 2009, p. 138).

On the supply side of the model, the merchant fleet represents the prevailing amount of vessels in the world that are available for trading. In times of low demand, only parts of the fleet may be used whereas the rest may be laid up or used for storage. Through newbuildings or scrapping, the fleet either increases or decreases. Fleet productivity are determined by factors such as speed, ballast and time in port, e.g a ship that returns with ballast on its backhaul of a cargo voyage is less efficient than a ship carrying cargo on its backhaul from a voyage. Ballast is materials used to keep the ship stable while not carrying cargo, this is not paid for or included in the charter contract. Lastly, regulators, banks and politicians all contribute to the total amount of ships available for trading. Hence, if banks become reluctant to provide the financing of ships, or regulators implement restrictions as a cause of environmental concerns, this may create consequences for the number of vessels in the merchant fleet.

The last fundamental component in the shipping market is the freight rate mechanism. In short, freight rates are the payment that a cargo owner will pay a shipowner or operator for transporting his cargo (Stopford, 2009, p. xxii). The freight rates are established through negotiation between the shipowner and the cargo owner, often led by a shipbroker. The rates will therefore mirror the relationship between the number of vessels and the amount of cargo that is accessible in the market (Stopford, 2009, p.160). Hence, when there are few vessels available, the rates tend to be higher. On the contrary, when there is oversupply, this has a negative effect on freight rates. The interactions between demand, supply and the freight rate mechanism is depicted in figure 4.1.2 below.

Figure 4.1.2: Shipping market model



Source: Stopford (2009, p. 137).

4.1.4 IMO 2020

Drawing on North's (1991) definition of institutions, the IMO 2020 regulations can be considered a particularly important formal institution in the shipping market. These regulations have been initiated by the International Maritime Organization (IMO), which is an agency under the United Nations (UN). IMO is responsible for creating an international regulatory framework that is easily implemented and followed for all parties connected to the shipping industry worldwide (International Maritime Organisation, n.d.). In recent years there has been a growing concern for polluting emissions from vessels, that is proved to have a large negative impact on the environment (Clean Marine, u.d.). Accordingly, the IMO 2020 regulations were created with the intention that the shipping industry would actively contribute to a cleaner, more sustainable globe (International Maritime Organization, 2016). The regulations aim to reduce sulphur content in ships' fuel oil from a limit of 3,5% to 0,5%. In the shipping industry, ship's fuel oil is commonly referred to as bunker. The date for final implementation was 1st of January 2020 (U.S. Energy Information Administration, 2019). Accordingly, this institution will have a major impact on the market dynamics going forward, thus changing the "rules of the game" as recognized by Friedman and Friedman (2002). IMO 2020 will increase demand for low sulphur fuel, which in turn will alter the way shipping companies operate.

Compliance with IMO 2020

There are several ways in which shipping companies can respond in order to comply with these requirements, however there are primarily two options that shipping companies seem to gather around. The first option contains installing a scrubber on each vessel, whereas the second solution involve switching to compliant, low sulphur fuels.

For the shipping companies choosing to comply with IMO 2020 through the scrubber solution, it means that they will install a gas exhaust cleaning system that will wipe out the sulphur oxide from the vessels' engines (International Maritime Organisation, 2019). As these installations will reduce the sulphur content of the ships' emissions, the vessels are allowed to continue burning the cheaper high sulphur fuel oil (HSFO). However, installing this system requires a large upfront payment. Hence, the shipping companies must determine whether this investment is worth the cost. Another important consideration regarding this solution is the amount of time it will take to install the system, that will put the respective ships out of trading for approximately a month (Pareto Securities

AS, 2019). In February 2020, approximately 7,5% of the vessels in the global product tanker fleet have been installed with scrubbers (Bockmann, 2020).

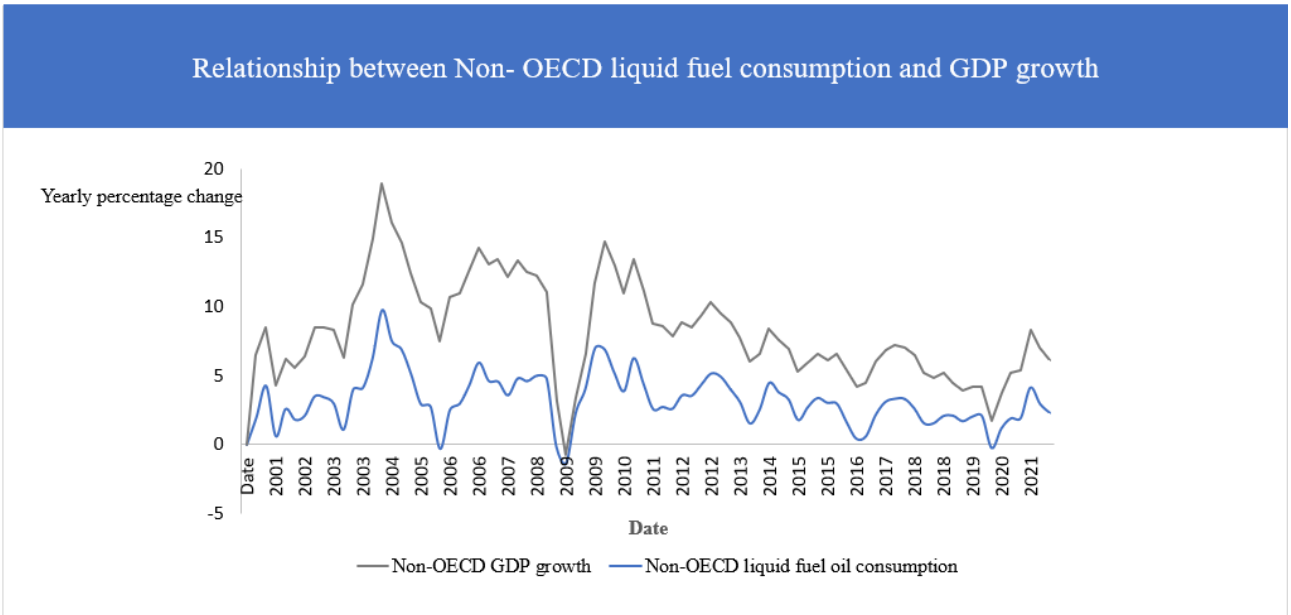
The second compliance solution involves operating vessels with fuels containing a sulphur content less or equal to 0,5%. There are a number of alternatives within this solution, and the preference of each shipping company largely depend on the fuels' availability at ports, future development in price and the different fuels' compatibility with a company's fleet (Charles River Associates, 2019, p. 7). The most frequent compliant fuels are the Marine Gas Oil (MGO) and Low Sulphur Fuel Oils (LSFO), including Very Low Sulphur Fuel Oil (VLSFO) and Ultra Low Sulphur Fuel Oil (ULSFO). Nonetheless, whether a company chooses to operate its vessels with compliant fuels or to install scrubbers, will ultimately depend on the company's expectation about the future price spread between HSFO and the compliant fuels.

4.2 Demand

4.2.1 World Economy

According to Stopford (2009), the world economy is the most significant influencer on shipping demand (p. 140). Evidently, there is a close relationship between the global economy and the shipping cycles that determine the ultimate level of freight rates (Stopford, 2009, p. 140). In order to assess the world economy a frequently used measure is the gross domestic product (GDP) growth, which estimates the value of all products produced in a country during a specific time period. As refined oil products are commonly used for manufacturing processes and other industry activities, consumption and demand for these products will correlate with the GDP growth. Hence, it can be seen that the areas with high GDP growth, such as many non-OECD countries (or emerging markets), will have a high consumption of refined oil as their economy tend to revolve more around industry activities, rather than service-oriented activities (U.S Energy Information Administration, 2020).

Figure 4.2.1: Correlation between non-OECD liquid fuel consumption and non-OECD GDP growth



Source: US Energy Information Administration (2020). Own production

The figure demonstrates the correlation between the liquified fuel oil consumption of non-OECD countries and their GDP growth from 2001 until 2020, with an estimate for 2021. The figure also reveals how the shipping cycle fluctuates together with the world economy, a phenomenon heavily

emphasized by Stopford (2009, p.141). Consequently, the correlated decrease in GDP level and oil consumption of non-OECD countries in latter part of 2004, can be explained by a rising oil price leading to decreased demand for oil, hence lower demand for product tankers. Similarly, the financial crisis of 2008 is also visible through the fall in GDP growth and consumption as displayed in the chart above. Accordingly, the global economy can cause dramatic effects on shipping demand.

Currently, the economy is largely impacted by the coronavirus pandemic. This has affected many of the formerly proposed GDP outlooks for 2020, as can be seen in table 4.2.1. For instance, the global GDP growth in 2020 was in January forecasted to be 3,1 %, however this was adjusted to 2,4% in March 2020 (OPEC, 2020, p.12). For US, China and India, similar adjustments were made as each country was anticipated to have lower growth than first assumed. Considering these countries being the largest consumers of refined oil products (International Energy Agency, 2020), a slowdown in their economies will therefore severely impact product tanker demand.

Table 4.2.1: Forecasted GDP growth

GDP growth				
	World	US	China	India
2019	2,90%	2,30%	6,10%	5,30%
2020 Jan	3,10%	1,90%	5,90%	6,40%
2020 Feb	3,00%	1,90%	5,40%	6,10%
2020 Mar	2,40%	1,60%	5,00%	5,20%

Source: Extracted from OPEC Monthly Oil Market Reports of January, February and March (2020). Own production.

4.2.2 Seaborne commodity trades

One important aspect of this driver is the seasonal cycle of oil trade that has a large impact on the global product tanker demand (Stopford, 2009, p. 144). Accordingly, as the need for oil in the Northern Hemisphere tend to rise during winter season, the demand also increases in the autumn and early winter months compared to spring and summer season (Stopford, 2009, p. 144). Hence, the seasonal shipping cycle will largely impact product tanker demand, and the level of freight rates within the sector.

In the latter part of 2019, demand for MGO increased due to the new regulations from IMO, which contributed to a higher demand for product tankers (Torm, 2020). These requirements are expected to continue altering the market dynamics throughout 2020 (Clarksons Research, 2019). In order to get a better understanding of how the development in the most essential oil commodities have affected global product tanker demand, an assessment of these oil products will be given below:

Diesel & Motor Gasoline: The consumption for gasoline and diesel oil have been the highest among all oil products during the last decades. However, as the world has become increasingly concerned with CO_2 emissions, the consumption of these products are anticipated to decline from 2020 and onwards (International Energy Agency, 2020). The largest effects can be seen in the transportation and manufacturing sectors, where there has been a stronger focus on substituting oil products with cleaner alternatives. For instance, there has been a high demand for electric vehicles, which has lowered demand for gasoline, and thus product tankers. Moreover, the need for product tankers has been affected by the COVID-19 situation, which has disrupted industry activity. In particularly, the demand for diesel and gasoline has fallen tremendously as manufacturing processes and transportation infrastructure around the world has slowed down (Bockmann, 2020). In China alone, the demand for these products dropped by 1,5 million bpd in February (Kaya, 2020). Although road and air traffic is slowly beginning to recover in China for the latter part of Q1, the traffic setback is still largely in effect in the rest of the world (Kaya, 2020). This indicates that the demand for product tankers may be reduced in a short-term perspective.

Bunker Fuels: For almost 50 years, HSFO containing 3,5% sulphur, has been the dominant fuel oil within the shipping industry, accounting for approximately 70-80% of the fuel market (Adamopoulus, 2019; Rystad Energy, 2019; Schieldrop, 2018, p. 5). HSFO can be described as the thickest, most dirty residue to be found in the very bottom of the oil barrel produced by refineries all over the world (Schieldrop, 2018, p. 5). Since 2019, a gradual transition from high demand for HSFO, to increased demand for MGO and LSFO, has been evident and continued into the 1st quarter of 2020 (Wittels, 2019). In the beginning of 2020 there were approximately 3800 vessels worldwide fitted with scrubbers, which means that over 90% of the merchant fleet ran their ships on compliant fuels (Saraogi, 2020). Thus, this entails a significant contribution to the demand for LSFO and MGO, in which the latter affects the product tanker demand positively. In fact, there is

anticipated a 4-5% growth in product tanker demand resulting from MGO alone in 2020 (Clarksons Research Services, 2019; Torm, 2020)

