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Entry Into Emerging Industries

How should Norwegian companies enter the
emerging offshore wind industry?

Karianne Olsen
Linn Ornum
Martin Fauske Tho

Industrial Economics and Technology Management
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Supervisor: Arild Aspelund, IØT
Co-supervisor: Øyvind Bjørgum, IØT

Norwegian University of Science and Technology
Department of Industrial Economics and Technology Management

Problem Description

This thesis aims to answer how firms should enter emerging industries. The following research questions are introduced in order to answer this:

> *i) Do emerging industry characteristics influence a firm's industry entry?*
>
> *ii) In what way do characteristics of emerging industries affect industry entry among established and new firms?*

The offshore wind industry is examined to gain empirical data for emerging industries. An industry study, in addition to a multiple case study of Norwegian firms that have entered this industry serve as the foundation for empirical findings. These findings are anchored with theoretical perspectives, in order to give a valuable study on the topic of entry into emerging industries.

Preface and Acknowledgements

This master thesis is written as the final part of our Master of Science in Industrial Economics and Technology Management within the field of Strategy and International Business Development. The thesis was written for the research organization InNOWiC, and its research and writing process was conducted during the spring of 2017.

The master thesis explores how firms should enter into emerging industries. As part of this study, we have gathered empirical data from the emerging offshore wind industry and Norwegian firms that have entered this industry. The empirical data is analyzed and anchored with theoretical perspectives on industry entry and emerging industries in order to give valuable insights to firms and scholars considering entry into emerging industries.

Several people and industry actors have contributed in the process of writing this thesis. First, we thank Arild Aspelund and Øyvind Bjørgum, our teaching supervisors, at the Department of Industrial Economics and Technology Management (NTNU), for guidance throughout the process of writing the thesis. They have guided us through the writing process, interpretation of literature and data, and given helpful feedback.

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Karianne Olsen *Martin Fauske Tho* *Linn Zhou Ornum*

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Abstract

Purpose - The purpose of this thesis is to discover how firms should enter emerging industries. As these industries carry great economic potential, knowing how to enter and exploit this potential is believed to be valuable for firms facing such decisions.

Methodology - Empirical data from the emerging offshore wind industry is used, both through industry research and a multiple case study, to investigate emerging industry entry. Empirical findings will be anchored in theoretical literature on industry entry and emerging industries in order to generalize the findings.

Findings - It was found that the characteristics of emerging industries affect how firms view industry entry. The characteristics of uncertainty and risk, complexity, turbulence and capital requirements was observed to have the most significant impact on emerging industry entry. The study thereof conclude that having relevant pre-entry resources to cope with high technological complexity, and a flexible organizational structure is beneficial in order to handle industry turbulence. Further, network relations should be exploited in order to gain informational advantages and help find suitable partners. Moreover, new firms should enter early due to capital requirements, while established firms are recommended to delay entry due to industry uncertainty and preferably consider entry through a real options logic.

Implications - This study is believed to be valuable to managers of firms, both new and established, considering entry into emerging industries - as well as students and scholars. As the research is driven by empirical data and further anchored in theoretical literature on industry entry and emerging industries, this thesis contributes with insight into such industries.

Sammendrag

Hensikt - Hensikten med dette studiet er å finne ut hvordan selskaper bør gå inn i nyetablerte industrier. Siden industrier av denne typen har et stort økonomisk potensiale, mener vi at selskaper som står overfor en slik beslutning vil ha stor verdi av å vite hvordan de skal entre en slik industri for å utnytte dette potensialet.

Metode - Empirisk data fra den nyutviklede offshore vind-industrien har blitt benyttet til både et studie av industrien og en multiple case-studie, for å forske på hvordan selskaper skal gå inn i slike nyetablerte industrier. Empiriske funn vil bli forankret i teoretisk litteratur om hvordan å entre nye industrier, slik at funnene kan generaliseres.

Funn - Av analysen ble det funnet at kjennetegn ved nye industrier påvirker hvordan selskaper ser på inngang til slike industrier. Karakteristikkene usikkerhet og risiko, kompleksitet, turbulens og kapitalkrav var de som ble observert til å ha størst innvirkning på hvordan man entrer nyetablerte industrier. Masteroppgaven konkluderer derfor med at det å ha relevante ressurser før man entrer en slik industri for å håndtere høy teknologisk kompleksitet, samt at det å ha en fleksibel organisasjonsstruktur er nyttig for å håndtere turbulens i industrien. Videre ble det funnet at nettverksrelasjoner burde utnyttes for å oppnå informasjonsfortrinn, og er fordelaktig i prosessen med å finne passende partnere. I tillegg ser vi at nyoppstartede selskaper burde gå inn i nye industrier på et tidlig tidspunkt. Etablerte selskaper anbefales å utsette inngang på grunn av usikkerhet, og kan med fordel vurdere inngang gjennom realopsjonslogikk.

Implikasjoner - Dette studiet vil være verdifullt for bedriftsledere i både nyoppstartede og etablerte selskaper som vurderer inngang i nyetablerte industrier - i tillegg til forskere og studenter. Siden forskningen er drevet av empirisk data, som videre er forankret i teoretisk litteratur innenfor industri-inngang og nye industrier, vil denne masteroppgaven bidra med innsikt i slike industrier.

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Chapter 1

Introduction

In this chapter, the background for our thesis topic, research questions and its structure will be introduced.

1.1 Background

Emerging industries carry great economic potential. If an emerging industry matures, the firms and countries involved can be positioned for large economic growth. As established firms see expansion opportunities in other industries, some choose to enter these new business areas. This also applies to new firms, which see the apparent opportunities that can come with such industries. It is believed that scholars and firm managers find it valuable to gain a better understanding of how to enter emerging industries successfully.

One example of an emerging industry is the offshore wind industry (OWI). Here, an exponential growth in both capacity (MW), farm size, number of industry actors and investors have been seen during the 2000s (Wind Europe, 2017a). In 2016, onshore and offshore wind power became the second largest energy source in Europe (Wind Europe, 2017b). Offshore wind have seen massive cost reductions and have already reached cost level forecasts for 2020 (ORE Catapult, 2017).

Emerging industries are challenging to study as they can be difficult to detect, especially as a large number do not reach maturity at all (Forbes and Kirsch, 2011; Klepper and Graddy, 1990). The characteristics of emerging industries are hard to generalize, since they can take many forms and concern a great variety of products and services - much like industries in general. However, some characteristics are prominent. According to emerging industry literature, high uncertainty and risk, high complexity, and a turbulent business environment are typical traits for emerging industries (Bjørgum, 2016a; Forbes and Kirsch, 2011; Funk, 2010; Peltoniemi, 2011; Schwanitz and Wierling, 2016).

The main focus in the thesis is to give valuable insight into how firms should enter emerging industries. From this, we look into emerging industry characteristics, and industry entry in general. A theoretical framework consisting of emerging industry and industry entry literature will be applied. Empirical data from the OWI is further discussed and analyzed in depth together with the theoretical framework.

As several characteristics of the OWI can be directly applied to emerging industries, the OWI was selected as the area of research. With this, in-depth interviews with six firms engaged in the OWI serve as the empirical data foundation along with the industry study of OW. As a result, theoretical concepts from emerging industry literature can be linked to empirical data gathered from the emerging OWI in order to conclude on a favorable entry for emerging industries in general.

In order to answer the research questions (RQs) presented below, we will first provide our definition of industry entry. The definition will be applied throughout the thesis. This research show that firms enter the OWI through different investment approaches. Therefore, we have chosen to define industry entry as the time-lapse from a firm's initial active decision and investment in the OWI, until the time the firm is awarded with a contract.

1.2 Research Questions

To establish a better understanding of how firms should enter emerging industries, two RQs are formulated. These questions are used as a tool to break down the initial problem and thereby guide us towards answering how firms should enter emerging industries.

There exist an extensive amount of theory regarding entry into industries. From this, we need to understand whether characteristics of emerging industries influence industry entry or not. Therefore, the first research question is:

> *i) Do emerging industry characteristics influence a firm's industry entry?*

Emerging industries possess certain attributes that separate them from industries in general. Literature and empirical data show that emerging industries are characterized by uncertainty and risk, complexity, turbulence and capital requirements. In addition, entry theory argue that established and new firms possess different traits which influence their industry entry. Thus, if we find that emerging industry characteristics do affect firms' industry entry, the second research question is:

> *ii) In what way do characteristics of emerging industries affect industry entry among established and new firms?*

1.3 Purpose and Structure

1.3.1 Purpose

The purpose of this thesis is to discover how firms should enter emerging industries. Emerging industries carry great economic potential if they mature. Hence, knowing how to enter and thereby utilize the economic potential that emerging industries hold, is of great value for firms facing such decisions. While industry entry has been studied for a long time, emerging industries have been getting more attention only the last decades. With this, we also want to address the importance of studying emerging industry entry and contribute to strengthen this field of research.

1.3.2 Structure

In order to investigate how firms should enter emerging industries, both theoretical and empirical research have been conducted, followed by an analysis of the collected data. This is the foundation for the thesis, which will be presented in the following section, see Figure 1.1. Based on the research questions, a theoretical framework is constructed. Here, theories on emerging industries and industry entry, in addition to five theoretical rationales are introduced. Afterwards, we review the methodology of the thesis, and justify the research method, firm selection and industry data collection. In Chapter 4, we develop the industry study on the European OWI, to establish a contextual understanding of the thesis. Thereafter, we introduce the case companies individually before a multiple cross-case analysis is conducted. In Chapter 6, findings from our industry research and case firms will be discussed in relation with theoretical literature. Moreover, limitations to the study, implications for managers and further research are outlined. Last, we present the conclusion to summarize the main findings.

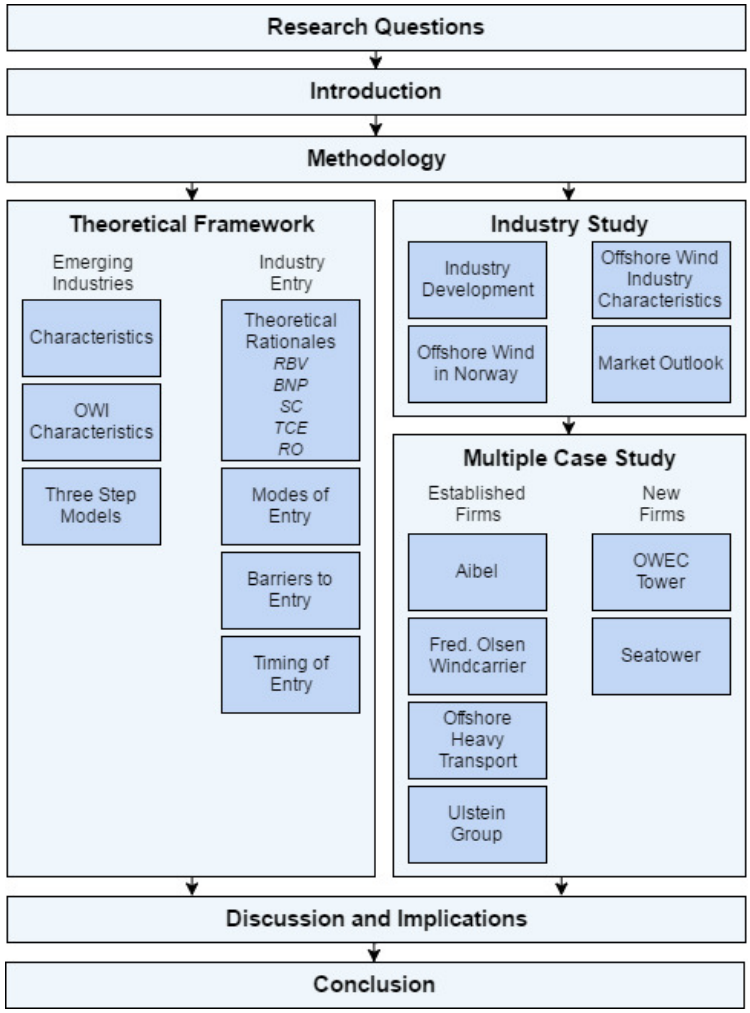


Figure 1.1: Structure of the master thesis.