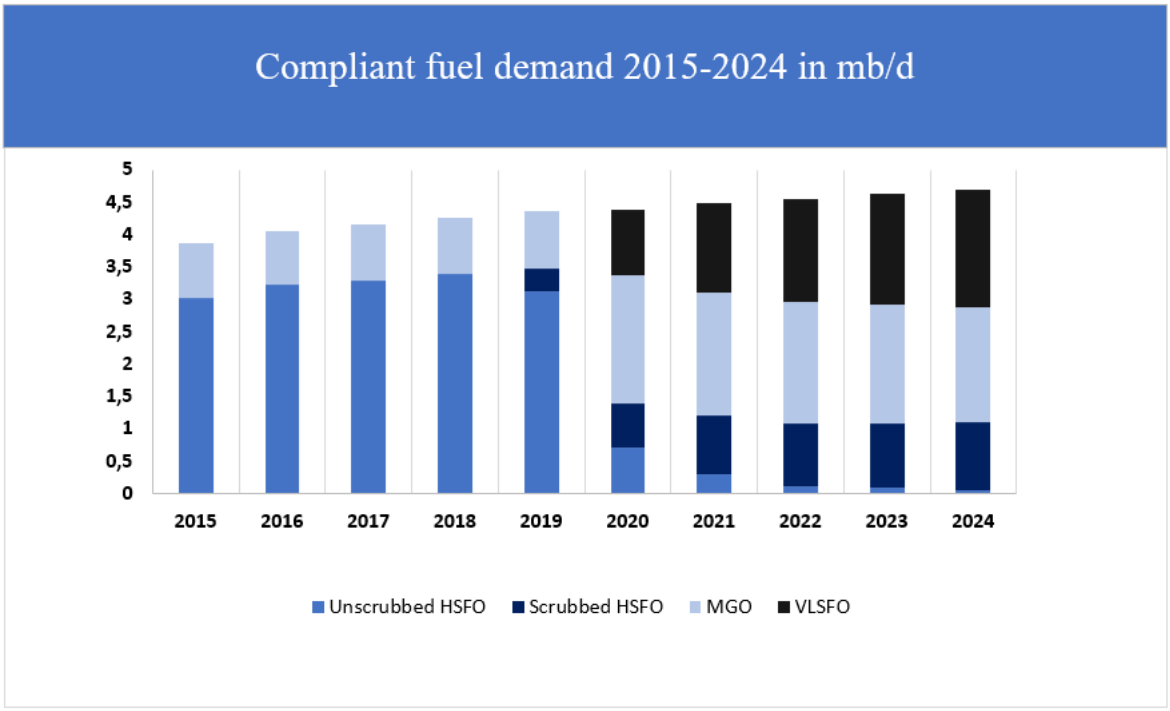
Although HSFO historically has been the most popular fuel oil among shipping companies, the use of LSFO and MGO before 2020, were also apparent. Among other factors, this has been due to regional variations in the sulphur limit requirements, that have been 0,1% in the Sulphur Emission Control Areas (ECAS) since 2015 (DNV GL, u.d.; IMO, u.d.). These restrictions are either inserted by each country's national law, or by other directives such as IMO, the Water Framework Directive or the European Union Sulphur Directive (DNV GL, u.d.). Related to this use of low sulphur fuels before the IMO 2020 implementation, MGO has typically been the favored product type, largely caused by the higher experience and availability in ports (Slaughter et al., 2020, p. 4). Despite the fact that MGO traditionally has been the preferred low sulphur fuel oil, there has been uncertainty regarding what type of compliant fuel that is most optimal. Thus, it seems like different analysts have found diverging results in their studies of the most ideal bunker type. Nonetheless, what seems to be apparent, is that research conducted before the last quarter of 2019 are in favour of MGO, whereas research undertaken after this, are in favour of LSFO. The previously low LSFO preference can be attributed to the fuels' relatively new characteristics, meaning the lack of knowledge within refineries related to its creation and use before the IMO 2020 implementation (North of England P&I, 2019). Thus, a large part of the earlier analyses suggested that LSFO would become rather rare on the global fuel market, ultimately leading to lower access in ports, although a lower price than that of MGO (North of England P&I, 2019).

However, as more refineries have tested and improved their experience of the fuels' use, this has facilitated for higher production, thus accessibility in several ports. In fact, more ship operators now seem to prefer LSFO, particularly VLSFO, over MGO, as this fuel appear to include less compatibility issues with different ships' engines compared to MGO (Hellenic Shipping News, 2019). Moreover, the prices for both MGO and VLSFO rose substantially from mid-December 2019 to the beginning of January 2020. This was specifically evident for the latter option, that increased by 30% from December 2019 to January 2020 (Liang, 2020).

The figure below displays how the International Energy Agency estimates future demand for the different complaint fuels to look like. It also discloses how HSFO have dominated in the bunker

market, followed by MGO, prior to the IMO 2020 implementation. Further, it is seen how demand for VLSFO emerged in 2020 and is likely to increase in the future. According to the chart, MGO and VLSFO will have a similar market share during 2022-2024. Although some of the lost HSFO demand is replaced by VLSFO, large parts of the compliant fuel demand will still accrue to MGO. Independent of which compliant fuel is preferred in the market, demand for MGO is likely to be higher compared to the years before IMO 2020. It is therefore assumed that demand for product tankers will grow in a short term perspective. In the long run, however, the influence on the product tanker market is more uncertain as the bunker types are tested, one type may evolve to become superior to the other.

Figure 4.2.2: Historical and forecasted marine bunker product demand 2015-2024 in million barrels per day



Source: International Energy Agency (2019). Own production.

Naphtha: As naphtha is considered a petrochemical with a wide scope of applications, it is needed for many types of processes in the industry all over the world (Mordor Intelligence, 2019). Almost 50% of all the naphtha produced globally are used in the petrochemical industry as a raw material in the production of other oil products (Mordor Intelligence, 2019). Consequently, Asian countries,

particularly China and India are considered large producers and consumers of this product (Mordor Intelligence, 2019). More specifically, naphtha is commonly used as an important blending component in the creation of gasoline, hence demand for naphtha tend to have similar fluctuations as the demand for gasoline (Prem & Wittels, 2019). Thus, with future expectations of decline in gasoline demand, it is only to expect that demand for naphtha will shrink as well (Sahu, et al., 2019). However, naphtha is also used for other products such as plastic and natural gas liquids in North America, therefore the need for naptha will, to some extent, persist (International Energy Agency, 2020). It is further anticipated that some refineries will concentrate a heavier part of their production on LSFO and middle distillates, such as jet fuel, diesel, gasoils and some of the lighter fuel oils, that do not require naphtha in the process (Sahu, et al., 2019).

Another threat on the future naphtha demand, is the ramp up in production and exportation of other feedstock alternatives such as butane, ethane and propane (Liquid Petroleum Gases (LPG)), which is not shipped by product tankers (Reeder & Fox, 2018). This substantial increase in LPG supply has led to lower prices for these commodities, ultimately resulting in lower demand for naphtha which reduces the need for product tankers (Reeder & Fox, 2018; Clarksons Research Services, 2019, p. 20). To summarize, the future demand for naphtha will to a large extent rely upon the development of future gasoline demand, plastics and natural gas liquids demand and the production and price for other feedstock alternatives that might be used for similar purposes (Sahu, et al., 2019).

Jet fuel: US and China is considered the largest consumers of jet fuel, due to the countries' high activities within cargo aircraft and passenger flights. They are also considered the largest suppliers of jet fuel, and use most of their production for own consumption which is traded Intra – America and Intra – Asia (Torm, 2020; Wittels, 2019). In the first quarter of 2019, U.S. Energy Information Administration (2019) expected that by 2050, 40% of all jet fuel consumption will be from the Asian countries, due to a larger share of the population representing the middle class. Nevertheless, jet fuel is presently the oil product in which the coronavirus has had its greatest effect. During March 2020, global transportation infrastructure was limited, in which jet fuel demand has declined as an immediate response. The estimated decline in Chinese international air traffic is 70% and 50% for domestic travels (Bockmann, 2020). Across the year 2020, it is further assumed that global jet

fuel demand will decrease by 11% compared to the 2019 levels (Kaya, 2020), hurting the product tanker market.

4.2.3 Average Haul

In the product tanker market, the demand for vessels can increase although the demand for specific oil products remain the same. This increase in demand is called the distance effect of changing shipping routes (Stopford, 2009, p. 146). For instance, if regulators implement restrictions that require product tankers to undertake routes with greater lengths to reach the end customers, the distance effect of expanding these routes will increase the average haul (Stopford, 2009, p. 146). However, making precise calculations on how changes in the average haul will affect product tanker routes is according an extremely complex procedure, necessitating a lot of data and information (Stopford, 2009, p. 146).

Prior to 2020, key routes in the product tanker market have revolved around the short haul routes with vessels carrying diesel, gasoline and jet fuel, commonly produced in the US and Asian refineries (Sand, 2019). These routes have to a large extent involved Intra-America, as well as Intra-Asia trading, thus large contributors to the short haul voyages. The long haul routes have primarily involved ships with naphtha and gasoline from European refineries heading for East-Asia, in addition to exportation from the Arabian Gulf into Europe and East Asia (Torm, 2020).

Changes in the average haul of product tankers have emerged as a result of IMO 2020 which increased demand for MGO. Future routes are difficult to predict and are dependent on several factors such as the capacity and location of refineries in addition to the location of the ultimate MGO consumers. Prior to 2020, MGO has to a large extent been produced in North America as well as in some refineries in Asia (Wittels, 2019). Going forward, Wittels (2019) estimates that the US refineries will have the capacity to export additional amounts of MGO to Europe, Latin America as well as boost the volumes into the Far East. He further proposes that countries in East Asia, as well as countries in the Middle East could have the potential of exporting MGO volumes to Europe (Wittels, 2019). A significant element in support of these routes is the fact that refineries already producing large amounts of the middle distillates such as diesel, gasoline and jet fuel, will have greater flexibility of changing production to MGO as they share similar features with one another. Thus, many refineries located in the Middle East, Asia, as well as the US, are projected to have this opportunity (Wittels, 2019). Nonetheless, the very attractive long-haul voyages from Asia to

Europe, are threatened by the expected higher consumption within Intra-Asia (Jallal, 2019), hence some of the increased supply from Asian refineries may trade on short-haul rather than long-haul routes.

Accordingly, if there will be a significant increase in the long-haul routes between Asia and Europe, as well as Europe and the Middle East, this may contribute to increase the average haul and result in an estimated 5% boost in product tanker demand (Clarksons Research, 2019; Torm, 2020). Another aspect is the unpredictable effects imposed by COVID-19, threatening future trading routes. This is particularly expected to reduce the number of LR tankers on route from the Middle East to Europe, and from Asia to Europe, that could have contributed to boost the average haul (Bockmann, 2020). However, as Q1 evolved the product tanker market reached a state of contango (Bockmann, 2019), meaning that the future oil price was higher than the current oil price. This facilitated longer routes as customers found it beneficial to buy futures to increase their earnings on the oil products by prolonging the travel time.

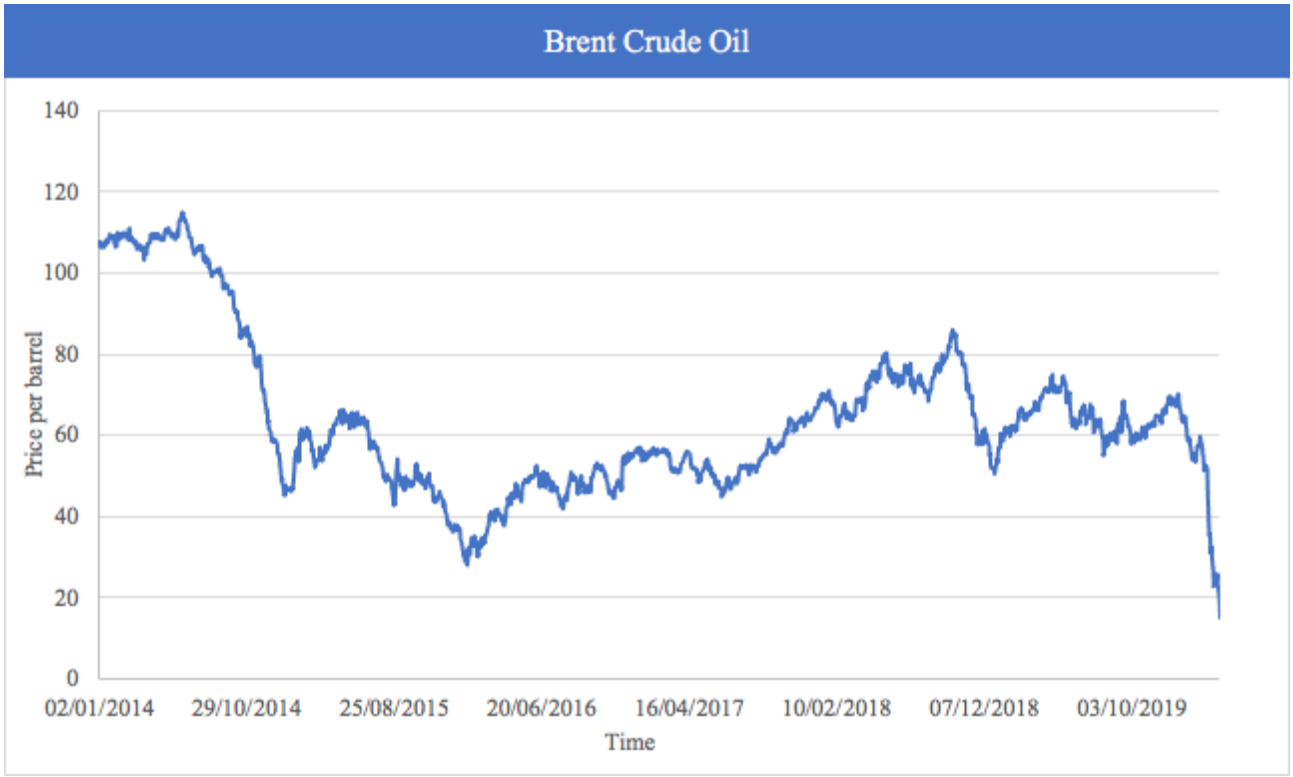
4.2.4 Random Shocks

Demand for seaborne trade is highly sensitive to random shocks in the macro environment. Such shocks are typically related to financial crisis, wars, changes in commodity prices or climate changes (Stopford, 2009, p. 147). According to Stopford (2009), the common denominator for these random shocks is that they often have a severe effect on the shipping market, and they are independent of cycles. He further claims that random shocks are typically triggered by politics, thus the IMO 2020 regulations can be categorized as a shock which will have significant impact on the shipping market. The effect of IMO 2020 on product tanker demand have been discussed throughout this chapter, therefore it will not be treated in detail in this sub-section. There are also ongoing trade wars, extreme weather conditions and other incidents prevailing the market. Although, these events have effects on the market, the focus in this sub-section will be on even more prominent shocks that are currently disrupting the product tanker market.

In the fourth quarter of 2016, the Organization of Petroleum Exporting Countries (OPEC) members agreed to reduce their oil production by 1.2 million barrels per day (bpd), with Saudi Arabia in front lowering its output by almost 0.5m bpd starting in 2017 (Brown, 2016). Non-OPEC producers also joined the agreement, committing to cut 0.6 million bpd, amongst them Russia which were willing to hold up around 0.3 million bpd (Gamal et al., 2016). The purpose of the agreement was to

stabilize the oil price by limiting world oil supply starting from 2017. The agreement is commonly referred to as the OPEC+ alliance. In 2020 OPEC found it necessary to further increase cuts for Q1 to combat the outbreak of COVID-19, whereas Russia wanted to await the situation in order to assess how the coronavirus would affect oil demand (Astakhova & Golubkova, 2020). Russia was also concerned that further caps could harm the competitiveness of crude oil against US shale oil, as the US would be able to sell its oil cheaper if OPEC+ lowered production. Nevertheless, OPEC gave Russia an ultimatum to either accept larger cuts, or the pact would be terminated (Gamal et al., 2019). Ultimately, OPEC and Russia failed to find an agreement and the deal fell apart in March 2020, allowing both parties to produce freely from 1st of April. Subsequently, Russia and Saudi Arabia started competing for larger oil market share and Saudi Arabia is expected to increase production whilst Russia is already producing at capacity level (Bockmann, 2020). In effect, the oil price plunged, reaching more than a 50% drop in the days after the fallout (Kennedy, 2020). For the first time in 18 years the oil price fell to below 25 dollar per barrel (Blas, 2020). The low oil price, in addition to the virus outbreak has created new opportunities for tankers to take advantage of the spot market, which will be discussed below.

Figure 4.2.3: Historical price movement of brent crude oil 2014-2020.



Source: Extraxted from Macrotrends.net. Own production.

During the first quarter of 2020 the outbreak of COVID-19 escalated, and by the 11th of March the World Health Organization declared the virus a pandemic (World Health Organization, 2020). The outbreak started in China where the government instructed a full lock-down of the country and almost all its operations. This entailed restrictions on inbound and outbound transportation and strict quarantine rules for citizens. Intuitively, this had a major impact on aviation and public transportation, which lead to a substantial reduction in the country's oil consumption. Subsequently, as the virus spread globally, countries around the world implemented resembling restrictions to limit spread of the virus. Thus, global economic activity was drastically reduced, especially with regards to the aviation industry. As a result, consumption of oil products declined which typically involves a decline in oil demand. However, in this situation demand was kept steady as companies saw an opportunity to exploit the low oil price by purchasing floating storage (Bockmann, 2020). Moreover, oil traders have bought futures on the oil products in order to profit on sales as market recovers. For this reason, the demand for product tankers persisted and freight rates continued to soar.

Nonetheless, it must be emphasized that future prospects of the product tanker market is extremely uncertain. There are few global crises of the same scope as COVID-19, the closest comparison could be the SARS virus that spread in 2003. However, its impact on world economy was limited compared to the ongoing pandemic. In the period between 2003 and 2020, Asian countries have developed significantly and are perceived as crucial contributors to the world economy. Especially, China has had notable growth in oil demand, which increased from around 5,8 million bpd in 2003 to 13,6 million bpd in 2020, this is equivalent to an upsurge of 134% (Walia, 2020). Hence, it is reasonable to assume that COVID-19 will have a greater effect on seaborne trade than SARS had. Even so, it is close to impossible to foresee how the virus will continue to disturb the product tanker demand, as the situation changes day by day. Accordingly, ship operators and owners must be prepared for a highly volatile market going forward.

4.2.5 Transport Cost

From a ship operator's perspective, the transportation costs can be viewed as all intermediate costs of shipping commodities from refineries to end consumers. From a cargo owner's perspective, transportation costs is the fee he has to pay in order to ship his cargo. For the ship operator, this fee

is the freight revenue that should cover all costs connected to the respective shipment. Hence, the cost of transporting refined oil products will affect demand for product tankers.

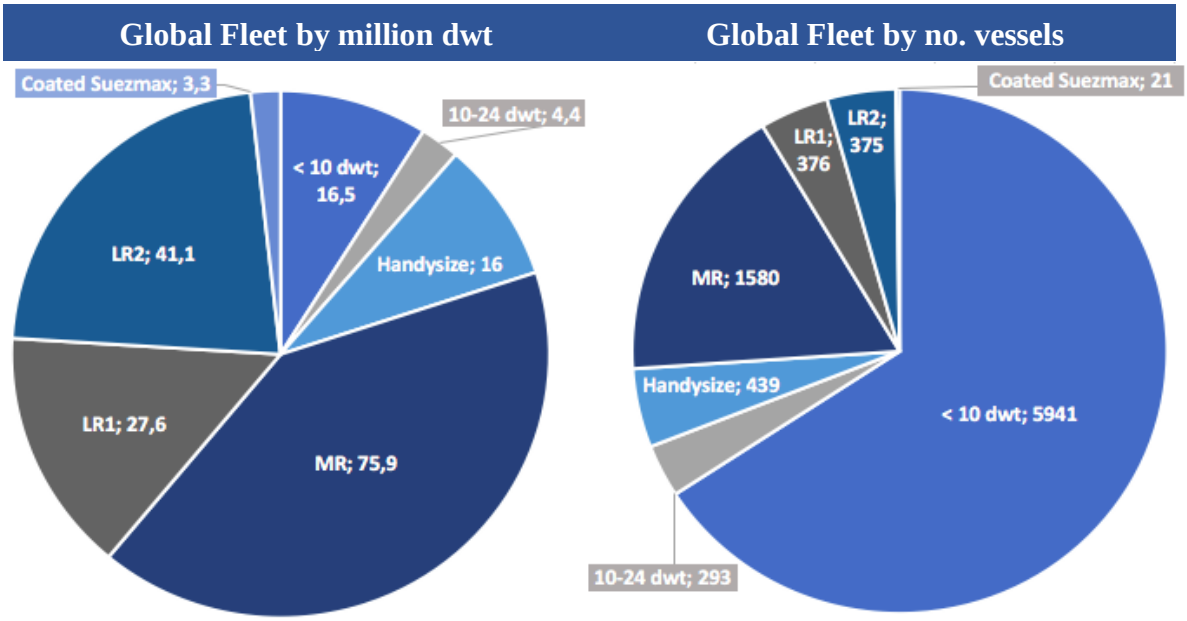
In assessing how transportation cost will affect demand, it is necessary to evaluate the cost of bunker, as this accounts for a great amount of total transportation costs (Stopford, 2009). Especially, after the implementation of IMO 2020, the shipping companies' choice of bunker has become increasingly important. For the companies using scrubbers the fuel costs depends on the price of HSFO. During last quarter of 2019 and the beginning of 2020, the price of HSFO was at decent levels indicating shorter payback time for the scrubber installments (Liang, 2020). Simultaneously, the prices for LSFO and MGO were at relatively higher levels compared to HSFO (Liang, 2020; Tan, 2019). Consequently, the shipping companies with scrubbers benefitted from lower bunker costs. However, as the coronavirus escalated and the oil price tumbled, the prices of the two compliant fuels dropped. As a result, the spread between HSFO/LSFO and HSFO/MGO fell in the latter part of Q1, and companies that chose the compliant fuels solution experienced lower fuel costs. Despite the lower transportation costs for ship operators, cargo owners are willing to pay relatively high freight rates due to hoarding of cheap oil. Thus, the high freight rates do not seem to affect the demand for product tankers negatively, as cargo owners are able to buy futures on their commodities.

4.3 Supply

4.3.1 Global fleet

The global fleet of product tankers in Q3 of 2019, consisted of a total of 9025 vessels, which is equivalent to a carrying capacity of 184,8 million dwt (Clarksons Research, 2019). Within the fleet, the largest ship class, measured by number of vessels, is the general purpose (GP) tankers below 10.000 dwt with approximately 5941 ships worldwide. However, if tonnage is taken into account, the MR class is by far the largest as it represents over 40% of the total fleet, and is able to carry almost 80 million dwt. The MR is commonly used for shorter distances and is quite convenient as its size allows it to access almost all ports around the globe (U.S. Energy Information Administration, 2014).

Figure 4.3.1: Overview of global merchant fleet.



Source: Clarksons Research (2019). Own production.

Compared to 2018, which was characterized by relatively low fleet growth, there was an increase in tonnage capacity in 2019 (Clarksons, 2019; Torm, 2020). In total the global product tanker fleet grew by 4,7% in 2019, measured by tonnage, whereas the fleet growth was about 4,1% based on number of vessels (Torm, 2020). Calculations show that deliveries in all vessel types increased during the year, with the LR2 class accounting for the highest growth, followed by the MR segment (Torm, 2020).

Despite new capacity being added to the fleet during 2019, the actual tonnage supply did not follow the same trend. In the latter part of 2019, US sanctions on Chinese COSCO had a major effect on the global demand for VLCCs (Torm, 2020). This led to an undersupply of VLCCs which in turn caused an upsurge in the freight rates. The high freight rates for crude tankers was appealing for shipping companies operating larger clean tank vessels. Hence, many LR2 vessels were redeployed to start shipment of crude oil in order to exploit the high rates (Norden, 2020). As a result, the supply of product tankers able to ship clean oil decreased, this was also supported by vessels being taken out of business for scrubber installments.

However, as the coronavirus continued to spiral in 2020, the amount of vessels that should have been scrubber-fitted during first quarter of 2020 had to be postponed due to shut-down or low

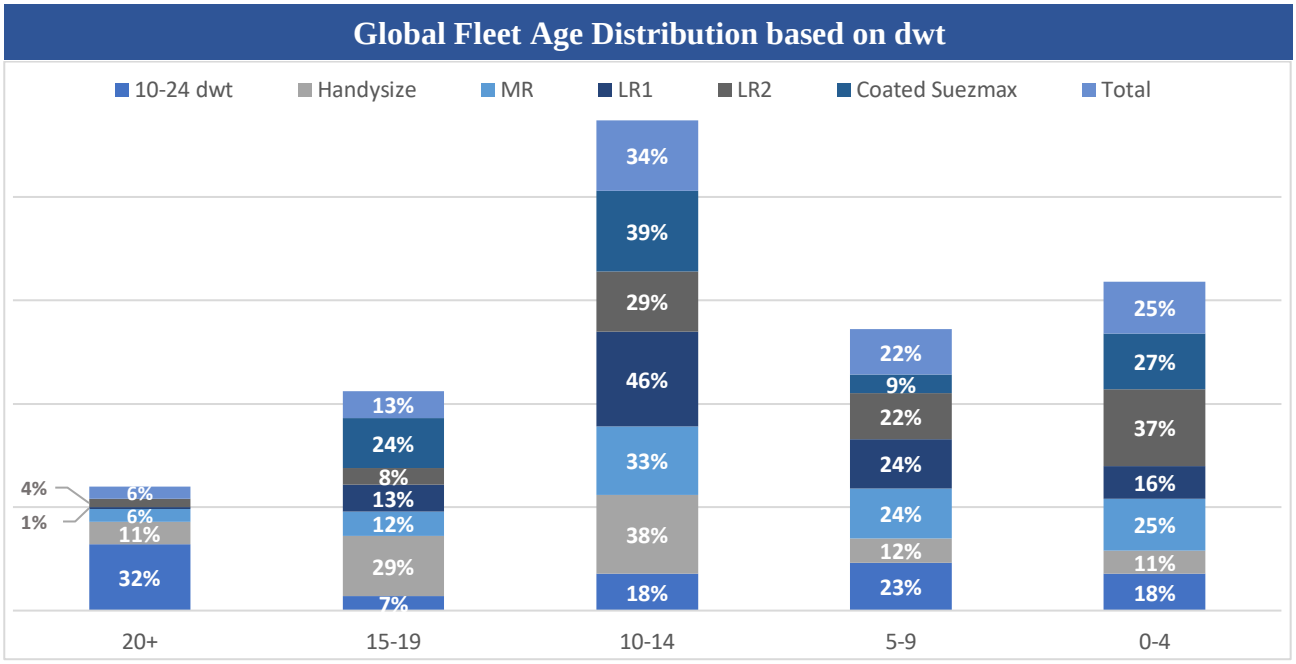
capacity at shipyards (Tan & Cichen, 2020). Thus, it is expected that parts of the product tanker fleet, must get their scrubbers installed in the second quarter or even later. Adding to this, there is projected a sharp drop in the orderbook, together with a delay in deliveries of vessels during 2020 (Bockmann et al., 2020). As a consequence, the supply of product tankers will most likely be lower than anticipated for the upcoming period. Supporting this view, is the use of floating storage resulting from the low oil price, which is tying up larger vessels, thus restricting supply of ships for active trading (Bockmann, 2020).