Chapter 2

Theoretical Framework

In order to answer the research questions, a theoretical framework for industry entry into emerging industries was established. This was done by studying the concepts of emerging industry and industry entry individually. First, literature on emerging industries will be presented, where characteristics for emerging industries are in focus. Here, three step models to categorize the industry development are presented. Then, existing theory on industry entry will be presented. Theoretical rationales are introduced in order to facilitate a broader discussion on industry entry. Moreover, entry modes, barriers to entry and timing of entry will be explained. The structure of our theoretical framework is visualized in Figure 2.1.

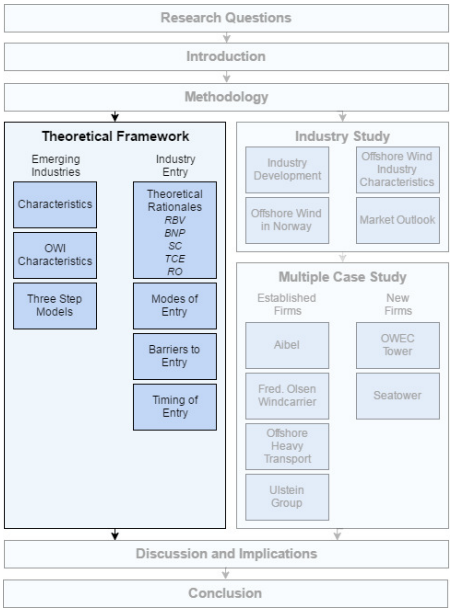


Figure 2.1: Structure of the theoretical framework.

2.1 Emerging Industries

Emerging industries are new industries which are in the earliest stage of development (Forbes and Kirsch, 2011). The concept of emerging industries is known under different names. "Introductory industry", "nascent industry", "new industry" and "embryonic industry" are all labels on the same concept (Bjørgum, 2016a; Klepper and Graddy, 1990; Santos and Eisenhardt, 2009). With this, Helfat and Lieberman (2002)'s definition of a "fundamentally new product or service" called "new-to-the-world" industry, is the most applicable definition in the context of emerging industries. According to Klepper and Graddy (1990), such industries can differ greatly in terms of the time it takes for the industry to mature, ranging from two years to fifty years.

Helfat and Lieberman (2002) state that new industries emerge due to a gap or discontinuity in product or service offerings. Gaps can be created by a product or service niche that develops towards becoming an emerging industry. New industries can also emerge due to incentives from actors such as governments (Möller and Svahn, 2009). Such industries carry great economic potential for industry participants if they are to mature. Therefore, governmental incentives such as subsidies can facilitate for the emergence of industries and thereby the possibility of economic profits (Möller and Svahn, 2009).

Literature concerning emerging industries is limited (Forbes and Kirsch, 2011). Since the 1990s, this type of industries have received more attention. However, little empirical research have been conducted, making it hard to determine the characteristics and hence favorable ways to enter such industries. One of the reasons that explain the limited literature is the difficulties tied to identifying emerging industries before they mature (Forbes and Kirsch, 2011). This makes it hard to conduct empirical research during the initial development of emerging industries. Moreover, emerging industries often fail, making them even harder to identify and study (Forbes and Kirsch, 2011).

2.1.1 Characteristics

Uncertainty and Risk

Although research is limited, some characteristics in emerging industries are prominent. One of the main characteristics of emerging industries is the high level of uncertainty and risk they suffer under (Funk, 2010; Gustafsson, Jääskeläinen, Maula and Uotila, 2016). The fact that the industry is emerging, imply that the structural frameworks are not fully established. Unstandardized industry processes in segments such as contracting structure, procurement processes, network structure and financing also increases the level of uncertainty (Aldrich and Fiol, 1994; Funk, 2010). Emerging industry uncertainty is also related to multiple factors such as the fact that such industries often are subsidy dependent and that there might be a lack of established actors and technological standards.

As emerging industries have not matured, the industry might be dependent upon governmental incentives such as subsidies, in order to survive. This increases the level of uncertainty, as the industry is not completely market driven. Political changes affecting the current subsidy policy can initiate a domino effect weakening or strengthening the sales argument for potential investors (Bjørgum, 2016a; Walker, Schlosser, and Deephouse, 2014).

Additionally, uncertainty can be a result of little cognitive and socio-political legitimacy due to a lack of established actors and technological standards (Aldrich and Fiol, 1994; Bjørgum, 2016a). Established actors entering an industry may imply that the industry is moving towards stabilization, hence reducing its uncertainty. Therefore, the initial phases of industry development, characterized by a lack of established actors, increases the level of uncertainty. Moreover, the a lack of technological standards might also enhance the level of uncertainty (Aldrich and Fiol, 1994; Forbes and Kirsch, 2011). With multiple firms developing their own technological solution in early industry development, some firms will fall short when other technological solutions evolves to become the technological standard.

Complexity

Many emerging industries are highly complex. This complexity can be related to the number of subsystems and the technological solutions (Aldrich and Fiol, 1994; Funk, 2010). The high number of subsystems is related to multidisciplinarity, meaning that multiple actors need to integrate their products and services in order to complete projects. Additionally, advanced technological solutions can also enhance the level of complexity present in emerging industries. According to Funk (2010), high complexity often result in the fact that industries need more decision making, a higher R&D focus and a higher level of involvement from the government. As a result of the high level of complexity, the level of uncertainty and risk among the industry entrants can increase significantly (Schwanitz and Wierling, 2016).

Turbulence

Turbulence is one of the characteristics that affect emerging industries considerably (Bergek and Jacobsson, 2003). Emerging industries are often technologically advanced, as well as suffering from the lack of dominant technological solutions (Forbes and Kirsch, 2011). This result in multiple actors developing different technological solutions, which increases the level of turbulence. For this reason, having a dominant design is one of the most important aspects of maturity, as it stabilizes the industry (Gustafsson et al., 2016). Additionally, the high frequency of industry entries and exits in the emerging stage - unlike other stages in industry development - create turbulence and uncertainty in the market (Peltoniemi, 2011).

2.1.2 Three Step Models

In order to better understand emerging industries, there have been made several attempts of dividing its development into different phases (Möller and Svahn, 2009). Gustafsson et al. (2016), Klepper and Graddy (1990), and Möller and Svahn (2009) divided the industry into three phases based on the lack of dominant technological designs, number of firms present in the industry and environmental characteristics, respectively.

Gustafsson et al. (2016) divide an emerging industry into three phases consisting of the *initial stage*, *co-evolutionary stage* and the *growth stage*. The initial stage is described as "disruption to the existing industrial order". The co-evolutionary stage is known as the phase after the industry has been formed, but before any dominant design is developed. Here, four sub processes explain the development in the fields of technology, markets, activity networks and industry identity. In the last phase, known as the growth stage, the dominant technological design is turning the emerging industry into a mature industry.

Klepper and Graddy (1990) also explain an emerging industry as a three-stage process. However, they label the phases *growth stage*, the *shakeout stage* and the *stability stage*. In contrast to Gustafsson et al. (2016), Klepper and Graddy (1990) construct the phase segmentation on the number of firms in the emerging industry at the time. In the growth stage, the number of firms acting in the industry is constantly growing. The shakeout stage is characterized as a phase where the number of firms decreases as the competition increases. The stability stage is distinguished by a stabilized number of firms in the industry, and thus a development towards constant prices and output, moving into the maturity phase of the industry.

The third type of phase segmentation is the "three key phases" based on environmental characteristics (Möller and Svahn, 2009). In the first phase, known as the *exploration for future business phase*, innovative ideas are explored and selected. The second phase, *mobilization for application phase*, addresses the time when similar technological designs compete for dominance either alone or through collaboration. Last, *Coordination for dissemination* is the final stage, where actors compete for distribution channels and industry entry time.

2.2 Industry Entry

We want to look at the theoretical industry entry segments "modes of entry", "barriers to entry" and "timing of entry", from different perspectives to enhance the quality of our research. Therefore, this section will first present five theoretical rationales. Afterwards, the three mentioned entry categories will be elaborated on individually. These categories will be discussed through both theory and empirical findings in Chapter 6.

2.2.1 Theoretical Rationales

Resource Based View

The RBV is a traditional theoretical framework, which explains how a firm's internal resources contribute to a competitive advantage (Coates and McDermott, 2002; Levitas and Ndofor, 2006). Supporters of the RBV believe that a firm's strategy and success depends upon its resource base, as it provide unique abilities. It is especially the exploitation of resources with VRIN-characteristics that are believed to provide a higher performance and competitive advantage. Therefore it is argued that a firm should seek to develop or obtain resources and capabilities which are valuable, rare, inimitable and non-substitutable (Levitas and Ndofor, 2006; Lockett and Thompson, 2001). Newbert (2008)'s empirical research supports the RBV as he discovered a strong correlation between a firm's competitive advantage and degree of valuable and rare resources and capabilities.

The definition of resources is broad in existing literature, and consist of all assets that are in the possession of a firm (Coates and McDermott, 2002). In this thesis, materials, processes, knowledge, both tangible and intangible will be acknowledged as a part of a firm's resource base. Capabilities is a term, which is often mentioned in RBV specific literature. In accordance with Lockett and Thompson (2001)'s definition, this thesis will define capabilities as dynamic resources, which describe a firm's ability to utilize its resource base.

The Business Network Perspective

The major part of the business network perspective (BNP) and its related theories are based upon the theoretical foundation created by the International Marketing and Purchasing (IMP) project and the research conducted by Håkansson and Snehota (Håkansson, 1982; Håkansson and Snehota, 1989; Håkansson, 1990; Snehota and Håkansson, 1995). This field of research is characterized by the way it accounts for why and how relationships change over time between actors in a dyad (Slotte-Kock and Coviello, 2010). The BNP argue that changes in a dyad[1] is the result of one or more of the following factors: (i) new combinations of resources and how they can be utilized and discovered by the actors, (ii) the constant search by actors to find opportunities that can better their position in relation to other important actors and (iii) the differing views of how actors see relationships (Snehota and Håkansson, 1995).