4.3.2 Fleet productivity

The number of ships available for trading at certain times will not alone determine the total capacity of the merchant fleet. Each ship's ability to trade efficiently will also contribute to the final amount of tonnage capacity that the fleet can offer per year (Stopford, 2009, p.138). Moreover, a tanker's productivity is affected by more than the time spent carrying oil for customers, it will also depend on inefficiencies and other utilization methods of a ship (Stopford, 2009, p.138). These inefficiencies or various utilization methods may for instance be related to time spent in port, surveys, speed adjustments, time carrying ballast, accidents and reparations or ships used for floating storage. For instance, in Q1 of 2020, COVID-19 created inefficiencies related to the crewing of vessels. This includes difficulties related to change the staff on board vessels, as ports do not allow the crew to enter or travel through the respective country. Therefore, a crew may have to spend longer time at sea than under regular market conditions when borders are open. This inefficiency delays vessels, which is positive for the product tanker market, as it contributes to lower supply.

In order to measure productivity, it can also be helpful to review the fleet's age. For ships older than 15 years, costly surveys are required every 2,5 years compared to every 5 years for those under the age of 15 (Pareto Securities AS, 2019). As viewed from the figure below, nearly 81% of the fleet's tonnage capacity is aged under 15 years, therefore the majority of the fleet require less frequent surveys and maintenance compared to older vessels. In total, the current fleet is relatively young at an average age of 11 years and approximately 47% of the fleet is below the age of 10 years. Hence these vessels are more modern with newer technology to lower fuel consumption. This will enable ships to trade more efficiently compared to the less modern fleet.

Figure 4.3.2: Age by class in the product tanker market



Source: Clarksons Research (2019). Own Production.

Furthermore, Stopford (2009) particularly highlights speed as an important determinant for a ship's efficiency. For instance, in times when freight rates are relatively low or bunker costs are high, vessels typically reduce their speed in order to save fuel costs, therefore the number of days it will take to complete a voyage increases. At the end of Q1 2020, bunker costs were at low levels, which typically cause shipping companies to consider raising the average speed of their fleet. However, the contango situation, in combination with the coronavirus, led to longer routes and more inefficiencies, despite the young fleet. This indicates a lower supply for product tankers.

4.3.3 Newbuilding

The amount of newbuildings hitting the water will affect the supply of product tankers, and can be measured on the number of vessels in the orderbook. The orderbook is based the developments in the future ship demand (Stopford, 2009, p. 157). There exists a lag effect of about 1 to 4 years from the time a ship is order to the time of delivery, therefore earlier estimations of demand have more than once proved to be incorrect (Stopford, 2009, p. 157). Thus, in times when future demand is predicted to increase, the orderbook tends to increase as well, with the additional anticipation of

growth in freight rates. Moreover, if the future demand actually turns out to decrease, there is likely to be an oversupply of vessels in the next 1 to 4 years, hence lower utilization of the fleet.

From 2017 to 2018, the total amount of vessels that were registered in the product tanker orderbook increased from 265 to 272, respectively (Clarksons Research, 2019). However, in 2019 only 223 orders were registered with an estimated delivery in 2020-2022, and it was projected that order activity would rise in 2020 (Torm, 2020). Nevertheless, there was a sharp drop in the orderbook in the first quarter as a response to the random shocks disrupting the industry (Bockmann et al., 2020).

Moreover, the two last years have involved a lot of geopolitical tension that has been a founder for uncertainties in the future market prospects. In the beginning of 2020, the COVID-19 situation in addition to the large fall in the oil price made the future outlook even more unclear. Accordingly, many analysts have feared that the reduced GDP growth may continue further into 2020 and lead to depressed global oil demand (Jallal, 2019). As the workforce at Chinese shipyards has been reduced by 50% or more, it has diminished capability of shipyards, and resulted in delays of planned deliveries (Tan & Chichen, 2020). In fact, among the 116 planned deliveries for 2020, only 60-70 of them are now expected to actually happen (Catlin, 2020). As this will contribute to reduce supply, this may induce the rates, looking at the short-term perspective (Bush, 2020).

In addition to the above-mentioned factors, there are also several undisclosed aspects regarding future ship design and technology of vessels that will be necessary, in order to comply with the requirements from IMO 2020 (Hellenic Shipping News, 2019). As a result, more shipowners have become reluctant to order new ships, as this is likely to include a high upfront payment. As these ships are anticipated to live for at least 20 years, decision makers have to make sure that this high investment is worth the price, thus they await the investment decision (Hellenic Shipping News, 2019).

4.3.4 Scrapping

Scrapping activity of product tankers have been relatively low during the last year (Pareto Securities AS, 2019). At the end of 2018, 62 product tankers with a capacity above 10 000 dwt, were registered as sold for demolition (Sand, 2019), whereas the number for 2019 amounted to only 26 in comparison (Clarksons Research, 2019). However, for 2020, the number of potential scrapping

candidates are 272 vessels, as this is the amount of vessels above 20 years. The lifetime of a ship may vary between vessel segments, but are typically within the range of 20-25 years for product tankers (Clarksons Research, 2019). Hence, a decent amount of the older vessels is likely to be demolished during 2020. The future supply of vessels, however, will depend on whether new deliveries will offset the scrapping of older ships, or vice versa.

4.3.5 Freight revenues

In the long-run, freight revenues affect shipping companies' investment decisions, either in terms of ordering new ships or deciding to scrap older ones (Stopford, 2009). Furthermore, freight revenues prompt companies to adjust their fleet capacity in order to correspond with the prevailing market conditions (Stopford, 2009). For this reason, freight revenues have a fundamental effect on the supply for product tankers. For instance, if market conditions are good and freight rates are high, companies tend to be more willing to invest in new vessels. On the other hand, when conditions are weaker companies are often more reluctant to take on investments, and may instead be triggered to sell or scrap vessels.

During the last quarter of 2019 freight revenues for product tankers were at a very high level, reaching levels that has not been seen since Q3 in 2015. These high rates can be attributed to strong demand for oil and temporary removal of ships for scrubber installment (Torm, 2020). The trend continued into 2020, even though uncertainty around how the coronavirus would unfold led to somewhat weaker rates. In February, there was a decline of 12% in freight rates for clean tankers, although the rates actually rose by 6% compared to the same period in 2019 (OPEC, 2020). In March, freight revenues were sustained at a relatively high level, mainly because of the low oil price causing demand for floating storage (Bockmann, 2020). However, considering a longer time perspective, as the virus outbreak continues to evolve, demand for refined oil products is expected to decline. Especially with regards to the aviation sector which was severely crippled by the sudden travelling restrictions implemented around the world (Sharpe, 2020). This may impair demand for product tankers which is likely to deteriorate freight revenues going forward. However, there has not been any signs of this in Q1, as rates have remained high for the entire period. Some shipping companies may therefore consider using the proceeds to make investments in technology or vessel purchases. Still, the ongoing COVID-19 pandemic facilitates an abnormal amount of uncertainty for

the future of freight revenues in the product tanker market. Thus, it is difficult for shipping firms to make decisions that require large capital investments, such as the purchase of new vessels.

4.4 Sub-conclusion

Sub-question 1: *How do the key drivers of the product tanker market interact?*

In order to understand the interactions of the key drivers in the product tanker market, an assessment of the balance between supply and demand have been conducted. On the demand side, the world economy has been severely impacted by the coronavirus which sat back the global GDP growth and slowed down the industry activity. Consequently, the world's consumption of refined oil products was substantially reduced. Whereas most oil commodities experienced a drop in demand resulting from environmental concerns and lower economic activity, demand for MGO increased due to IMO 2020. This withheld the demand for product tankers during first quarter of 2020. There was also evidence of longer trading routes as the market was in contango from the low oil price caused by the dissolvement of OPEC+. Moreover, the low oil price led to cheaper transportation costs as the bunker price fell and customers started hoarding cheap oil. In effect, the freight rates soared despite COVID-19 limiting the need for refined oil products.

On the supply side, several vessels were in Q1 dry docked for scrubber installations to comply with IMO 2020. Additionally, a number of ships have been used for floating storage by customers taking advantage of the contango market, thus advocating a situation of undersupply. Supporting this, is the COVID-19 situation which caused delays in deliveries of ships due to lower capacity at shipyards. Moreover, supply was setback by difficulties in replacing staff on board ships, resulting from closed borders.

In sum, the product tanker market has been subject to two unique shocks which have had an extreme impact on the key drivers of the market during Q1 2020. Even though this was the first quarter with IMO 2020 in place, little evidence was found with regards to its impact on the market alone. Instead, OPEC + and the corona pandemic disrupted supply and demand. COVID-19 led to a temporarily hold up in industry activity, normally indicating a decline in demand for refined oil products. However, as the oil price war escalated, the price surged and demand for oil soared. This, in combination with the undersupply of product tankers, facilitated a strong Q1 with very high rates.

5.0 Case study

In order to address sub-question two, an assessment of Torm's and Norden's business model will be conducted separately. However, to start with, a short introduction of the companies and their business models' historical developments will be given. Thereafter, the framework presented in chapter 2.2 regarding business models, will be used to perform the analysis of the business models in their value networks. Hence, the resources and core activities will be analyzed under value creation, whereas the revenue model and cost structure will be assessed under value capture, for each of the business models. Based on the findings from applying the framework, an explanation of why Torm and Norden chose their respective models will be given in the sub-conclusion. The main part of the data used to conduct this analysis is based on the information provided in interviews with the Vice President of Tankers, and the Strategy and Investor Relations Manager from Torm and Norden, respectively. Whenever secondary data is applied this is highlighted as in-text citations.

5.1 Torm

5.1.1 Company presentation

Torm was established in 1889 and has 131 years of experience at sea. The company operates in the product tanker segment and has grown to become one of the world's largest owners of tankers (Torm, 2020). Torm has offices in 6 different countries around the world and are listed on both Nasdaq Copenhagen and NASDAQ New York. With a fleet of nearly 80 product tankers, ranging from a size of 35.000 to 114.000 dwt, Torm is also considered a leading carrier of refined oil products. More precisely, the fleet consists of 2 Handysize, 56 MR, 9 LR1 and 12 LR2. Additionally, the company is awaiting delivery of two LR2 vessels in 2021. The vessels are distributed globally and Torm employs roughly 3400 workers to operate them, including seafarers and land-based staff (Torm, n.d.).

5.1.2 Business model developments

In 2013 Torm started implanting a new strategic framework, labeled ONE Torm, with focus on pursuing four particular goals: 1) improving quality across the entire value chain, 2) stronger customer focus, 3) ensuring responsible operations and 4) increasing cost-efficiency (Torm, 2014, p. 11). In the years leading up to this, Torm's business model had been resembling more of an asset light model in the sense that the company did not have full ownership of all the vessels it operated, rather the focus was on pools and chartering of vessels. In 2014, however, Torm exited the pool

tactic completely, thus either owning, chartering-in or commercially operating vessels. Torm perceived this decision to be in line with its ONE Torm model in facilitating cost efficiency, whilst also bringing the company closer to its customers.

During 2015 Torm merged with Oaktree Capital Management (Oaktree), causing Oaktree to obtain a controlling equity share of 62% (Torm, 2016, p. 2). In exchange for the equity share, Oaktree contributed with 25 product tankers and 6 newbuildings of MR vessels to the fleet (Torm, 2016). This led Torm to become one of the world's largest owners and operators of product tanker vessels. Today, the strategic aim is to keep its leading position by continuing to pursue the ONE Torm model introduced in 2013. To achieve this, Torm applies an asset heavy business model in which it owns the entire fleet it operates, a few vessels can also be chartered in on a case-by-case scenario if profits are expected to be favorable (Torm, 2020, p. 19). Additionally, the model is integrated, meaning that all core activities are performed in-house, including the commercial and technical management of ships.

5.1.3 Business model components

Value creation

Torm employs an asset-heavy business model to create value for its stakeholders. In large, the model is concerned with satisfying customer needs as Torm considers them pivotal to generate value for all other stakeholders. The customers are for the most part oil majors, both state-owned and independent. They have high requirements to Torm and the quality of its services. If Torm delivers below customers' expectations, then they may replace Torm with competitors. Therefore, the business model is built to enable Torm to offer its customers a high degree of flexibility and to ensure quality in all aspects of the service it provides. This is possible because Torm controls all divisions responsible for the safe and efficient operations of the vessels. For example, Torm operates its own technical management which is organized to stay close to its vessels in order to monitor them (Torm, 2020). Hence, the need for maintenance will be discovered and resolved quickly, effecting in minimum days spent off-hire. Moreover, Torm has a commercial team which is responsible for employing the vessels in the market. By combining the technical and the commercial team in-house, Torm is better equipped to coordinate its voyages with regards to maintenance. For instance, if a ship has to go to a repair yard, Torm can commercially make sure to

send this ship as close to the location of the yard as possible. Hereby, the company is able to minimize the number of days the ship has to carry ballast.

Torm also has an in-house sale and purchase team, working specifically with the timing of selling and purchasing vessels. This is an important aspect of keeping the fleet modern so that it is able to deliver high quality for Torm's customers. Through this team, Torm also utilizes its relationship with shipyards for ordering newbuildings focused on matching the need of Torm's customers. Essentially, Torm's asset heavy structure, provides the customers with a "one-stop shop" which simplifies the customer experience as customers only have to relate to Torm, no other supplier or partner. This integrated model is further enhanced by the fact that Torm is involved within all product tanker segments; Handysize, MR, LR1 and LR2. Thus, Torm can satisfy its customers' needs across all vessel types, which gives the company a competitive edge.