According to the BNP, networks are developing on a cumulative basis. This is an implication by the fact that new relations are continuously being developed, established, maintained and broken in order to better an actor's or firm's position in the network, as well as seeking satisfactory economic returns. Further,

[1] A dyad is something that consists of two elements or parts (Oxford Diary). Such as the relationship between two businesses.

this means that network change is propelled by factors that are endogenous to the firm (Slotte-Kock and Coviello, 2010; Snehota and Håkansson, 1995). The business network field argue that single actors do not control networks, neither is there a hierarchical structure. Business networks are thereof seen as an adaptive system of relationships that are continuously developed by the respective actors' network management (Ritter, Wilkinson, and Johnston, 2004).

In their seminal work, Håkansson and Snehota (1989) state that no "business is an island". This statement serves to explain that every business is intertwined in a network with a number of other organizational entities. This view imply that the boundaries of a business may not be as clear as proposed in general literature, where the business environment is often looked at as an external factor. The BNP looks at a business as a part of a larger whole with arbitrary boundaries, and that its performance and efficiency are highly related to how it manages its network relations (Håkansson, 1990). According to this view, it is important for a company to understand how it can relate its technological solutions and services to what is happening between and inside other organizations - such as potential partners, customers, competitors and suppliers (Håkansson, 1990).

Industry Entry Through a Business Network Perspective
Möller and Svahn (2009) state that business network relations can be used by actors to attain a heightened understanding of the industry they are in or want to enter. It is further argued that this understanding reduce the industry entry risk faced by the respective actor. In addition, networks can be utilized to decide which actors one should interact with in order to influence the respective industry network, and align it with own company goals. Actors with high influential power can leverage their influence so that the emerging industry networks will "adopt their technological solution" (Möller and Svahn, 2009). Often, subtle relations in a network is of great importance, since it sometimes is "necessary to reach out beyond the legal requirements in order to gain acceptance for a project" (Corvellec and Risberg, 2007).

Social Capital

The concept of social capital is described as the goodwill arising from social relations, which is possible to utilize in order to facilitate certain actions (Berg, Aspelund, and Sørheim, 2008; Adler and Kwon, 2002). Social capital can be seen as the accumulated amount of potential and actual resources that lie within a given network of relationships that are related to a social entity. Examples of such a social entity can be a single actor or an entire organization (Nahapiet and Ghoshal, 1998). The latter word "capital" signals that social capital can be viewed as an asset like other forms of capital - such as human, financial and physical capital. From this, actors and firms can invest in improving their social capital and expect future benefits. Networks and social relations are dependent

on new inputs and confirmation of existing relations. Thereof, social capital needs maintenance to uphold its relevance and usefulness for its respective actor (Adler and Kwon, 2002; Berg, Aspelund, and Sørheim, 2008).

Adler and Kwon (2002) present three perspectives on how to view social capital: *the bonding view*, *the bridging view* and *the neutral view*. These are elaborated upon in Table 2.1. It should be noted that when viewing an actor, an organization or a firm as either an internal or an external network relationship, one often simplifies the reality since impulses from internal and external entities rarely exclude each others presence.

Table 2.1: Social capital perspectives (Berg, Aspelund, and Sørheim, 2008; Adler and Kwon, 2002).

Social Capital Perspective	**Elaboration of Perspective**
Bonding	This view elaborate on collective entities (such as firms and organizations) and how these are internally structured. Further, this perspective can be used to understand how collective entities pursue a common goal.
Bridging	This view elaborate on individual actor and focuses on how that actor is connected to others.
Neutral	This view is neutral towards arguments of individual or collective and internal or external nature. Whether an actor entity can be seen as part of a internal or external network is a matter of perspective.

Burt (2000) argues for the importance of social capital in terms of capitalizing on human and financial resources. This entails that social relations and capital is an essential part in transforming resources into profit. It has been discussed whether social capital should be seen as an ability, or be defined as an opportunity on a more general basis. The background of this discussion is that having a large amount of social capital does not necessarily lead to a valuable resource, since a great part of the capital can be useless for a given actor or firm. In other words, a network of relationships is only useful when its resources and capabilities can be accessed by the actors within the network (Berg, Aspelund, and Sørheim, 2008; Adler and Kwon, 2002).

Further, it is stated that a higher level of social capital increases the amount of information that is available to an actor (Berg, Aspelund, and Sørheim, 2008). Informational advantages can prove to be essential for a firm in a complex actor

landscape - such as in industries with high uncertainty (Möller and Svahn, 2009).

Transaction Cost Economics

The concept of transaction cost economics (TCE), which can also be referred to as transaction cost theory, views firms as governance structures. According to this theory it is the transaction costs that define the boundaries of a firm (Hollensen, 2008). Coase (1937), arguably, first introduced the concept of TCE with the accompanying explanation that "(...) the costs of organizing within the firm will be equal either to the costs of organizing in another firm or to the costs involved in leaving the transaction to be "organized" (...)". Thus, a firm will expand their business as long as the transaction costs by doing so are lower than the costs associated with outsourcing their activities to external players in the industry.

TCE theory has later been refined by Tadelis and Williamson (2012), among others, who state that "when a good or a service is transferred across a technologically separable interface" it will incur transaction costs. Transaction costs are seen as the sum of the information processing necessary to coordinate the tasks of machines and people that operate the main processes within a firm. When added to the production costs, these costs make up the total costs for a firm (Hollensen, 2008).

The focus in TCE is whether a firm should use internal resources or cut costs by outsourcing activities. According to supporters of TCE, structural decisions can be determined by how a firm choses to minimize the incurred transaction costs. Such decisions can be when to internationalize activities, when to enter foreign markets or which market channel to select. According to Williamson (1989), a firm can choose between two strategies in general:

(i) Integrate vertically through internalization

(ii) Outsource activities through externalization

The strategy that is associated with the lowest transaction costs will be preferred.

The assumptions in TCE are associated with a firm's exchange of resources with the environment, and related to the following factors: opportunism, environmental uncertainty, risk, bounded rationality and company assets. Tadelis and Williamson (2012) state that these factors will affect how a firm's transaction costs will evolve over time and whether its activities will be kept in-house or not.

Entry Through TCE Logic

When following a TCE logic, firms will favor control, as well as minimizing the total transaction and production costs when entering an industry (Bjørgum, 2016b). The trade-off faced by firms selecting this approach is the desire for control over flexibility. One argument, which support the use of TCE logic is that

full control during industry entry can contribute to a better utilization of pre-entry resources. This is especially important if the firm holds expertise within certain fields that they want to exploit in an emerging industry. Further, some argue that industry entry through a high degree of control can respond rapidly to industry opportunities or threats, since they can make organizational changes instantly (Bjørgum, 2016b).

Entry Through Real Options Logic

Assessing a business opportunity through real options (ROs) logic is the opposite of using TCE logic (Bjørgum, 2016b). The ROs approach is based on small initial investments that give a firm the opportunity to follow up on the investments later, i.e. one buy the option of investing more later (McGrath and MacMillan, 2009). As this approach gives a firm the opportunity and flexibility to wait before a full commitment investment, it is often argued to be advantageous when entering uncertain industries. In fact, it is stated that: "... the more uncertain any project, the more it would benefit from real-options reasoning" (McGrath and MacMillan, 2009, p. 56).

Bjørgum (2016b) state that firms using the ROs logic during industry entry see flexibility as one of the most important factors in order to reduce risk and uncertainty in emerging industries. One example is when an investor forecast that industry uncertainty will decrease with time, and thereof wants the possibility to make a better decision in the future. Further, minor investments entail less risk since a firm can choose to scale up or down investments based on how the industry at hand evolve. On the other hand, the benefits of being able to delay decision-making comes with a cost. Firms who enter through small investments may miss industry learning possibilities, as well as having less power to influence strategic decisions (Bjørgum, 2016b).

2.2.2 Modes of Entry

A firm's mode of entry is described as their strategic process of entering a new industry (Forbes and Kirsch, 2011; Helfat and Lieberman, 2002). Different industry actors enter industries through various entry modes, which are dependent on certain firm characteristics. Helfat and Lieberman (2002) argue that industry entrants' choice of entry mode depends on factors such as pre-entry resources, entry capabilities and the importance of early entry.

Industry entrants are generally divided in two groups, either as new firms, or as established firms (Forbes and Kirsch, 2011; Helfat and Lieberman, 2002). In this thesis Helfat and Lieberman (2002)'s categorization of industry entrants will be used, which group firms according to their level of heritage and legal relationship to a parent firm. The entrant types are divided into three main categories:

diversifying entrants, parent-company ventures and new firms. Established firms can enter as a diversifying entrant or through parent-company ventures. New firms enter as stand-alone entities (Helfat and Lieberman, 2002). A specification of the entry modes are given in Table 2.2, where the different industry entrants' mode of entry and their relation to the parent company is shown. A brief explanation of entrant types and their choice of entry modes will be presented in the following sections.

Table 2.2: Industry entrants (Helfat and Lieberman, 2002).

Entrant Type	**Entry Mode**	**Parent Company Ownership and Legal Relationship to Entrant**
Diversifying entrant	Internal growth Acquisition	Full ownership and same legal entity
Parent-company venture	Joint venture Franchise Parent spin-off	Partial ownership and separate legal entity
New firm	Entrepreneurial start-ups Entrepreneurial spin-offs	No ownership and separate legal entity

Diversifying Entrants

An established firm who enter an industry through internal actions is a diversifying entrant. Through this type of entry, the existing parent company and the entrant are considered to be the same legal entity (Helfat and Lieberman, 2002). In this way, the parent company maintains full control and ownership after industry entry. According to Helfat and Lieberman (2002), a diversifying firm can choose between the two entry modes of internal growth or acquisition. Through the entry theory research, it is evident that internal growth and acquisition are the most common entry modes in the context of diversifying entrants.

During an industry entry, a firm may realize that it lacks required resources or competence (Helfat and Lieberman, 2002). Internal growth and acquisition are two different methods for an industry entrant to fill this resource gap. Through internal growth, the firm build needed resources and competence internally. This mode is often time consuming, and therefore not preferred when the timing of industry entry is crucial. A firm can also gain required pre-entry resources through an acquisition, where it purchases another firm and gain full control of it. This entry mode is often more time efficient compared to internal growth, as it allows the acquiring firm to gain immediate access to new resources.

Regardless of entry mode, there is a common understanding that a match between a firm's pre-entry resources and the required resources in the new industry is related to successful industry entry. As a matter of fact, diversification strategies encourage established firms to exploit their existing resources by expanding into related industry fields (Mitchell and Singh, 1992).

The RBV also support the importance and influence, which pre-entry re-

sources have on firms' choice of entry mode. Lockett and Thompson (2001) and Silverman (1999) found that a firm's choice of industry entry is highly influenced by its past resources and knowledge from similar industries. Silverman (1999) look at how diversifying entrants use their resource profile to choose which industries to enter. Through their work, it was found that a firm tend to diversify into industries that share similar expertise, resources and behavior patterns to their extant industry.

Through Bjørgum (2016b)'s work, firms considering entry into emerging industries are divided into two segments, either driven by a TCE logic or a ROs logic. He argues that firms who desire full control during their industry entry will choose entry modes such as internal growth or acquisition. In this way, the firms can respond to industry changes quickly, and utilize their expertise in certain ways without going through negotiations with partner firms.