Another crucial feature of value creation in Torm is the ONE Torm Safety Culture programme. The programme is dedicated to train employees, especially leaders, to act according to safety guidelines and to teach them how to encourage their fellow employees to act responsible (Torm, 2020). The intention is to safeguard all employees by reducing accidents, which in turn will contribute to increased efficiency for vessels and create a more smooth experience for the customers. Additionally, this programme will help Torm attract a competent workforce as safety is an important selling point for staff, and it further contributes to strengthen Torm's reputation among all stakeholders in the value network. Besides, Torm's employees are a crucial resource in delivering quality to its customers, and the company is reliant on skilled personnel in order to enhance its ability to adapt to market changes.

Although, Torm generally performs all activities associated with its day-to-day operations in house, the company may use partnerships where it believes it will add value to the firm and its stakeholders. For instance, Torm decided to approach IMO 2020 by installing scrubbers on just over half its fleet which gave the firm a sudden demand for scrubbers. To take advantage of the scrubber demand and by sticking to the company's asset heavy model, Torm entered into a joint-partnership to produce and install scrubbers. The joint-venture is named ME Production China and consists of the scrubber manufacture, ME Production, and the Chinese shipyard, Guangzhou Shipyard International. ME Production provides the necessary technology and know-how to manufacture the

scrubber, whereas Guangzhou Shipyard International possesses the capabilities to install the scrubber on vessels, for a relatively cheap price. Upon the creation of this partnership, Torm committed to buying approximately 40 scrubbers from the venture. However, instead of receiving a discount on its scrubbers, Torm received an equity stake of 27,5% in ME Production China. This will secure Torm a high degree of flexibility with regards to its scrubber installments as the company will have the ability to delay or expedite its scrubber installments to assess how the market develops. Considering the volatile nature of the shipping market, there exists great value in postponing decisions like this. Hence, the partnership will give Torm a substantial advantage as opposed to outsourcing the scrubber installments entirely. Further, the partnership was a means to reinforce Torm's relationship with the China State Shipbuilding Corporation, which owns Guangzhou Shipyard International, an important supplier for Torm (Torm, 2020).

It is of great importance for Torm to create value for regulators by adhering to the regulations they set forth. Although these regulations are a prerequisite for operating in the tanker market, Torm considers them carefully on a daily basis, to make sure the company is in compliance. Perhaps, the most radical regulation in the recent years is IMO 2020, which prompt Torm to alter its operations quite severely. However, there are also other environmental requirements and safety demands which Torm constantly pursues. In particular, the company is invested in its corporate social responsibility by actively contributing to reduce pollution through innovative partnerships. For instance, Torm is a part of the Getting To Zero Coalition, aiming to mitigate emissions from the maritime industry (Torm, 2020). Moreover, the company is devoted to support quality education globally and offers both scholarships and trainee positions to attract young talents. The aim is to educate future seafarers, especially in India and the Philippines, as this is where the majority of Torm's employees originates from (Torm, 2020). Engaging in such CSR activities is important to Torm's customers, while it also creates value for the society at large.

Value capture

As a publicly listed firm, Torm is obligated to generate value for its shareholders. To accomplish this, Torm captures value from its operations through its relatively straight-forward revenue model. In general, the company has three sources of income; revenues generated from operating its product tankers in the spot-market, profit from sale of vessels and revenues received from its scrubber related joint-partnership. The former can be considered Torm's primary income as it accounts for

the majority of revenues in the income statement. Hence, Torm's revenue model is highly sensitive to freight rates prevailing the market at any given time and the firm monitors the market closely. Torm believes employing its vessel in the spot market will allow them to exploit opportunities arising from the volatile market. However, in times of distress, when the company expects sustained low spot rates, Torm acknowledges the occasional need for chartering out a minority of its vessel on a longer time horizon, to mitigate exposure in the spot market. This chartering strategy will only be applied if it favors customer needs and is likely to result in significant returns, which can support the overall revenue generation of the firm. Adding to Torm's revenue model is the proceeds from sale of vessels. Because Torm also emphasize ownership of its vessels, the company is able to exploit asset play by drawing profits from the timely purchase and sale of its tankers (Stopford, 2009), although the revenue will vary depending on general market conditions and the ability of the sale and purchase team to act opportunistically. Lastly, Torm receives additional income from its ownerships stake in the joint-venture ME Production China, which allows Torm to take advantage of the scrubber demand ascending from IMO 2020.

With regards to the cost structure in Torm, a focal point is bunker costs as it comprises the largest cost associated with a voyage (Torm, 2020). Fluctuations in the bunker price is to be expected, Torm therefore hedges parts of its bunker purchase through oil derivatives. Additionally, Torm has a balanced approach, involving an approximate 50/50 split between scrubbers and compliant fuels, in order to fulfill the IMO 2020 restrictions. This limits the company's exposure to bunker cost increases in HSFO or any of the other compliant fuels, keeping costs more stable for Torm. Furthermore, due to Torm's asset heavy structure, it is able to renegotiate loan terms with banks in weak markets to alter repayment profiles and hereby reduce costs. This is because owned vessels can be held as collateral (Stopford, 2009), which offers Torm more financial flexibility in rough markets compared to if vessels were solely chartered-in.

5.2 Norden

5.2.1 Company presentation

Norden is one of Denmark's oldest globally trading shipping companies, that was founded in 1871 by Mads Christian Holm (Dampskibsselskabet Norden A/S, u.d.). During the last decades, Norden has grown from delivering shipping services on an international scale to delivering services globally. This has involved an expansion in the number of employees, offices, services as well as

segments currently trading worldwide. In 1990 Norden expanded its operations to include a tanker department in addition to the already established dry cargo division (Dampskibsselskabet Norden A/S, u.d.). Moreover, in 2005 Norden established Norient Product Pool ApS (Norient Pool) with its prevailing partner Interorient Navigation Company Ltd, in Cyprus. Today, the pool is operated through the main office in Hellerup, Denmark in addition to offices in Singapore, USA and Cyprus, and is a pool consisting of product tankers (Dampskibsselskabet Norden A/S, u.d.)

Today, Norden works through a total of 11 offices that are situated among all of the world's 6 continents, with its headquarter located in Hellerup, Denmark. For the dry cargo segment, Norden owns and operates a total amount of 218 vessels, whereas 61 tankers are operated through the pool, including 24 owned and 37 chartered in (Dampskibsselskabet Norden A/S, 2020). Further, the pool is considered one of the largest product tanker pools in world, comprising a total amount of 113 vessels (Norient Product Pool, 2020)

5.2.2 Business model developments

Norden's current business model can be characterized as asset light. A large contributor to this, is the way that the company operates part of its fleet through Norient pool, enabling them to share valuable assets with its partners (Dampskibsselskabet Norden A/S, 2020). Further, the pool can be portrayed a member-controlled pool, as defined by Haralambides (1996), as the pool is a result of the well-established partnership between the two companies, in which Norden is the commercial manager. Therefore, activities related to attract new members are less prioritized, and the focus is thus on operating and managing the vessels.

After the pool was formed in 2005, Norden's focus on an asset light business model has strengthened significantly, and a number of initiatives have been conducted within both the dry cargo and the product tanker segment. The latest initiative was the transformation of the three former business units: Dry Operator, Dry Owner and Tankers into three new units in 2019: Asset Management, Tanker Operator and Dry Operator. The former Tanker unit was concerned with operations related to both long-term and short-term contracts, in addition to control all owned assets. However, after obtaining fully control of the Norient Pool in 2018, Norden wanted to bolster focus on operational activities through the pool. Therefore, the company separated its product

tanker operations into two units: one focusing on short-term chartering, and one focusing on ownership and long-term chartering of vessels (Dampskibsselskabet Norden A/S, 2020).

5.2.3 Business model components

Value creation

It is in Norden's belief that the shipping market will become increasingly volatile and uncertain going forward, and that customers will be less concerned with the ultimate ownership of vessels when they look for oil product transportation. Thus, being able to satisfy customers in terms of offering high quality, service, flexibility, and cost efficiency through each step of the transportation chain, is fundamental to Norden's value creation. The new units, Asset Management and Tanker Operator, are intended to create value for Norden in terms of transparency as it allows the company to identify which units generate the highest profits.

The Asset Management unit manages all of Norden's owned vessels, including ships from both the dry cargo and the product tanker segment. The unit has established its own sale and purchase team as well as a technical department which is responsible for pursuing attractive investment cases, and to ensure that the fleet functions optimally at all times. Moreover, the unit is also in charge of all chartered vessels on contracts longer than a year and the technical aspect of maintaining these vessels. With regards to the tankers in Asset Management, they are all placed in the Norient pool, where the day to day operations of the vessels are handled. The Tanker Operator unit on the other hand, manages all ships chartered in on short-term contracts (e.i. less than a year). These are outsourced to the Norient pool which is responsible for employing them in the market. The advantage of the pool is that members can share information and spread vessels globally to gain economies of scale. Hereby, the fleet is more accessible for customers worldwide. Because of the short-term contracts, Norden has the ability to reduce or increase the fleet to quickly adapt to changes in demand. This possibility enables Norden to lower its exposure to market volatility and makes the company more resilient to withstand challenging markets. In the long run, the new unit structure will give Norden the opportunity to assess if the company should focus more on owning or simply operating vessels. Hence, these units create the foundation for a flexible business model which is valuable in a dynamic market.

Another value creating activity essential to Norden's business model, relates to educating and attracting the right employees within areas that are considered to be of explicit importance for

future growth. This can be exemplified by the company's recent initiatives to hire more people within the risk and trade department. In particular, the timing of when to reduce or increase the company's fleet require extensive skills in data analysis to forecast the market, and is the reason why Norden expanded its Advanced Analytics and Digital Solutions team. Accordingly, these actions were commenced with the aim to optimize trade and better adjust operations to several risk factors, ultimately leading to better service for customers.

Norden's asset light business model focus on leasing and outsourcing activities, therefore the company must ensure that all of its counterparties conduct their business practices in the most safe, ethical, and responsible way. Accordingly, Norden screens all of its suppliers on a daily basis for a number of potential issues. This is referred to as the Supplier Code of Conduct which is a set of minimum requirements that Norden has to its suppliers, mainly providers of tonnage and bunkers. The code is footed on the principles set forth by UN Global Compact and covers areas such as human rights, labor, environment, and anti-corruption (Dampskibsselskabet Norden A/S, 2019). Moreover, Norden voluntarily engages in topics of environmental concerns and CO2 emission reduction through exploring and testing alternatives for sustainable biofuel as bunkers (Dampskibsselskabet Norden A/S, 2019). The purpose of these CSR activities is to meet requirements set forth by regulators, as well as enhancing Norden's reputation in the industry.

Value capture

Within the tanker segment, revenues are primarily generated through freight rates as the main part of Norden's tankers trades in the spot market. However, some of the income is also generated through pre-paid time-charter arrangements, that makes the company less exposed to market volatility (Dampskibsselskabet Norden A/S, 2019). In 2020, 25% of all operating days within the product tanker segment, have revenues locked in time-charter contracts, whereas the remaining 75% of the days are open to the spot market. With respect to the revenue stream generated from the Norient pool, the annual earnings that Norden captures is dependent on the preagreed distribution key, that is established by the board of the Norient Pool. Each member of the pool will have their earnings attributed in relation to this key, which is largely contingent on the number of days that each participant's ships have operated in the pool, in addition to the vessels' characteristics in terms of age, speed, capacity, fuel consumption, productivity etc. Furthermore, after Norden acquired full control over the Norient pool, management income related to administrative tasks of the pool will additionally be captured by the firm. Considering Norden's complex revenue model comprising of

the pool and two new units, banks may be hesitant to lend capital as they might have a hard time comprehending the new revenue structure. Adding to this is the rather short track record of income streams that makes forecasting Norden's earnings difficult for banks.

The company's costs are principally generated from two streams. The first is connected to the operations of the vessels, primarily including rents for chartered ships and voyage costs (Dampskibsselskabet Norden A/S, 2019). The second stream is generated from management and overhead costs, typically including payments to onshore staff, travel expenses, office expenses etc. (Dampskibsselskabet Norden A/S, 2019). Bunker makes up a large part of the company's total variable costs, and Norden recognizes that the fluctuating price spreads between HSFO and compliant fuels will greatly impact the level of total voyage costs. As the company's solution to comply with IMO 2020 involves the use of compliant fuels on the majority of its chartered vessels, an increase in prices of compliant fuels will contribute to higher bunker costs. Nevertheless, as the product tankers are operated through the Norient pool, vessel operating costs will be subject to the pool's sharing system, thus deducted from the total revenues before they are distributed to the company. Although this shared allocation of assets within the pool limits the losses in times when markets are weak, it also entails sharing in cases when markets are strong, when the firm could potentially have captured greater earnings. Hence, it can be seen that this sharing system contributes to more stable and predictable income, regardless of the market situation.

A final element that should be notified within Norden's value capture, is the gradually reduced CAPEX, caused by the lower investment activities of new vessels in recent years. This is largely attributed to the company's decreased focus on ownership, enabling the firm to invest capital elsewhere. In fact, on the annual general meeting in 2019, Norden's board of directors came up with the concrete suggestion to increase the firm's payout policy to a minimum of 50% of the adjusted result from 2020 and onwards. This signalise a positive firm growth to Norden's owners and expands the value captured by shareholders (Dampskibsselskabet Norden A/S, 2020).