Parent-Company Ventures

An established firm who choose to enter an industry as a parent-company venture must sacrifice some of their ownership and control compared to entry through diversification (Helfat and Lieberman, 2002). In contrast to diversifying entrants, parent-company ventures are separate legal entities set up by the established firm. As they are newly set up companies and simultaneously being controlled at various levels by the established firms, parent-company ventures are often described as hybrids between diversifying entrants and new firms. Helfat and Lieberman (2002) argue that a parent-company venture is often used when speed of entry is crucial, or the firm lacks critical pre-entry resources. Bjørgum (2016a) supports the previous argument, and states that a parent-company venture can provide the parent firm with necessary pre-entry resources in a time efficient way.

Further, Mitchell and Singh (1992) state that established firms often choose to enter industries through alliances. It is argued that through a collaborative entry mode, a firm can limit their investment exposure while gaining market shares and access necessary technological competencies. In addition, industry entry through either joint ventures or franchises can ease the entry process by providing access to the parent company's resources, while simultaneously limit their influence and biases when necessary.

Despite the seemingly obvious advantages of entering through collaborative entry modes, Mitchell and Singh (1992) argue for why this entry mode is not possible for all firms. The stronger the established firm is, the more attractive it is towards potential allies, and the better chance they have to choose among valuable partners. Therefore, strong established firms are more likely to enter new industries through collaboration in comparison to weaker firms.

According to Helfat and Lieberman (2002)'s categorization, a firm that enter a new industry through parent-company ventures can enter through one of three

possible entry modes: joint ventures, franchises or parent spin-offs, as shown in Table 2.2. Multiple firms who desire to share complementary pre-entry resources through collaborative alliances create joint ventures. Moreover, it is argued that financial interest usually exists among the collaborating firms, in addition to the sharing of board membership (Helfat and Lieberman, 2002; Mitchell and Singh, 1992).

Parent-company venture can also, as with joint ventures, involve franchises. This entry mode involve a franchisee, an established firm, as well as other potential partner firms. Through this entry mode, the parent-company's brand name and organizational routines are utilized by the franchisee. Without a parent firm, the franchisee would have to establish an organization by its own, without access to the valuable assets of an established firm (Helfat and Lieberman, 2002).

The last entry mode in the group of parent-company ventures is parent spin-offs. These spin-offs are created by the established firm as a separate entity. They are set up to benefit from the parent company's resources, while being able to separate itself from the parent brand name and potential parent company biases. Helfat and Lieberman (2002) argue that despite the apparently high independence among parent spin-offs, the parent company often have a representation among the board of directors in the spin-off.

New Firms

New firms entering a new industry have a limited resource base compared to established firms. Due to their lack of resources such as financial capital, Helfat and Lieberman (2002) argue that new firms have no other choice than to enter an industry as a stand-alone entity. Their limited resource base make them unfavorable for collaboration prior to entry, as they cannot provide any resource sharing or risk spreading for a potential partner firm. Despite their unattractiveness towards collaboration pre entry, Forbes and Kirsch (2011) emphasize the fact that collaboration after industry entry is possible and might be beneficial. After industry entry, new firms can obtain valuable resources such as industry knowledge. This way, alliances can be created as new firms offer industry knowledge, while established firms contribute with their resource base in terms of financial capital or technology (Forbes and Kirsch, 2011).

As stand-alone entities, Helfat and Lieberman (2002) distinguish new firm entrants between entrepreneurial spin-offs and entrepreneurial start-ups. Entrepreneurial spin-offs are founded by people who have experience and relations to the industry of entry. Hence, Helfat and Lieberman (2002) argue that these spin-offs often have founders who can contribute with valuable knowledge of markets, products and technologies during the process of industry entry. In contrast to the entrepreneurial spin-offs, entrepreneurial start-ups do not have founders with strong prior relations to industry of entry. Despite this lack of experience, Helfat and Lieberman (2002) argue that the founders influence the firm

through personal experiences and knowledge from the pre-entry period. These attributes will affect their choice of business practice in the newly entered industry.

Helfat and Lieberman (2002) argue that there is a misinterpretation of the implications of limited resources among new firms. The *founder effect* is described as the value that founders of new firms bring with them. This effect include characteristic personalities and prior experiences that shape the firm in the new industry. In addition, empirical studies show that new firms have a much higher entry rate [2] compared to established firms (Forbes and Kirsch, 2011; Geroski, 1995; Helfat and Lieberman, 2002). According to Mitchell and Singh (1992), industry entry always involve certain risks and uncertainties. Therefore, there exist a possibility to harm former investments, brand name or products among established firms. It is argued that an entry failure will harm an established firm more, as they have built up capital and reputation over a longer period. These associated higher stakes of industry entry among established firms can explain the empirical results of a higher entry rate among new firms (Mitchell and Singh, 1992). Despite the high entry rate, literature shows that new firms also have a lower survival rate when entering new industries (Forbes and Kirsch, 2011; Geroski, 1995; Helfat and Lieberman, 2002).

Choi, Lee, and Baek (2016) argue that new firms' lack of organizational experiences give them the favorable attribute of being adaptable and flexible in terms of environmental changes. These attributes are often beneficial in technology intensive and emerging industries. Without inherited resources and capabilities from parent companies, new firms tend to be more technologically advanced as they must depend on innovative traits.

2.2.3 Barriers to Entry

Several definitions of entry barriers or barriers to entry, exist. Church and Ware (2000) argue that an entry barrier can be defined as "a structural characteristic of a market that protects the market power of incumbents[3] by making entry unprofitable.". McAfee, Mialon, and Williams (2003) argue that barriers to entry theory has an intricate history in economics, and that it is important to make its cost aspect clear. They therefore choose to define barriers to entry and organize them into three categories - (1) primary, (2) ancillary and (3) antitrust barriers. (1) A primary entry barrier is a cost that on its own form a barrier. Meaning that such barriers concern costs faced by a firm considering entry, that incumbents did not have to incur. (2) Ancillary barriers deal with costs that reinforce other barriers if they are present, while not forming barriers on their own. An example is the case with industries that lack technological standards. A range of possi-

[2] Entry rate is defined as "the number of new firms divided by the total number of incumbent and entrant firms producing in that year" (Geroski, 1995).

[3] Incumbent firm; a firm that is already in position in a market (Oxford Reference).

ble technological options can potentially be invested in - each having various chances of profits, and hence selecting one entail opportunity costs. This may lead to delayed investments, and hence act as an ancillary barrier. (3) Antitrust barriers are costs that delay entry. Such barriers lowers social welfare compared to an immediate entry, although being equally costly. Investments needed to pass requirements and get permits from a regulating governmental entity is an example of an antitrust barrier (McAfee, Mialon, and Williams, 2003). Thereof, barriers to entry can be looked upon as high costs or other deterrents that prevent firms to enter an industry easily.

Incumbents will often have advantages arising from their head start within the industry. This will in turn protect their revenue streams from competitors, both from new entrants and old. As an implication, the ideas of first and early mover advantages are inherently linked to a firm's view on barriers to industry entry (Makadok, 1998). When a firm enters an industry as a first mover, benefits such as pricing and information advantages can be obtained, while also having the possibility to gain important market shares before the competition gets harder. It is discussed whether such benefits are sustainable in a given industry. The resulting indicators from Makadok (1998)'s research point out that these benefits can be sustained in terms of both pricing advantages and market shares. Barney (1991) add that for a firm to be able to sustain their first mover advantages in the industry, they have to be in control of a heterogeneous resource base. However, it is also stated that these kinds of sustainable first and early mover benefits and advantages are seen as rare in competitive industries in a long-term perspective (Barney, 1991).

Several barriers to entry have been discussed in literature. It was found that the most relevant industry entry barriers where those concerning informational advantages, cost advantages, economies of scale, regulatory barriers, capital requirements, pricing and advertising and uncertainty and risk (McAfee, Mialon, and Williams, 2003). These barriers are elaborated upon in Table 2.3. Their influence and nature will vary according to the characteristics of an industry.

Barriers to Entry in Emerging Industries

Literature on topics related to entry barriers in emerging industries was found to be limited. This can lead to difficulties in applying general barriers to entry directly to emerging industries. The only barriers that seem to have been discussed in direct relation to emerging industries are license fees and bureaucratic delay, which fall into the category of regulatory barriers category[4] (Bennett and Estrin, 2013).

Möller and Svahn (2009) state that emerging industries often carry great

[4]It is acknowledged that this can also be due to restrictions in our search algorithms. However, it is a general finding that the existing theory has significant limitations with regards to emerging industries.

economical potential for governments and other involved actors. Further, such industries often have the need for support, especially in the early phases, in order to develop. Therefore, regulations can be used to stimulate industry growth (McAfee, Mialon, and Williams, 2003). Regulatory barriers are often related to regulations and limitations put into action by an industry authority, such as governmental organizations. Such barriers can be licensing and government supported regulations, as well as taxes and tariffs that work in favor for selected firms. While being beneficial for some actors, regulations may also limit the entry opportunities for other potential entrants, thus forming barriers.

The levels of uncertainty and risk faced in emerging industries are often higher than in other industries. Political changes, governmental incentives, subsidies and a complex actor landscape are all factors that to some degree can contribute to heighten this type of barriers (see Section 2.1.1) (Forbes and Kirsch, 2011; Funk, 2010). Further, Funk (2010) argues that emerging industries with high technological intensity are associated with even higher levels of uncertainty as they often lack dominant technological designs and standards. Industry actors will then have to face the added risk of having their technological solutions excluded by future dominant designs in the mature phase. That being if their technology proves to be inferior to that of their competitors (Gustafsson et al., 2016).

Table 2.3: Barriers to entry (McAfee, Mialon, and Williams, 2003; OECD, 2007).

Entry Barrier	**Characteristics and Examples**
Absolute Cost Advantages	- Patented production techniques and superior products through R&D and industry learning (intellectual property). - Advantages in terms of location, such as a favorable plant location or easier shipping of resources.
Capital Requirements	- High capital investments needed in order to enter the industry. - High entry commitment for firms with limited capital to invest. - Potentially huge sunk costs.
Economies of Scale	- Incumbents lower costs by being able to produce greater volumes and attracting more customers. - Incumbents already operate in the industry, hence lowering production costs through standardization. - Incumbents have built plants maximizing efficiency in terms of scale. - Brand loyalty and switching costs apply, which makes it more challenging for entrants to gain market shares.
Informational Advantages	- Industry knowledge and know-how. - Asymmetrical information, i.e. information the competitors do not have.
Pricing and Advertising	- Price dumping. - Incumbent firms can make it challenging for potential entrants by investing heavily in advertising, which can make it hard for entrants to be noticed.
Regulatory Barriers	- Restrictions or other forms of regulations introduced by governmental institutions or another superior authority. - Subsidies and tariffs introduced by governmental institutions, favoring some firms over others. - Taxation.
Uncertainty and Risk	- Environmental industry risk. - When entering emerging industries, a firms profitability and chance of success is often related with a high level of uncertainty. - Risk related to number of entrants and competition.