6.0 Comparative analysis of business models

To answer the research question of how the business models of Torm and Norden differ, this chapter will involve a comparison between the two models based on the findings from the case study. In resemblance with the section regarding business model components in the case study, the business models will be compared according to value creation and value capture. Secondly, the research will use the framework presented in sub-section 2.3.4 in order to identify if any of the companies applied innovations in their business model during 2018-2020. The framework will be employed to each of the business models to classify the innovation type, impact, reach and trigger. Subsequently, the innovation findings will be compared in a discussion in order to understand how the two business models' innovations differ. The last section will analyze how Norden and Torm performed according to the financial measures, TCE earnings, profitability ratios and share price. Each of these metrics will also be used to compare the financial performance of the business models in Q1 2020. After each of the three sections there will be presented a sub-conclusion answering the corresponding sub-question two, three and four (Torm, 2020).

6.1 Business model components

6.1.1 Value creation

The most prominent difference between the two business models is their divergent focus on ownership and management of the vessels. Torm has decided to invest heavily in owning vessels, whereas Norden pursues a model where chartering is currently at the core with less emphasis on ownership. According to Sohn et al. (2013) ownership of vessels is less liquid and quite time consuming to sell or purchase, thus Torm's business model may encounter difficulties in adapting its fleet to sudden market changes. Therefore, Torm's model can be riskier in markets with oversupply of product tankers, because the company must bear all costs, especially connected to potential lay-ups. Further, as noted by Lorange and Fjeldstad (2012), the company may be exposed to higher impairment costs in such markets. In contrast, Norden has the opportunity to quickly increase or decrease its fleet through the operator unit, conditional on their ability to time the market. Moreover, because Norden uses Norient pool to manage the product tankers, the model enables the firm to share costs with its members as emphasized by Stopford (2009), and thereby reduce the risk of losses in weaker markets. However, in a stronger market, Torm's business model is entitled to capture all earnings as opposed to sharing them with pool members, which is the case for Norden.

Another important distinction between the two models is the fact that Torm is in control of all aspects of its operations, this was further enhanced by the company's recent decision to get involved with scrubber production and installation. Whereas Norden emphasis outsourcing activities and is thus more reliant on strong relationships with its counterparties to ensure favorable terms of contracts. For Norden's chartered fleet, such terms may involve a higher degree of optionality related to the duration of the contracts and the opportunity to purchase the vessels. However, as recognized by Kachaner and Whybrew (2014), these charter contracts may also be subject to conflict of interest as all parties have divergent intentions. For Torm's asset heavy business model, which is not as concentrated around short-term chartering contracts, the company is less likely to encounter such conflicts of interest in its day-to-day operations. Although, Torm also enters vessel contracts, these occur more seldom and are commonly related to the sale and purchase of its tankers, thereby more capital intense and costlier to exit.

Further, both companies' business models operate within the product tanker segment, but they are present in different vessel classes. Torm directs attention to all vessel classes in line with its "one-stop shop" which enables the company to be more versatile for its customers. On the the other hand, Norden mainly specializes in operating Handysize and MR tankers as these vessels are flexible and have similar characteristics related to cargo, size, routes, etc. Thus, they are also easier to draw synergies from when operated in the pool structure, as opposed to including LR1 and LR2 which have different features (Lorange & Fjeldstad, 2012). In times with oversupply of tankers, Norden's approach may be less exposed than Torm's approach, due to MR and Handysize' wider range of application areas compared to the largest vessel segments. Conversely, Torm can exploit higher earnings from LR1 and LR2 tankers when there is a strong demand for vessels, especially because they can be converted to trade in the crude market.

Based on the assessment of the business models of Torm and Norden, it is evident that the companies apply very different approaches to create value, although they operate in the same market. For each company the customer is considered an essential stakeholder and they have developed distinct business models to suit customer needs. Even though the companies target customer with similar features, they have differing perceptions of what their customers value. On one hand, Torm believes that its customers prefer to buy services from a company that both owns

and operates vessels because this will facilitate accountability and transparency for the customers (Torm, 2020). Therefore, Torm pursues an integrated model to maintain control of all stages in their operations. On the other hand, Norden's impression is that customers are indifferent regarding who owns the ships, as long as the operator provides high quality in their services (Dampskibsselskabet Norden A/S, 2020). Drawing on this, it is noticeable that each company's understanding of customer preferences have influenced their choice of business model.

6.1.2 Value capture

In terms of revenue model, the two companies also differ. Norden earns the bulk of their revenues through Norient pool, as well as revenue from long-term leasing activities. Conversely, Torm primarily generates income from operating their vessels in the spot-market, in addition to chartering out vessels if profits are deemed favourable. The company's focus on exploitation of the spot-market may prove beneficial during times with high rates, whereas Norden may not be able to take advantage of such rates to the same extent as Torm. Furthermore, Torm has the potential to earn additional revenue from its scrubber venture, though it will depend on shipping companies' compliance solution with IMO 2020. Evidently, one similarity identified between the two revenue models, is the fact that both companies earn proceeds from sale and purchase of ships, although these transactions may occur more frequently for Torm than for Norden due to its asset heavy business model.

With regards to cost structure, both Norden and Torm recognize bunkers as their largest cost and they have chosen to install scrubbers on approximately half of their owned vessels. Torm is therefore less affected by the spread between HSFO and the compliant fuels due to its balanced approach. Norden on the other hand, may be more exposed to increases in this spread contingent on the characteristics of the vessels the company charters in. When it comes to capital expenditures however, these are significantly lower for Norden, resulting from the company's asset light model. Despite Torm's higher capital expenditures, the company has the opportunity to negotiate favourable loan terms with its creditors due to the large ownership of vessels. This is particularly advantageous in tough markets. For Norden, this may be more difficult as the firm has less collateral, thus lower ability to take advantage of asset play in negotiating with creditors (Stopford, 2009). Additionally, the company has a more sophisticated model which may hamper banks' understanding of how Norden generates income.

6.1.3 Sub-conclusion

Sub-question 2: *Why did Torm decide on an asset heavy business model, whereas Norden on an asset light business model?*

Torm's decision to apply an asset heavy business model is grounded in its perceived advantage of having a "one-stop shop". The company believes that this model simplifies the customer experience significantly, enabling Torm to become the preferred option across the product tanker market. Moreover, the asset heavy model creates synergies between revenues and expenses through close coordination between divisions within the company. Another reason for Torm's choice of business model, relates to the benefits of being an integrated owner and operator. Torm is determined that ownership, along with operation of vessels, will contribute to higher revenues because the company does not have to pay charter hire as sole operators must. Additionally, the asset heavy model enables Torm to generate revenue from timely purchase and sale of vessels. Norden, on the other hand chose an asset light business model because the firm wanted to reduce exposure to the volatile shipping market by chartering in vessels. In particular, the short-term leasing of vessels allows Norden to decrease and increase the fleet to adhere to market conditions. Further, the company's aim to reduce ownership was reasoned in exploiting synergies and reducing risks in terms of shared costs through employing vessels in the Norient pool.

6.2 Business model innovation

6.2.1 Identification of business model innovations

Torm

In the time period between 2018 and 2020, Torm has made few larger changes to its business model. Rather, the focus has been on smaller adjustments in the existing ONE Torm platform, but these modifications have not resulted in a change in one or more of the business models components. Therefore, these smaller improvements can not be considered a business model innovation according to the definition given in section 2.3.4. However, there has been identified one particular alteration to Torm's model during these years, involving the scrubber partnership ME Production China. This joint venture was initiated in the latter part 2018, as a response to environmental concerns and the new IMO 2020 regulations.

ME Production China entails a change in Torm's value creation and facilitates a novel way to capture value for the firm and its owners. Thus, the partnership will provoke alterations in at least one components of the business model, which is in line with the definition of a business model innovation. In particular, the venture will act as a resource for Torm, because it enables the company to postpone decisions about scrubber installments on its vessels. Additionally, the venture is expected to generate an extra income stream in a longer time perspective, thus affecting the revenue model. Nevertheless, if ME Production China is not profitable, this may instead have an effect on Torm's cost structure. Due to these features, the joint-venture can be regarded as a component innovation based on the business model innovation framework presented in section 2.3.4. The scrubber venture initiated by Torm however, is not novel to neither the shipping industry nor the product tanker market. There are multiple examples of companies having entered into similar ventures such as Frontline Ltd. and Navig8 Group (Frontline Ltd, 2019; Navig8 Group, 2019). Therefore the innovation can only be considered new to the firm. Considering this reach and the fact that relatively few of the business model components have been altered, ME Production China can be characterised as a business model innovation with a low level of impact.

Norden

In 2018, Norden's business model within the product tanker segment, was structured in only one unit: Tankers. However, in 2019 Norden decided to transform the Tanker unit into two new units, Tanker Operator and Asset Management. This decision was largely triggered by the external environment, in the sense that the product tanker market is extremely volatile, and Norden wanted its business model to become more flexible. Norden also believed this structure would contribute to strengthen its financial performance, as each units' profitability would be easier to isolate.

The redesign of the unit structure involves alterations to several components and can therefore be regarded as a business model innovation with reference to the definition from section 2.3.4. It encompasses new ways of creating value by separating the core activities into one unit of short-term leasing activities as well as one unit with long-term leasing and ownership activities. This separation facilitates a high degree of specialisation which contributes to increase efficiency compared to the former unit where all tanker activities were combined. For the value capture aspect, both the revenue model and the cost structure have been significantly changed, as Tanker Operator only reflects revenues and costs incurred from short-term market positions, whereas Asset

Management allows Norden to measure value generated from ownership and long-term positions. Altogether, these changes can be characterized as an innovation in the structure of the business model components.

This innovation of Norden's business model has not been applied in any other companies in the product tanker market, nor elsewhere in the shipping industry, and is therefore considered unique (Norden, 2020). Thus, the reach of the innovation goes beyond the firm and the market, and is regarded as new to the industry. Although it is new to the industry, the innovation type itself cannot be considered an industry innovation. This is because there is no evidence proving that the new structure of the business model will prompt changes to competitors' business models. Hence, the impact of this business model innovation can be considered as medium.

6.2.2 Discussion

During the time interval between 2018 and 2020, business model innovation was applied by both Norden and Torm, although in a quite different manner. Torm's innovation was less complex compared to Norden's, as a lower number of components were altered (Taran et al., 2009). Hence, the innovation did not affect Torm's core activities, rather it gave rise to a new resource. On the other hand, Norden's innovation had a major effect on the way its core activities are conducted, as well as how resources are distributed. Adding to the complexity of Norden's innovation, is the fact that it is new to the shipping industry, whereas Torm's innovation is only considered new to the company itself. For these reasons, the degree of impact is higher for the innovation implemented by Norden.

Although both companies operate in the same market, and are exposed to the same environmental surroundings, the innovations were still caused by different triggers. For Norden, the innovation was activated by both external and internal factors. The external factor relates to the firm's perception of the constantly volatile market and the need for a more agile business model, whereas the internal factor was connected to improving performance. In contrast, Torm's innovation was triggered by the regulatory environment, to be precise IMO 2020. Despite this being a regulatory trigger, it can also be regarded as environmental considering the regulations' aim to reduce pollution.

Table 6.2.1: Business model innovation comparison of Norden and Torm

	Torm	Norden
Innovation type	Component innovation	Structure innovation of business model components
Impact	Low	Medium
Trigger	Regulatory: IMO 2020	Environmental: Volatile market
Reach	Firm	Industry

Source: Own production.

6.2.3 Sub-conclusion

Sub-question 3: *How and why have Torm and Norden applied innovation in their business models in the years 2018-2020?*

The analysis uncovered business model innovation within both companies. Torm has used component innovation to enter into a joint-venture, ME Production China, which specializes in scrubber production and installation. Through this partnership Torm acquired an equity stake in a scrubber manufacturer, thus strengthening its integrated business model. The purpose of this venture was to obtain optionality with regards to Torm's scrubber retrofits as the joint-venture enabled Torm to postpone decisions of scrubber installments. This gives Torm the possibility to order or cancel scrubber installations with very short notices, without incurring too high costs. Moreover, Torm regarded this venture as an opportunity to generate an additional income stream from the increased scrubber demand, triggered by IMO 2020. Although, several shipping companies have entered into similar ventures, ME Production China can be regarded as an innovation for Torm as it is new to the firm.

Norden applied structure innovation of its business model components through the establishment of two new business units in the product tanker segment. These units reshapes how Norden organizes its core activities by separating its fleet into owned vessels, long-term charters and short-term charters. The Asset Management unit includes owned vessels and those on long-term chartering contracts, whereas the Tanker Operator unit solely focus on short-term chartering contracts. The purpose of the innovation was to isolate the earnings in each unit as a means to discover which unit

proves most profitable. Consequently, Norden can evaluate whether the company should continue to increase its focus on short term market positions, or if they should invest more in long-term chartering positions. Moreover, the innovation was triggered by the fluctuating market conditions constantly prevailing in shipping. Hence, the new structure facilitates agility in Norden's tanker operations. The business model innovation is unique and have not been identified elsewhere in the shipping industry, therefore it is considered new to the industry.