2.2.4 Timing of Entry

According to Geroski (1995) and Helfat and Lieberman (2002), most firms enter an industry in the earliest phases of its development. Entry rates vary over time, but often peak in these phases. Helfat and Lieberman (2002) explain that despite a significant entry rate during the earliest stages, choices exist at many points during an industry's development, and therefore also in established markets. Any changes in technology, innovation, customer needs, or the state of business practice lead to new segments and thus entry options for firms (Helfat and Lieberman, 2002; Karlsson and Nyström, 2003). Timing can be crucial to the success of entry, especially into emerging industries (Agarwal and Bayus, 2004; Park and Kang, 2010). The decision of when to enter an emerging industry is based on different strategies and firm characteristics. For instance, established firms often evaluate variations in competitive conditions closely when deciding when to enter (Mitchell, 1989).

Many scholars support the first-mover advantage as a strategic argument for early entry (Agarwal and Bayus, 2004; Makadok, 1998; Park and Kang, 2010). According to Agarwal and Bayus (2004), the earlier a firm enter an industry, the higher the chance of survival. Park and Kang (2010) state that "firms considering entry into emerging, technology-intensive industries should invest at the earliest possible time to exploit the advantage of early entry (...)". This is also supported by Barney (1991) who explains that early entry is advantageous because of few competitors, leading to large market shares and potential pricing advantages. Moreover, a deeper industry knowledge and first choice of resources such as location, employees and customers, can be important success factors for industry survival (Makadok, 1998; Park and Kang, 2010).

There exist literature, which argue for the disadvantage of being a first-mover in an industry (Lieberman and Montgomery, 1998). In emerging industries with high market and technological uncertainty, being a first-mover might not necessarily be an advantage as it can facilitate for later entrants' free-riding on existing industry participants' investments in areas such as R&D (Lieberman and Montgomery, 1988). Gustafsson et al. (2016), state that this is emphasized by the lack of dominant technological designs, which is common in emerging industries. Mitchell and Singh (1992) support the theory through their empirical research, showing that established firms usually enter later, as they fear high levels of uncertainty and product cannibalization.

Chapter 3

Methodology

This paper serves to explore how firms should enter emerging industries. First, relevant existing theory on industry entry is combined with existing research on emerging industries in order to create a theoretical basis for the concept of emerging industry entry. Further, a systematic industry study of the European OWI, along with a multiple case study on Norwegian industry entrants was conducted. The industry study consists of data from industry reports, databases and research articles regarding the OWI, while the multiple case study was done using in-depth interviews with a heterogeneous group of six Norwegian firms that have entered the OWI. This way we gathered relevant and up-to-date empirical data on how to enter emerging industries.

In order to get a structured overview on the topic of how companies enter emerging industries, we followed a three-stage process. First, the scope of the paper was planned in detail by gathering relevant literature. Then, a review of existing research on industry entry, emerging industries and emerging industry entry literature was conducted. The procedure and methodology used in the preliminary literature review can be seen in Appendix A and B. Our literature findings were used to develop a theoretical framework, as well as developing the interview guide (see Appendix C) used in the multiple case study to ensure theoretical anchoring. Third, the introduced theoretical framework and industry study were put into context with the empirical data gathered through the multiple case study. Together, these elements form the basis for the thesis discussion, which reflects the proposed research questions.

3.1 Selection Of Research Method

In addition to the industry study, a qualitative multiple case research approach was adopted, targeting six Norwegian companies that are engaged in the OWI. These companies were selected in order to get a heterogeneous sample of both

new and established firms along the supply chain. The research method was selected based on the qualitative nature of the research questions, as well as the scope of the thesis.

In general, social research methods can be divided into two main areas - quantitative and qualitative methods (Bryman, 2008). Quantitative research methods emphasize collection and quantification of data in the analysis. Such research methods entail a deductive approach to the connection between theory and research. Often the main focus is testing proposed theories (Bryman, 2008). Quantitative methods are generally used when you have few variables and a big set of data points, and analyzed using statistical tools and numerical methods. Further, practices from the natural sciences, scientific models and positivism are used in particular, as well as viewing the social reality as an objective reality (Yin, 2013).

Qualitative research methods, on the other hand, emphasize expressed opinions rather than the quantification in the data collection. In general, such research methods focus on an inductive approach to the connection between theory and research, and the emphasis is put on the generation of theories. Further, this method is often used when you have a small set of data and many different variables (Yin, 2013). Qualitative research methods emphasize the importance of how individuals understand the social world - in contrast to the models from the natural sciences often used in quantitative research methods. One more characteristic is that quantitative research methods view the social reality as constantly changing, resulting from the property of individual creation (Bryman, 2008).

Each of the two research methods have advantages and disadvantages, and according to Yin (2013), the selection of research methodology is based on the following three factors: the level of control a researcher has over behavioral events, the nature of the research questions and the importance of current or historical events.

The aim of this thesis is to reveal how companies should enter emerging industries successfully. The research questions are thereof formulated as:

> *i) Do emerging industry characteristics influence a firm's industry entry?*
>
> *ii) In what way do characteristics of emerging industries affect industry entry among established and new firms?*

For this thesis, a qualitative research method was selected, by studying the OWI as a representative for emerging industries in general. The research questions were evaluated to be answered best through a qualitative approach. The research questions are hard to quantify in a satisfying manner, especially as the last question can be characterized as a "how"/"why" question. This makes it nearly impossible to control as the OWI, and its surrounding processes take place in

international and highly varying contexts. In order to assess the OWI in general, an industry study was conducted along with a multiple case study. The different companies that are being evaluated in this study each have different characteristics in terms of for example the level of internationalization, industry experience and historical background. Based on this, a qualitative multilevel study[1] was selected as the best research method option for this thesis.

3.2 Industry Selection Criteria

According to Forbes and Kirsch (2011) and Klepper and Graddy (1990), emerging industries can be difficult to discover, and further challenging to study. In order to find a suitable industry to study that can be characterized as emerging, we developed several criteria, as presented below:

- The industry must be identified as emerging.
- The selected industry has to be of international nature.
- The industry need to have the characteristics from introduced theory on emerging industries[2].
- The selected industry must follow a similar industry development as emerging industries in introduced theoretical literature[3].
- Norwegian firms should be identifiable in the industry at hand.
- The industry should have a research community in Norway.

It was found that the OWI possibly could serve as a good representative to study emerging industries. The selection of the OWI is further justified as an emerging industry in the discussion (see Section 6.1). As introduced, certain industry characteristics have been discovered. We found the most important and valid general characteristics for emerging industries to be uncertainty and risk, complexity, turbulence and capital requirements. Since the OWI adhere to the general characteristics, as well as following a similar industry development, we decided to study the emerging OWI in order to investigate emerging industries.

In addition, we wanted the results from this thesis to be as generalizable and applicable as possible. Therefore it was important that the selected industry was of international nature. The OWI is in accordance to this criteria. However, it was found that the OWI industry is most developed in the European countries. Hence, we decided to study the European OWI in particular.

[1] The multilevel study refers to that empirical data have been gathered both through an industry study and a multiple case study.

[2] These characteristics are related to uncertainty and risk, complexity and turbulence - as elaborated upon in Section 2.1.1.

[3] See three step models in Section 2.1.2.

It was seen as an advantage that Norwegian actors and research communities were present in the emerging OWI. This made the process of gathering empirical data less challenging, especially due to our collaboration with the research organization InNOWiC.

Although the selected industry has additional characteristics that are specific to the OWI, such as high capital requirements and long projects cycles[4], we found the OWI a good option for this thesis' study on entry into emerging industries.

3.3 Case Selection Criteria

The first step in the selection of case study companies was to construct a plan in order to link qualitative data to the research questions (Yin, 2013). The overall goal, which is also reflected through the research questions, is to investigate how companies should enter emerging industries successfully. To do this, an industry that shares several characteristics with the general emerging industry had to be used. As a result, it was found that the case firms should be engaged in the OWI. We selected Norwegian case firms in order to keep the process of gathering empirical data domestically.

In order to get as generalizable results as possible from Norwegian companies in the OWI, a heterogeneous sample of both new and established firms was selected across the OWI value chain. A multiple case design was selected due to the conviction that this approach will give more robust and compelling results. In addition, this design provides the possibility of comparing results across cases to find similarities or differences between case firms along the value chain in the OWI.

We looked into several firms and made inquiries to a total of eight firms. Before the inquiries were made, each firm was evaluated through relevant information available on the Internet[5]. Our selection criteria was that the case firms:

- Had to be established in Norway.
- They have entered the OWI within the past ten years (2007 - 2017).
- They have to be engaged in OW activities at the time of our initial interviews.
- The final selection of firms had to consist of both new firms and established firms.
- The mix of selected case firms should be diverse in terms of which mode of entry they used.
- The final selection of firms had to be a heterogeneous mix in terms of size and time of OWI entry.

[4]Specific characteristics are elaborated upon in Table 6.1

[5]In addition to OW news articles we used Proff.no, the respective firms' website, OffshoreWind.biz and OW databases such as 4C Offshore.

In addition to these criteria, we were limited to selecting firms that was available for in-depth interviews during our master thesis period - the spring of 2017. Based on the criteria and availability, six case firms were selected. These firms were the ones that fitted best to our initial criteria, given by the research questions, and were available for interviews.

3.4 Data Collection

3.4.1 Industry Study

In order to assess the OWI and create a contextual background for the thesis, we went through a number of OWI related articles and reports. This entailed an evaluation of the industry development, the characteristics that are applicable to the industry, how the Norwegian position is in the current OWI, as well as the market and industry outlook. Together with the multiple case study, the industry study form the empirical data foundation for the thesis.

It was found that the websites Offshorewind.biz, Renewable Energy UK and the international database on the OWI, 4C Offshore Wind, particularly useful for gathering industry information. After going through selected industry databases and searching for relevant articles using Web of Science, Google Scholar and Oria, we ended up with a final selection of 34 articles and industry reports, as can be seen in Table 3.1.

Table 3.1: List of articles and industry reports used in the industry study (see Chapter 4).

Author(s)(year)
4C Offshore (2015)
4C Offshore (2017)
Bergek and Jacobsson (2003)
Burkhard and Gee (2012)
Dedecca, Hakvoort, and Ortt (2016)
E24 (2016)
EIA (2016)
Energy Post (2016)
European Comission (2016)
Eurostat (2016)
EWEA (2016)
EY (2015)
Forbes and Kirsch (2011)
FTI Consulting, Inc. (2015)
Global Wind Energy Council (2016)
Jacobsson and Karltorp (2012)
Kern, Smith, Shaw, Raven and Verhees (2014)
Lehtovaara et al. (2012)
Markard and Petersen (2009)
Njøs et al. (2013)
NORWEA (2014)
NORWEA (2016)
Offshore Wind (2017)
Offshore Wind Works (2015)
ORE Catapult (2017)
Schwanitz and Wierling (2016)
Sovacool and Enevoldsen (2015)
Sun, Huang and Wu (2012)
Statkraft (2009)
Statkraft (2016)
Statoil (2016)
Wieczorek, Negro, Harmsen, Heimeriks, Luo and Hekkert (2013)
Wind Europe (2017a)
Wind Europe (2017b)
A total of 34 articles and industry reports

3.4.2 Multiple Case Study Interviews

Case study data can be gathered from several sources, and as stated by Yin (2013), these sources can be: archives, documents, interviews, direct observation, participant observation and physical artifacts. These data sources are classified into primary and secondary data.

Primary data gathered throughout this case study comes from in-depth interviews with the six case firms. Key persons, preferably top management or with extensive knowledge from each of the case firms, were contacted and interviewed. Through such interviews it is easier to investigate underlying causes, get more updated information and, if needed, get more controversial information about firms than what is publicly available through websites, videos and archives. Case study interviews are also a great tool when one wants to investigate characteristics about firms that may diverge from the proposed theory on a given topic of interest.

The secondary data have been gathered through browsing of public information on each of the case firms. This included among other sources: firm websites, annual reports, news articles, available interviews and relevant databases. The secondary data gathered was used to ensure the thesis validity through triangulation of multiple data sources. These data also gave us insights into each firm and helped us prepare the interviews and the respective interview guides.

First, a general interview guide was created in line with the proposed research questions. Some topics were relevant to all firms, while some had to be formulated differently or changed. Since each of the case firms have different characteristics, six interview guides tailored to the respective case firms was prepared. The general interview guide can be seen in Appendix C. The word *guide* has to be emphasized, as the questions are formulated in advance of the interview. Thereof, changes in the formulation of questions and answers logically will occur. In addition, each answer reflect the background and industry knowledge, and will change accordingly on an individual basis. The interview guide is therefore developed to allow for flexibility, while at the same time ensuring that important topics are discussed. The different questions and topics in the interview guide was also prioritized in order ensure that the most important subjects was discussed in depth.

Each interview was planned to be executed in one hour. Five out of six interviews were done in person, the sixth over a phone call. See the interview overview in Table 3.2.

Table 3.2: Interview overview.

Firm	Name / Title	Location	Method	Duration	Date
Aibel AS	Lars Henrik Hosøy *Business Development Manager Renewables*	Bergen	In person	1 hr 5 min	01.03.2017
Fred. Olsen Windcarrier AS	Anonymous *Firm representative*	Oslo	In person	57 min	14.03.2017
Offshore Heavy Transport AS	Torgeir Ramstad *CEO* Eirik Rieber-Mohn *Chartering Manager*	Oslo	In person	55 min	27.02.2017
OWEC Tower AS	Per Bull Haugsøen *Previous Business Development Director at OWEC Tower* *Currently Manging Director at Oceanvis AS*	Oslo	In person	1 hr	28.03.2017
Seatower AS	Petter J. Karal *CEO*	Oslo	In person	45 min	27.02.2017
Ulstein Group ASA	Per Olaf Brett *Deputy Managing Director Ulstein International AS*	Trondheim	Telephone	1 hr 10 min	24.02.2017

The six interviews followed a semi-structured design. This entails that while each interview followed an interview guide and topics set in advance, there were not necessarily a fixed order of the questions. This was done to make room for relevant and interesting digressions and discussions (Cohen and Crabtree, 2006). Each interview started out with a presentation of the thesis and scope of the interview, which was followed up by an introduction of the respective case firm. In agreement with each respondent, all of the interviews were recorded. In addition, notes were taken. Further, the interviews were transcribed in order to prepare the data for thorough analysis.

3.5 Data Analysis

The first step of the analysis process was to sort and classify each transcribed interview according to the introduced theoretical concepts and research questions in the thesis[6]. The findings were put into context with the empirical data gathered from the industry study. This resulted in a matrix of theoretical themes and case firms, which is similar to the qualitative analysis framework proposed by Bryman (2008, pp. 554-555). The analysis resulted in the tables presented in Chapter 5.3. According to Bryman (2008), this structuring of empirical data is necessary in order to get manageable data for further analysis.

After the initial sorting and classification, each interview was analyzed in depth. The sorted and classified interviews were analyzed across the six case firms. This was done using a cross-case analysis approach in order to search for patterns and generalizable case study results, which can be seen in Section 5.3.

[6]Microsoft Excel was used in this sorting and classification process.

According to Eisenhardt (1989), the idea behind cross-case analysis is to force researchers to go beyond initial impressions by structuring data and use diverse lenses. Eisenhardt (1989) further state that such tactics improve the chance of getting accurate and reliable data to build theories on, as well as increasing the likelihood of discovering the novel findings that may otherwise be hidden in the data.

In order to assure the validity of the analyzed in-depth interviews, the findings were also analyzed in the industry context. This was done using data from the industry study. According to Yin (2013), triangulation of data sources increase the validity of the research. From the industry study several characteristics were found to be apparent in the emerging OWI, most of which are also applicable in emerging industries in general. These common traits, along with the central theoretical perspectives introduced, formed the categories that were used in the analysis of the in-depth interviews.

The following categories were used to sort and classify the transcribed interviews and used for further analysis:

- General company information
- Mode of Entry
- Collaboration
- Uncertainty and Risk
- Complexity
- Turbulence
- Capital Requirements
- Relevant Knowledge
- Timing of Entry
- Network

3.6 Quality of Study

In this section the quality of our research methods used in the thesis will be evaluated. There are several sources of errors when conducting an industry and qualitative multiple case study regarding reliability, construct validity and external validity (Bryman, 2008; Yin, 2013).

3.6.1 Reliability

The reliability of the study concerns the quality and level of detail in the methodology, as well as to which degree it is possible to repeat and get the same results (Yin, 2013). In addition, clarification of whether the people that conduct the study can influence the results from the study is seen as important. According to Bryman (2008), it should be made clear that the scientists should not have any personal incentives or theoretical inclination towards influencing the research and the resulting findings.

Since this thesis is qualitative and exploratory in nature its results and findings may not be easy to replicate, as findings possibly will vary even if the same methodology is deployed. This factor is emphasized by the fact that a semi-structured interview approach was selected. It should also be mentioned that some information may be withheld due to confidentiality, which can lead to misunderstandings of case firm projects and industry contexts.

Further, the time frame of the case study was relatively short when compared to longitudinal studies that have the resources to follow the respective case firms over time following a longitudinal approach. A consequence of this is that valuable information that can only be observed by following the selected case firms over an extended time period may be overlooked.

During the selection of our cases, knowledge about the respective firms were limited and consisted of what we could find through conventional channels. Moreover, we did not have any previous relations to the interviewees. From this, our research approach can be looked at as neutral and unbiased. However, it should be noted that the interview guide was developed in accordance with our initial literature review[7], as well as our industry study[8]. This was done in order to triangulate and anchor our empirical findings with theoretical rationales and industry insights. To some degree, this made us as researchers influenced by the introduced theory and industry study when conducting the in-depth interviews.

For each case firm, only one representative was interviewed. Although each representative was selected based on criteria related to knowledge on entry and the OWI in particular, this can give rise to subjective bias. Since each representative may have its own understanding of the firm and the industry context, the empirical data can be colored by subjective meanings of a single employee that not necessarily is in accordance to the case firm as a whole. Moreover, firm representatives can sometimes view and display their own firm and its industry actions as more positive than it actually is. We made an effort to minimize these factors by doing a thorough firm background analysis, in addition to that the interviews were interpreted by three researchers and transcribed and analyzed together with other data sources.

Throughout the process of gathering and analyzing the empirical data it was focused on interpreting each interview without personal bias to ensure the credibility of our resulting findings.

3.6.2 Validity

According to Yin (2013), validity can be split into two categories: (1) construct validity, the integrity of the conclusions and constructs in the study, and (2) external validity, the area of application for the study and to which degree its findings can be generalized.

[7] See Appendix A and B.

[8] See Chapter 4.

Construct validity can be ensured through triangulation by using multiple methods of gathering data and referencing several sources of evidence (Yin, 2013). We followed these principals, gathering data through seminars, in-depth interviews, conferences, peer reviewed literature and a thorough background analysis through industry research[9]. We believe this strengthens the empirical analysis by supporting it with first hand industry experience, publicly available data and literature.

The external validity of this study is closely tied to how relevant the OWI is as an emerging industry and the number of interviewed case firms. By researching literature on emerging industries and industry entry, we believe that characteristics of emerging industries can be related directly to the OWI to a large extent. This is argued for in Section 6.1 However, some emerging industry characteristics can differ from the OWI. We therefore present limitations for the applicability of using the OWI as representative for emerging industries in general in Section 6.5.

Moreover, the relatively low number of participating firms might lead to that the empirical data gathered is to some extent more colored by subjective meanings and bias than a large data set with a greater number of respondents. In addition, all interviewed firms have entered the industry relatively successfully. This leaves out the potentially valuable experiences from all firms that failed to enter. Still, we find the empirical data foundation satisfactory in this context relative to the scope and time frame for this qualitative study.

After laying out aspects of the quality of the study and critical reflections, we still present the thesis study findings as significant and relevant to firms considering entry into emerging industries. In addition, regardless of the transferability to emerging industries, Section 6.6 gives valuable insights to managers considering entry into emerging industries and the OWI in particular.

[9]Databases such as 4C Offshore, relevant OW websites, industry specific research and news articles are examples of data sources used in in our background study.

Chapter 4

Industry Study

The mix of energy sources in Europe has started to change, and will continue to do so as we proceed into 2030 and further. These changes favor renewable energy, which will continue to grow at the expense of fossil fuels. Renewable energy is now the fastest growing energy source with an average annual growth rate of 2.6% (EIA, 2016). One exception being natural gas, which maintains its role in the energy mix towards 2030 (European Commission, 2016). The demand for electrical energy is constantly growing on a global basis. Countries with expanding populations and strong economic growth are forecasted to have an increase in energy demand by 71% from 2012-2040 (EIA, 2016).

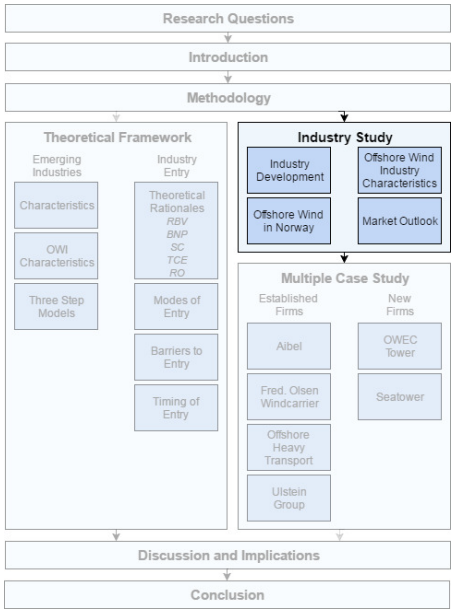


Figure 4.1: Structure of the industry study.

During the 2015 climate conference in Paris, COP21, 186 countries decided to target an emission free power sector within 2050[1] (Global Wind Energy Council, 2016). In addition, several climate goals put into action by the EU were targeted, one of which is for 20% of all energy consumption to come from renewables within 2020 (European Comission, 2016). When looking at the

[1]The conference was UNFCCC's (United Nations Framework-Convention on Climate Change) COP21 (21st Conference Of Parties) climate negotiations.

range of renewable energy sources - hydropower and wind are currently seen as those with the highest potential. The latter is divided into onshore wind and offshore wind, where offshore wind currently makes up 8.2% of the total wind capacity[2]. It is expected that these renewable energy sources will cover two-thirds of the global energy sources from 2012-2040. Renewables such as wind and other non-hydropower energy sources are particularly supported in several OECD countries. In Europe, this is done through governmental incentives such as market share quotas, feed-in tariffs, and tax incentives (EIA, 2016).