6.3 Performance

6.3.1 TCE earnings

The TCE earnings have been separated according to each vessel class for both Norden and Torm to clarify how much of the earnings each segment has generated. Overall, the start to the product tanker market in 2020 has been very strong, as supported by the findings in chapter 4. This has contributed to extraordinary high TCE earnings in all segments for both companies compared to previous Q1 earnings in 2018 and 2019, this can be viewed in table 6.3.1.

Table 6.3.1: TCE earnings for Norden and Torm in Q1 of 2020, 2019 and 2018.

	TCE - Q1 2020				
	Handysize	MR	LR 1	LR2	Average
Torm	20 649	22 461	24 329	29 108	23 643
Norden Tanker Operator	18 937	19 697	N/A	N/A	19 501
Norden Asset Management	13 464	15 960	18 609	N/A	15 466
	TCE - Q1 2019				
Torm	18 875	16 765	18 089	22 469	17 949
Norden Tankers	17 131	15 994	17 345	N/A	16 282
	TCE - Q1 2018				
Torm	11 905	14 320	14 635	15 026	14 225
Norden Tankers	12 183	13 700	12 714	N/A	13 247

Source: Extracted from the Q1 reports from Torm (2020) and Norden (2020). Own production.

For Torm, it is evident that the TCE earnings in Q1 2020 have increased proportionally with the vessel classes, where LR2 received the highest earnings of 29.108 USD and Handysize accounted for the lowest earnings of 20.649 USD. LR2 in particular, had almost 30% higher TCE earnings than in Q1 2019, which can be explained by Torm's choice of employing these vessels in the crude market to exploit the higher earning levels. The average TCE earnings for all the vessel classes was 23.643 USD, this was a significant increase compared to the first quarter of 2018 and 2019, when

TCE was 14.225 USD and 17.949 USD respectively. The reason for this strong increase in earnings in Q1 2020 can be viewed in relation to Torm's business model. The model's focus on presence in all vessel classes, combined with its chartering tactic of employing the majority of its vessels in the spot-market, have enabled Torm to adapt quickly to prevailing market conditions. Thus, Torm was able to take advantage of the favourable market in Q1, this was especially apparent from the company's decision to utilize its LR2 tankers in the crude market as opposed to employing them in the product tanker market.

In analysing Norden's TCE earnings in the first quarter of 2020, each vessel class' earnings have been reported based on the business unit they were generated in. As shown in the table above, it is clear that the Tanker Operator unit had superior earnings in relation to the Asset Management unit in all vessel classes. The average TCE earnings for Tanker Operator was 19 501 USD, whereas for Asset Management the earnings amounted to 15 466 USD in Q1 2020. In large, this gap in earnings can be explained by the units' different chartering strategies. The Tanker Operator focuses on short-term chartering of vessels and these were mainly operated in the spot market through the Norient Pool, enabling exploitation of the high rates. On the other hand, Asset Management manages its vessels on long-term contracts of at least one year. This hampers the unit's ability to exploit high rates arising in the spot-market, as the earnings are fixed for the duration of the charter.

In comparing average TCE earnings, it is noticeable that Torm's earnings was at a much higher level than Norden, for both units. This can be accredited to Torm's flexible business model which made it possible for the company to trade LR1 and LR2 vessels in the spot market. In particular, the latter was operated in the crude market which strengthened the company's TCE earnings remarkably. Norden did not employ this strategy as its fleet mainly consists of Handysize and MR, in addition to two LR1 tankers on long-term contracts. As a result, Norden was not able to reap the benefits of the the strong rates in largest vessel classes. However, in the Handysize segment, the gap in TCE earnings between Torm and Norden's Tanker Operator was less apparent than the average for all segments. As the Handysize segment comprises the smallest vessels, and both have few tankers operating in this class, its overall contribution to company performance are of lower importance. Therefore, it is more meaningful to compare the earnings within the MR class, because both companies' fleet largely consists of these tankers. For Torm TCE earnings in Q1 was 22 461 USD per day for MR tankers, compared to 19 697 USD per day for Norden's Operator unit and 15

960 USD per day for Asset Management. Considering Torm's strong presence in the spot market compared to Asset Management concentration on longer contracts, the large difference in TCE earnings is logical. On the other hand, the gap between Norden's Tanker Operator and Torm is more narrow as this unit mainly trades in the spot market. Still, Torm performs better in this class and the rationale for this can be found in their distinct business models. Torm's integrated model has assured the company to exploit synergies from the coordination of its in house commercial and technical team. These synergies are achieved through minimizing voyage costs in terms of efficiencies related to bunker, ballast, port time, routes and speed adjustments (Stopford, 2009). Additionally, the strong market observed in Q1 2020, assured Torm to capture all earnings generated, whereas Norden had to share revenues with pool members. Thus, during Q1 Torm had a stronger static performance compared to Norden (Haggegé et al., 2017).

Lastly, it must be mentioned that IMO 2020 was expected to have a significant impact on the product tanker market in Q1 2020. Therefore, both companies had prepared their fleet for increased product tanker demand as the global consumption of MGO was expected to rise (Personal communication, 2020). At first, from the beginning of January until March, the spot rates remained at a relatively high level resulting from the optimistic market expectations in the light of IMO 2020. During this period, the case for scrubber investments seemed profitable due to a high spread between HSFO and compliant fuels. This resulted in lower payback time for scrubbers, advocating for scrubbers as a favourable solution to IMO 2020. For Norden and Torm this meant reduced bunker costs on their scrubber fitted vessels contributing to slightly higher TCE earnings during the beginning of 2020 (Personal communication, 2020). However, as the impact of COVID-19 became more visible, followed by the drop in oil price in March, the oil spread tightened and the payback time for scrubbers increased. Hence, the bunker savings on vessels with scrubbers became less apparent. Nevertheless, spot rates for product tankers increased as demand for refined oil boosted, this contributed to the abnormally high TCE earnings. Accordingly, these random macroeconomic shocks overshadowed the effects of IMO 2020. Despite this, both companies were able to utilize their increased fleet to take advantage of the favorable market conditions resulting from the shocks during Q1 2020 (Personal communication, 2020).

6.3.2 Profitability ratios

Firstly, it must be mentioned that this section of the analysis will assess the Tanker Operator unit and the Asset Management unit for Norden, as these units are involved in the product tanker

market. The Tanker Operator unit solely operates vessels on short-term chartering contracts which makes it relatively easy to compare to Torm's operations in the spot market. However, to evaluate profitability from Norden's long-term chartering and owned vessels, the Asset Management unit must also be considered. Asset Management also entails operations from the dry cargo segment, thus this unit will to some extent reflect profitability resulting from long-term operations within the dry cargo segment.

In reviewing the profitability for each company's business model, EBIT, EBITDA and net profit margins will be assessed. With regards to the EBIT margin, it was at much higher level for both companies, when viewed in conjunction with Q1 2019, as displayed in table 6.3.2. In comparing the companies with each other, Torm had a significantly higher EBIT margin of 28,5%, in relation to Norden's margins of 12,8% and 11,25% for Tanker Operator and Asset Management, respectively. The reason for Torm's superior EBIT margin can be attributed to the high TCE earnings and its lower operating expenses due to no charter hire. For Norden's Tanker Operator large parts of the revenue are lost to charter hire, whereas Asset Management have high depreciation costs in addition to charter hires which lowers the margin. If depreciation is excluded however, the EBITDA margin for Norden's Asset Management unit is 49,20%. This is significantly higher than the unit's EBIT margin and also above Torm's margin of 41,20%. The Tanker Operator on the other hand, does not have as large of a difference in these operating margins because the unit does not own vessels, and thus have lower depreciation costs.

Table 6.3.2: Profitability ratios showing return on sales

	Profitability Ratios - Q1 2020		
	Operating profit (EBIT) margin	EBITDA margin	Net profit margin
Torm	28,50%	41,20%	22,90%
Norden Tanker Operator	12,80%	17,80%	12,39%
Norden Asset Managment	11,25%	49,20%	5,27%

	Profitability Ratios - Q1 2019		
	Operating profit (EBIT) margin	EBITDA margin	Net profit margin
Torm	17,27%	33,00%	12,45%
Norden Tanker Operator	9,00%	9,53%	9,00%
Norden Asset Managment	-2,78%	40,42%	12,31%

Source: Calculated from Q1 Reports of Norden and Torm 2019 and 2020. Own production.

The net profit margin for Norden Asset Management was particularly low during Q1 at 5,27 %, compared to Torm and the Tanker Operator unit. Reviewing Asset Management's net profit margin in relation to its EBIT margin of 11,25%, it can be seen that the net profit margin is substantially lower. Considering that net profit is calculated by adding financial income and expenses to EBIT, assessing financial expenses is relevant to explain this difference. According to Norden's Q1 report (2020), EBIT was 12 USD million, and financial expenses amounted to 6,7 USD million. The latter primarily consisted of interest on leasing liabilities, hence the long-term leasing activities was the main contributor to the low net profit margin. In comparison, Torm's net profit margin was 22,90 %. Although Torm had a higher net profit margin than Norden Asset Management, it also had higher financial expenses of 14,2 USD million. However, Torm's EBIT was 70,1 USD million, thus the relationship between EBIT and its financial expenses were lower, resulting in a smaller effect on net profit in the period (Torm, 2020). Therefore, the difference between Torm's EBIT margin and net profit margin was less significant. Similarly, Norden Tanker Operator's net profit margin was not notably different from its EBIT margin, though this was due to the unit's very low financial earnings. As the Tanker Operator unit emphasize short-term leasing contracts, its leasing expenses are recognized in the income statement. Thus, these do not appear on the balance sheet, as the unit does not pay interest on leasing liabilities, to the extent extent, as the Asset Management unit.

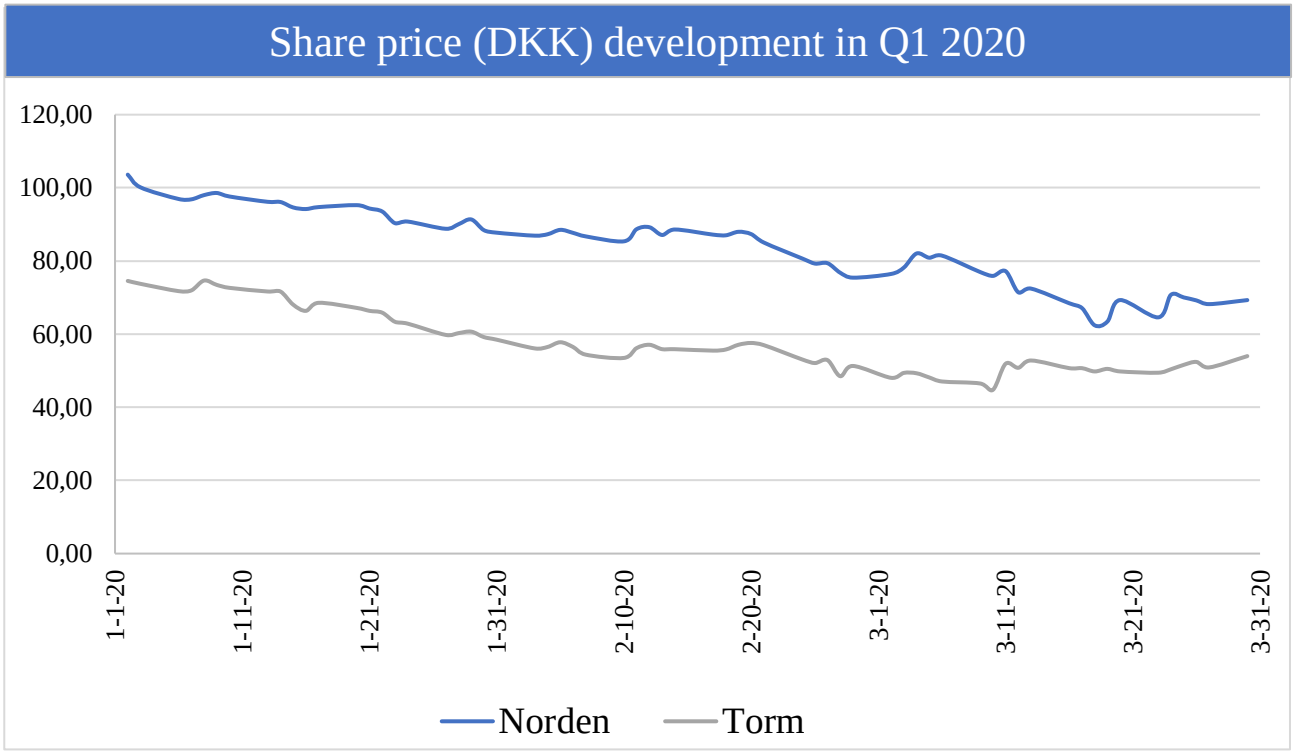
Based on these profitability ratios, it is evident that Torm has exceeded Norden's performance in nearly all these metrics, this applies to both Q1 2020 and Q1 2019. Thereby it can be argued that Torm's business model has had a better static performance than Norden's (Haggegé et al, 2017), although both companies have exhibited good profitability for Q1 2020. However, it can not be determined whether the same findings are transferable to dynamic performance, considering the short time period of this research.

6.3.3 Share price

To start with, it must be noted that Norden also operates in the dry bulk segment, thus the company's share price will, to some extent, mirror market conditions for both the product tanker and the dry bulk segment. However, as Norden employ the majority of their dry bulk vessels on T/C contracts, these are not as exposed to market fluctuations as vessels trading in the spot market. For this reason changes in Norden's stock price mainly reflects the exposure to the product tanker market as these vessels are operated in the spot-market. Therefore, it can be argued that a comparison between Norden and Torm's share price is an adequate measure of performance,

although Torm operates solely in the product tanker market. Further, in order to compare the two share prices it is important that these are stated in the same currency (Robinson et al., 2015), thus data of price development have been extracted in Danish Kroner (DKK).