Further in this chapter, we will give a thorough overview of the OWI in Europe in order to create an industry study for our empirical research. First, the development of the OWI is presented. Then, characteristics of the OWI in specific is described. This will later be used in order to compare them to general emerging industry characteristics in our discussion in Chapter 6. Thereafter, OW in Norway is reviewed. This will set the context for our case firms, as all firm representatives are from Norwegian offices. Last, a brief overview of the market outlook of the OWI is given. The structure of the industry study is visualized in Figure 4.1.

4.1 Industry Development

In the nineties and early 2000s, the offshore wind power industry was characterized as being a niche industry (Markard and Petersen, 2009). Now, the industry has evolved and established itself as a late phase emerging industry, covering 11.1% of Europe's total energy demand (Dedecca, Hakvoort, and Ortt, 2016; Eurostat, 2016). When comparing the renewable energy sources, wind power has been the sector with the highest growth. The main constraint of wind power generation is the limited space onshore. Therefore, developing OW farms can be seen as the necessary next stage for the wind industry (Sun, Huang, and Wu, 2012). About 20 years ago, the first offshore wind projects (OWPs) were developed to test and to gain industry experience. Through rapid development of technology and governmental incentives, the number of turbines installed offshore have grown dramatically (Markard and Petersen, 2009). Since the first OW farm, Vindeby, was constructed in 1991, a total of 3,589 wind turbines have been installed (NORWEA, 2016). These wind turbines correspond to a total capacity of 12.6 GW, which can cover about 1% of Europe's current energy demand (EY, 2015; Wind Europe, 2017b).

The OWI has high development costs, which is one of its main challenges. Nevertheless, the industry has been given support from a range of governmental energy schemes. The reasoning behind the commitments to this uncertain and expensive industry have been made based on its great potential. According to

[2]The total installed wind power capacity in the EU are now 153.7 GW, where 12.6 GW is generated from OW farms (Wind Europe, 2017b).

Global Wind Energy Council (2016), it is argued that the industry potentially can be able to meet the energy demand in Europe seven times over. The new technology introduced by Statoil illustrates the readiness to invest in OW. In order to capitalize on offshore deep-water environments, they piloted Hywind, a floating wind turbine concept. The Hywind full-scale demo turbine was finished in 2009, and the first full-scale farm that is built with floating foundations, Hywind Scotland Pilot Park, is scheduled for its final commission during 2017 (Statoil, 2016).

Three Step Model - The Offshore Wind Industry

Based on the current OWI characteristics, it can be argued that the industry is in the third stage - market stabilization phase - following Dedecca, Hakvoort, and Ortt (2016)'s three step model, as depicted in Figure 4.2. Offshore Wind (2017) state that while the world's OWI is in its early stages, the European industry is the most mature with more than 20 years of experience. Following Dedecca, Hakvoort, and Ortt (2016)'s arguments, the characteristics of the OWI as a whole classifies it as being in the late emerging stage, which is described as the market stabilization phase (see Figure 4.2).

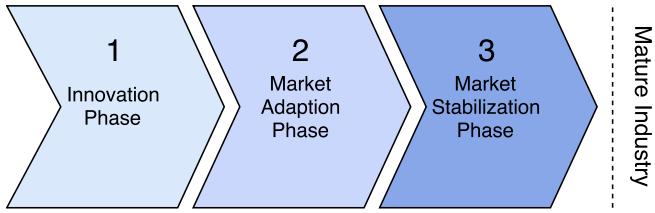


Figure 4.2: Three step model (Dedecca, Hakvoort, and Ortt, 2016).

Since the OWI was categorized as emerging, the industry has undergone significant changes. As a result, the industry development has been classified in three different phases. These phases are related to barriers and how the OWI has addressed them throughout its emerging phases[3] (Dedecca, Hakvoort, and Ortt, 2016). The first phase, according to Dedecca, Hakvoort, and Ortt (2016), is the *the innovation phase*. This is an experimentation phase. Several new firms entered the OWI during this first phase. Since the boundaries were still being formed, few incumbents were present in the industry at this stage. With a relatively high number of new firms, several technologies and innovations were developed. The firms drew large amounts of inspiration from the O&G sector, as well as from the maritime sector. Because of the large number of new firms and technologies, it was hard for firms to get sufficient investments in their respective innovative technologies. This resulted in high levels of risk and uncertainty

[3]Illustrated in Figure 4.2.

related to these early OW investments.

During the *the market adaption phase*, wind farms' sizes increased significantly, an exponential increase in both capacity per OW farm (MW) and number of farms can be observed, as illustrated in Figure 4.3. This development heightens the barriers related to capital requirements. More risk averse established firms entered the industry, indicating that barriers such as uncertainty and risk reduced from the initial phase. Several firms adopted the monopile-founded turbines with permanent magnet generators (PMGs), which was seen as progress towards a dominant design in the industry. While this was a success factor for firms that started using this design, several other firms were forced to exit during this phase, as they could not handle the transition from their inferior design to the more dominant designs. With that being said, it is argued that as the OWI develops into later stages, new technologies related to foundations and other technological concepts can outperform existing dominant designs.

According to Dedecca, Hakvoort, and Ortt (2016), the OWI is currently situated in the last phase of the emerging industry, *the market stabilization stage*. Here, an increasing number of established firms have entered the industry. Moreover, the mentioned design with monopile-founded turbines with PMGs has gained a solid foothold in the industry. Some parts of the industry value chain have, in this phase, reached commercialization. However, risk, uncertainty and cost related barriers still makes the OWI as a whole dependent on governmental support. The supply and value chain is more integrated, and hence diverging from the oil, gas and maritime sectors. Still, with the increasing size and complexity for the OWI and wind farms, the barriers related to capital requirements, multi-disciplinarity, risk and absolute cost advantages remain challenging for entrants. In addition, governmental regulations related to planning and procedures in developing new OWPs also make regulatory barriers relevant.

Several challenges still have to be looked into for the OWI to be able to compete against other renewable energy sources. Currently, the OWI is said to be ten to fifteen years behind the onshore wind industry. Hence, it is difficult to compare its position in the renewable energy sector to the onshore wind industry. Nevertheless, according to EY (2015), offshore wind has the potential to follow the success of onshore wind given the right conditions.

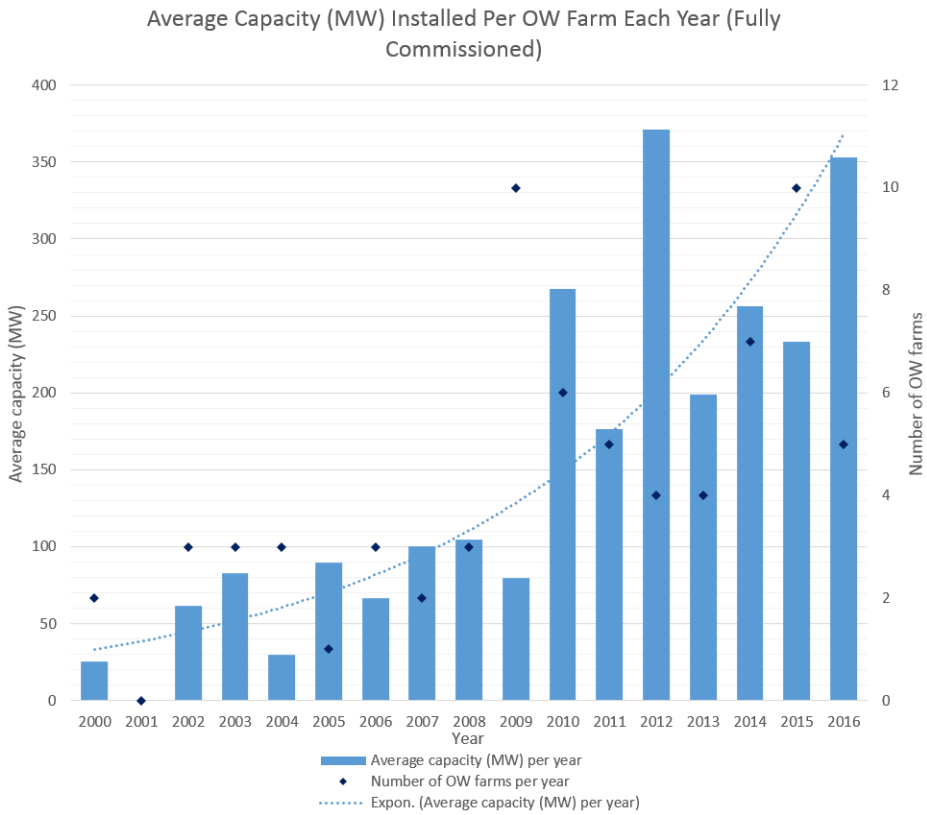


Figure 4.3: Average capacity (MW) installed per OW farm each year (Europe: 2000-2016). Shows the exponential increase in the size of OW farms and projects as the industry develops. Data gathered from 4C Offshore (2017).

4.2 Offshore Wind Industry Characteristics

The continuous increase in OWPs' size towards a viable commercial purpose, resulted in an increasing level of complexity, risk and capital requirements. In addition, the level of standardization in terms of components, contract structures and design is relatively low, which result in high production costs for firms (Offshore Wind Works, 2015). As a result, the OWI as a whole is currently dependent on subsidies, although some parts of the value chain is no longer as dependent. Thus, regulatory changes can affect the profitability in the industry, hence, making the industry more uncertain. In order to lower their costs in a long term perspective, firms often use a great portion of their resources and subsidies on R&D. This is done in order to reduce production costs, which is essential for the OWI to be competitive on the energy market. Further, according to Schwanitz and Wierling (2016), the following factors contribute to heightened

uncertainty in the OWI: construction and maintenance of newly developed technologies, challenges with operating in offshore conditions, subsidy dependency and changes in political regulations.

Multiple knowledge fields need to be integrated in OWPs. This need for multidisciplinarity creates an industry with numerous actors and subcontracts, and hence, a large and complex value chain. The complexity is emphasized by the following factors: time consuming planning due to large value chains, the national differences in planning, regulations and licensing procedures, as well as the wide range of components enhance this complexity (Dedecca, Hakvoort, and Ortt, 2016; Markard and Petersen, 2009; Schwanitz and Wierling, 2016). As a result, the OWI is known to have a complex actor landscape (Dedecca, Hakvoort, and Ortt, 2016).

4.3 Offshore Wind In Norway

During the last few years, the profitability in the Norwegian O&G sector has decreased. With the oil price being more than halved, approximately 40 000 job severance packages and terminations was seen within the industry (E24, 2016). The recession in the O&G industry has increased the incentives to evaluate other high technological and relatable industries, such as the OWI. Despite the fact that incentives for exploiting OW along the Norwegian coastline are weak, entry into the international OWI can be a great opportunity for Norwegian firms in order to expand their business activities.

According to Statkraft (2009), up to 99% of the total energy consumption in Norway is covered by hydropower. In addition, the unemployment rate is relatively low. Although the emerging OWI comes with great economic potential, new job opportunities and the possibility of capitalizing on offshore engineering solutions, the development of OW farms in Norway are not forecasted to happen in the near future (Statkraft, 2016). As a result, Norwegian firms invest internationally.