Figure 6.3.1: Share price (DKK) for Norden and Torm during Q1 2020



Source: Extracted from Finance.yahoo.com. Own production.

Despite a strong Q1 with very high spot-rates, the share price for both Torm and Norden has fallen. Norden began the year with a share price of 103,60 DKK and by the end of the quarter the price was down to 69,30 DKK. For Torm the stock price started at 74,55 DKK and ended at 53,99 DKK. Based on these numbers, Norden had the largest drop of 33% from the beginning of the year to the end of Q1, whereas Torm's stock price experienced a decline of 28%. In examining the the graph below, it can be seen that both companies' share price fell from the start of January until early March, where the trend seems to shift. After mid-March Torm's stock price began to stabilize, this was similar for Norden, although its price fluctuated a bit more. The shift was concurrent with the OPEC+ fallout sending spot-rates to extremely high levels as floating storage increased demand for product tankers. In the time before March, the downwards sloping trend can be ascribed to the uncertainties following the COVID-19 situation. These uncertainties may have caused investors to become reluctant to buy or keep shares in the companies, as the outlook for oil demand was

dubious. Simultaneously, spot rates were quite high due to the market's expectations of IMO 2020, which may have induced shareholders to sell-out in attempt to time the market peak before it deteriorated. The declining stock prices compared to the positive performance in TCE earnings may not seem coherent, however, it can be interpreted as a result of the uncertainties prevailing the market during Q1. (Dampskibselskapet Norden A/S, 2020) (Torm, 2020)

6.1.4 Sub-conclusion

Sub-question 4: *How did the two business models perform financially after the implementation of IMO 2020?*

Based on the analysis of the financial performance measures, it is clear that both of the companies' business models have performed well during the first quarter of 2020. According to the TCE earnings, Torm and Norden exceeded their earnings reported during Q1 in 2019 and 2018. For Torm the total average of TCE earnings was 23.643 USD during Q1, while for Norden it was 19.501 USD for the Tanker Operator unit, and 15.466 USD for the Asset Management unit. Evidently, Torm received substantially higher TCE earnings compared to both of Norden's units. The reason for Torm's superior performance can be attributed to its presence in all vessel segments and the company's tactical decision to employ LR2 vessels in the crude market where spot-rates were even higher than in the product tanker market. Norden on the other hand, primarily operated Handysize and MR tankers, thus missing out on earnings from the larger vessel classes. Another reason for Torm's superior TCE earnings was related to its efficient management of the fleet through coordination across divisions which contributed to lower voyage costs. Lastly, Torm did not have to share revenues with pool members, this also supported the company's higher TCE earnings in Q1.

In terms of profitability Torm performed on a significantly higher level than Norden, considering EBIT, EBITDA and net profit margins. Based on the net profit margin, Torm managed to turn 22,90% of its total revenues into operating profit, whereas Norden's Tanker Operator had a net profit margin of 12,39% and Asset Management had a margin of 5,27%. In large, this difference in profitability can be ascribed to Torm's asset heavy model which enabled the company to capture all revenues from the strong Q1 market, as opposed to sharing them with pool members, such as Norden had to. Additionally, due to Torm's ownership of vessels, the company did not have any charter hire expenses, resulting in unusually high earnings. In total, this research found that both

companies' business models had a good static performance, though Torm's model achieved better profitability in Q1.

The price development of Torm and Norden's share price have largely correlated during the first quarter of 2020. The companies experienced a drop in share price from the beginning of the year to the quarter end. For Torm the decline was equivalent to 28%, while Norden's stock price fell 33%. The price changes in the stocks seem to have fluctuated in adjunction with market events, largely influenced by COVID-19 and the low oil price. From January to mid-March there was a downwards sloping trend in the share prices, likely explained by uncertainties among investors, arising from COVID-19. However, as demand for product tanker began to rise due to the low oil price and demand for floating storage, the negative trend in share price began to ease towards the end of Q1.

7.0 Conclusion

This research project has analyzed the business models of Norden and Torm to uncover how each of them have performed after the implementation of IMO 2020. The purpose was to gain knowledge of how the two models differ, and to understand why the two firm's have chosen their respective approaches. Four different frameworks have been applied, each connected to a sub-question, to answer this thesis' problem statement. Firstly, it was necessary to understand the market in which the business models of Norden and Torm operate. Therefore, a shipping market framework was used to analyze how the key drivers of the product tanker market interacted in order to understand the market condition in Q1 of 2020. Thereafter, by reviewing business model theory, value creation and value capture was recognized as two important aspects regarding the composition of a business model. These were used as a framework to evaluate Torm and Norden's business model. Moreover, each model was assessed to identify potential innovations through a framework encompassing innovation type, impact, reach and trigger, grounded in business model innovation theory. Lastly, financial metrics was employed to examine how the two business models performed in Q1 2020, in light of the market situation discovered through the shipping framework.

The findings from the practical analysis of the product tanker market, disclosed a very strong market in Q1 2020. Although, IMO 2020 was expected to have a great impact on the product tanker market in this quarter, the effect was offset by the two unique shocks which disrupted the market. Firstly, COVID-19 led to lowered industry activity, reducing the global consumption of refined oil

products. However, demand for product tankers remained in tact as the oil price decreased, following the dissolvement of OPEC+. This prompted floating storage of cheap oil, which in turned contributed to lower supply as fewer vessels was available for trading in the spot market. As a consequence, spot rates soared during the first quarter of 2020.

A thorough evaluation of the business models of Torm and Norden reveals that the greatest difference is related to the companies' chartering strategy. Torm's business model emphasize ownership of vessels, and these are employed in the spot market. On the contrary, Norden's business model has a larger focus on chartering in vessels through short-term and long-term leases. Another distinction between the two business models, is Torm's concentration on having a "one-stop-shop" for its customers, whereas Norden relies on commercial outsourcing of vessels through the Norient pool. Torm's decision to apply this asset heavy model was footed in the company's determination that ownership, in adjunction with commercial operations of vessels, will ultimately result in higher revenues as the company does not have to pay charter hire. Additionally, Torm prefers to have the opportunity to capture earnings from timely sales and purchase of vessels. Naturally, this model entails higher risk, compared to a more asset light model as Norden chose. Norden's rational was to reduce exposure to market fluctuations by being able to quickly increase and decrease its fleet. Supporting this risk aversion, was the company's decision to employ its vessels through the Norient pool.

In the time period between 2018 and 2020, there has been identified business model innovation in both of the companies' business models. Norden's business model innovation was quite sophisticated as it involved a novel way of structuring the company's core activities. This innovation had a medium level of impact as it was unique and thus new to the entire industry. Moreover, it was triggered by internal and external factors relating to performance and reducing Norden's exposure to volatility in the market. Conversely, Torm's innovation was triggered by the IMO 2020 regulations and entailed the entrance of a joint-venture to manufacture scrubbers. It was characterized as a component innovation considering that it gave the company a new resource, and an additional income stream. In sum, the venture was not novel to the industry, although it was new to Torm. Hence, the innovation was deemed to have a low level of impact on the competitive environment.

The first quarter of 2020 can be described as a very good quarter in terms of financial performance for both companies. This can be viewed in relation to the strong market that prevailed. For both Norden and Torm, TCE earnings were at a particularly high level, well above the earnings reported in 2018 and 2019, during the same quarter. Similarly, the profitability of the companies were good, compared to 2019. In comparing the companies, the research found that Torm had superior financial performance than Norden in Q1 2020, in nearly all measures. This difference can be attributed to Torm's asset heavy business model which enhanced its ability to capture value from a strong market. Regarding the value created for shareholders in Q1, the share price analysis discovered a falling trend for both companies, mainly due to uncertainties resulting from COVID-19. However, at the end of the quarter, concurrently with the escalation of the oil price war, the stock prices seemed to begin recovery.

8.0 Limitations and future research

This thesis has investigated business models in a shipping market during a period with extraordinary market conditions and an ongoing pandemic. Thus, the research solely provides information about how the distinct business models performed financially in a strong market, with generally high earnings across the product tanker market. Although the asset heavy business model outperformed that of an asset light model, this finding may not be directly transferable to a situation with weaker market conditions. Hence, it is suggested that future research look into the performance of business models in shipping during tougher market situations, to assess how the models respond. Accordingly, the authors highly encourage future research to explore how the business models perform during a full market cycle, reflecting all conditions after the implementation of IMO. Furthermore, this study has merely reviewed the business models of two shipping companies, Norden and Torm. It would be advantageous if future research assessed multiple firms in the product tanker market in a longitudinal study. This would gain deeper insight into how several models have performed, in attempt to determine if there exists a superior model.

As a final remark, this thesis has included a few elements from the dry cargo market through Norden's operations in this segment. However, the research has strived to exclude its effect on Norden's business model in the product tanker market. Despite this effort, parts of the analysis have been influenced by the dry cargo segment, especially with regards to the Asset Management business unit and Norden's share price. Hence, it is recommended that future research which look

into business models in the product tanker market, evaluate pure product tanker companies, or make sure that it is possible to separate a company's operations in different markets.

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10. Appendices

10.1 Interview guide Torm

Presentation of the interview

We are two Norwegian students enrolled in the MSc Finance and Strategic Management Programme at CBS. We are currently working on our master thesis which is aiming to understand Norden and Torm's business models and how these models have performed after the implementation of IMO 2020. The purpose of the interview is to gather relevant information that can be used to perform a comparative analysis of the two companies' business models. The interview will be conducted by Tonje Holan Marstein and Lene Boge.

Guiding lines for the interview

We would like to record audio of the interview, given that the interviewee consents to this. The recording will only be used to perform the analysis in our master thesis, and the recordings will be deleted immediately after the thesis is completed. We will not use the name of the interviewee in our analysis. The interviewee can choose not to answer questions as he or she finds appropriate and the interview can be stopped at the request of the interviewee.

Brief introduction

1. When did you start working for Torm, and how have your career developed within the company?
2. What are your core competences and responsibilities in the company?
3. How would you describe Torm's current position in the product tanker market?

Product tanker market

1. What was Torm's expectations for the product tanker market after first hearing about IMO2020? e.g. trade patterns, bunker costs, spot rates, etc.
2. How were these expectations aligned with first quarter of 2020?

Business model structure

1. What is Torm's business strategy?
2. How will you describe Torm's business model?

3. How can Torm's business model be distinguished from other companies in the product tanker market?
4. Why did Torm decide on an asset heavy business model? And how does this model benefit the company?
5. What does Torm consider the key advantages of being a combined shipowner and operator? And key disadvantages?
6. What group of stakeholders do Torm emphasize for creating value in its business model? And why?

Business model innovations

1. In recent years, has Torm made any significant changes to its business model? And why?
2. How did Torm begin preparations for IMO2020?
3. What solution is adopted within the product tanker segment to comply with IMO2020?
    - Why did Torm choose this solution?
    - How has this solution affected Torm's cost structure?

Performance in Q1 2020

1. How has Torm's business model performed financially in Q1?
2. How has the corona pandemic affected the performance of Torm's business model?
3. How has Torm's performance been affected by the low oil price prevailing the market?

10.2 Interview Guide Norden

Presentation of the interview

We are two Norwegian students enrolled in the MSc Finance and Strategic Management Programme at CBS. We are currently working on our master thesis which is aiming to understand Norden and Torm's business models and how these models have performed after the implementation of IMO 2020. The purpose of the interview is to gather relevant information that can be used to perform a comparative analysis of the two companies' business models. The interview will be conducted by Tonje Holan Marstein and Lene Boge.

Guiding lines for the interview

We would like to record audio of the interview, given that the interviewee consents to this. The recording will only be used to perform the analysis in our master thesis, and the recordings will be deleted immediately after the thesis is completed. We will not use the name of the interviewee in our analysis. The interviewee can choose not to answer questions as he or she finds appropriate and the interview can be stopped at the request of the interviewee.

Brief introduction

1. When did you start working for Norden, and how have your career developed within the company?
2. What are your core competences and responsibilities in the company?
3. How would you describe Norden's current position in the product tanker market?

Product tanker market

1. What was Norden's expectations for the product tanker market after first hearing about IMO2020? e.g. trade patterns, bunker costs, spot rates, etc.
2. How were these expectations aligned with first quarter of 2020?

Business model structure

1. What is Norden's business strategy?
2. How will you describe Norden's business model?
3. How can Norden's business model be distinguished from other companies in the product tanker market?

4. Why did Norden decide on an asset light business model? And how does this model benefit the company?
5. What does Norden consider the key advantages of its pools strategy? And key disadvantages?
6. What group of stakeholders do Norden emphasize for creating value in its business model? And why?

Business model innovations

1. In recent years, has Norden made any significant changes to its business model? And why?
2. How did Norden begin preparations for IMO2020?
3. What solution is adopted within the product tanker segment to comply with IMO2020?
    - Why did Norden choose this solution?
    - How has this solution affected Norden's cost structure?

Performance in Q1 2020

1. How has Norden's business model performed in Q1?
2. How has the corona pandemic affected the performance of Norden's business model?
3. How has Norden's performance been affected by the low oil price prevailing the market?