The OWI is expanding rapidly on an international basis (Dedecca, Hakvoort, and Ortt, 2016). An increasing number of actors from different nations are integrated in the OWI value chain. With the economic potential that comes with the industry, the countries involved may have incentives to keep potential economic growth and jobs concentrated in the domestic market. This was especially observed in the early phases of the OWI, where countries involved in OWPs did not want to outsource its core business activities to foreign actors. This made it harder for international actors to gain market shares in the countries with strong national incentives. As a result, firms had to go through local actors to get market shares in the domestic production country. This also applies to Norwegian firms that had to cooperate with or invest in local partners and offices to be considered a potential contractor.

4.4 Market Outlook

While conventional power sources such as coal and fuel oil proceed to decommission faster than they are installed, installed wind power capacity accounted for the largest increase of any power form in 2016[4]. In addition, wind surpassed coal as the second largest power generation form i 2016 - only beaten by natural gas[5] (Wind Europe, 2017b). This can be illustrated by the cumulative OW installations from 2000 up to 2016 - depicted in Figure 4.4.

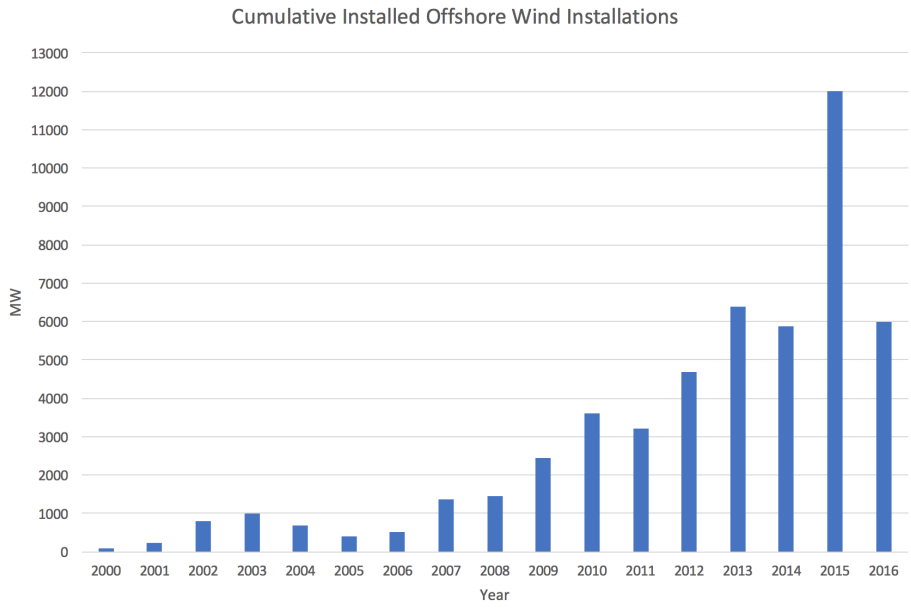


Figure 4.4: Cumulative offshore wind installations (2000 up to 2016) (Wind Europe, 2017a).

As stated by Wind Europe (2017a), a decrease in installed capacity was seen throughout 2016, when compared to 2015. Although this was the case, the high number of OWPs that started construction during the previous year means that the installed capacity will increase significantly during the next two years. However, there is some uncertainty related to the project pipeline closer to 2020, as the EU member governments completes their NREAPs[6] (Wind Europe, 2017a). This leads to a noticeable stall in added capacity throughout 2020 and potentially the next few years, as the total European OW capacity in 2020 will be 24.6GW (Wind Europe, 2017a). Still, a relatively good level of capacity building will

[4]Offshore Wind currently account for 8.2% out of the total installed wind power capacity (Wind Europe, 2017b).

[5]Numbers for the European Union 2005-2016.

[6]National Renewable Energy Action Plans.

continue.

While the OWI as a whole is still subsidy driven, this does not necessarily reflect all parts of the value chain. The cost levels have dropped dramatically and have reached cost levels way ahead of forecasted targets (ORE Catapult, 2017). UK show as a good example, where costs are reduced by 11% from 2010-2014. In addition, according to Energy Post (2016), costs related to OW can be reduced by 40% within the next ten years - leaving the industry capable of operating without subsidies. ORE Catapult (2017) state that the goals set by the UK government in 2012, namely that the LCOE[7] should be reduced by one third down to £100/MWh by 2020, was achieved four years ahead of forecast, as can be seen in Figure 4.5.

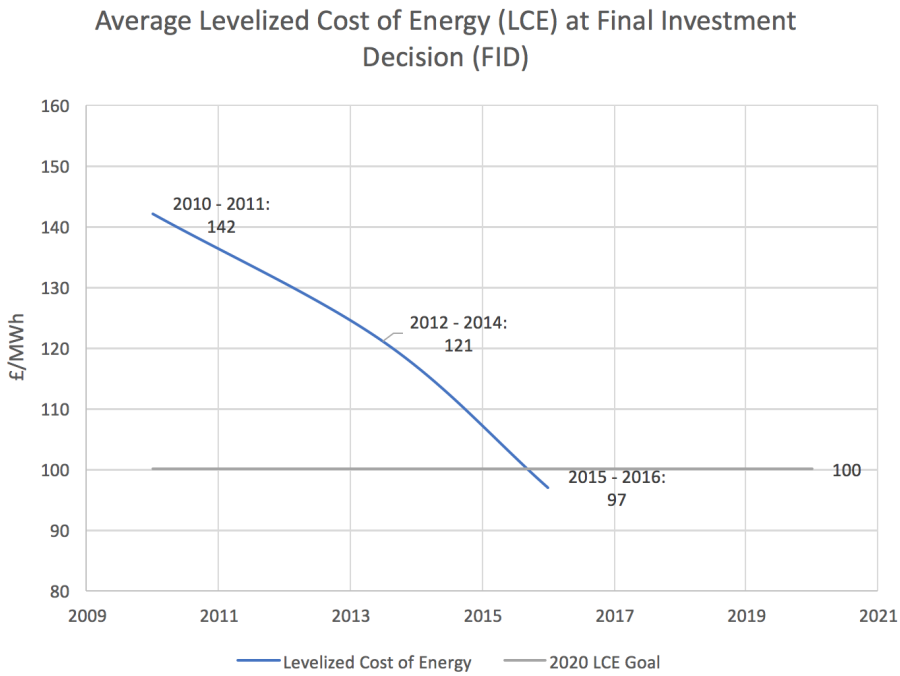


Figure 4.5: Average levelized cost of energy (LCE) at final investment decision (FID) (ORE Catapult, 2017).

General trends in the OWI is that the wind turbines are scaled up in size, OW farms increase in size and they are being put further from the shoreline (Wind Europe, 2017a). In addition, a drop in costs has been observed, as well as maintaining a continued focus on standardization. Further, the industry has seen an improved risk profile and the cost of capital have been reduced with the increased trust in the OWI. According to ORE Catapult (2017), the largest cost

[7]Levelised Cost of Energy.

reduction drivers have been technology developments and higher competition at the developer level in the value chain. The increased industry confidence have led to a larger mix of investors looking into OW, both corporate and financial, in particular overseas investors.

Chapter 5

Multiple Case Study

In order to further understand how firms should enter emerging industries, empirical data is gathered through in-depth interviews with six Norwegian case firms in the OWI. First, each case firm is introduced to give an overview of the firm selection and firm characteristics used in the following analysis. Afterwards, findings from the cross-case analysis, which are divided into five subcategories, are presented: Mode of Entry, Industry Characteristics, Network, Relevant Knowledge and Timing of Entry. The structure of the multiple case study is visualized in Figure 5.1.

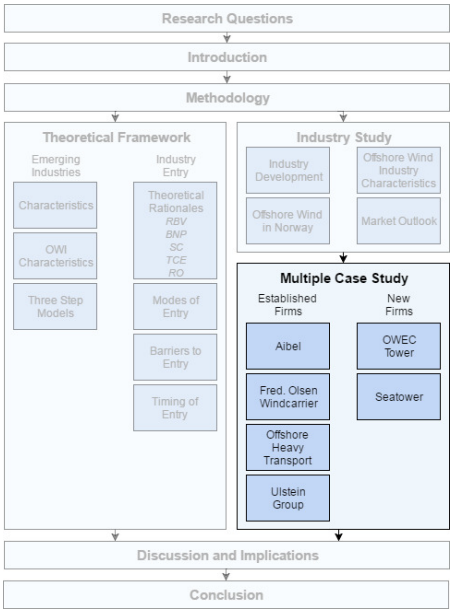


Figure 5.1: Structure of the multiple case study.

5.1 Case Firms

5.1.1 Aibel AS

Table 5.1: Key facts about Aibel AS (Aibel, 2017; Proff.no, 2017a).

Owner	Ferd(50%), Ratos(32%), Swedish Pension Fund(18%, managed by Ratos)
CEO	Mads Andersen
Founded	2007
Headquarter	Stavanger, Norway
Products and Industry	Oil & Gas, Offshore, Renewable Energy, Offshore Wind (Modifications, Yard services, Field Development and Renewable Energy)
Operating Markets	Norway, Denmark, Singapore, Thailand
Number of Employees	4300
Subsidiaries	No current subsidiaries

Aibel was established in 2007, and is a Norwegian company that delivers projects and solutions within the fields of O&G and renewable energy. The company has roots going back more than a century. Aibel have extensive knowledge on offshore projects that dates back to the first oil extraction from the Norwegian continental shelf. Currently, they are engaged in projects that involve almost half of all offshore platforms in Norway. Aibel entered the OWI in 2010, and had their first project on the Dolwin Beta AC to DC wind converter platform. In close collaboration with ABB, Aibel designed and built the platform. Dolwin Beta was installed in a large OW cluster in the German sector of the North Sea. In addition to this, Aibel won a contract for Statoil on the prestigious Hywind Scotland Pilot Park in 2014.

5.1.2 Fred. Olsen Windcarrier AS

Table 5.2: Key facts about Fred. Olsen Windcarrier AS (Fred. Olsen Windcarrier, 2017).

Owner	Fred. Olsen Ocean Ltd.
CEO	Even Dahl Larsen
Founded	2008
Headquarter	Oslo, Norway
Products and Industry	Installation of offshore wind turbines and foundations, in addition to transport and maintenance of offshore wind farms
Operating Markets	United States, Germany, Belgium
Number of Employees	830
Subsidiaries	Global Wind Service A/S Fred.Olsen Windcarrier A/S Fred.Olsen Windcarrier Holding Ltd Fred.Olsen Windcarrier Ltd Fred.Olsen Windcarrier Gmbh

Fred Olsen's engagement in environmental friendly technology encouraged the company to look for business opportunities in the OWI through 2005-2006. Fred. Olsen Ocean Ltd acquired the ship design company Windcarrier, in order to establish Fred. Olsen Windcarrier in 2008. Later, an order for the two purpose-built transportation and installation vessels, Bold Tern and Brave Tern were placed by Fred. Olsen Windcarrier in 2009.

Today, Fred. Olsen Windcarrier deliver a wide scope of services within the OWI such as installation of offshore wind turbines, in addition to transport and maintenance of OW farms. Up until now, they have installed more than 220 turbines, covering approximately 50% of all installed OW turbines in Germany. Fred. Olsen Windcarrier can provide integrated solutions and services for their OW industry clients, as they can draw on strengths and experiences from other Fred. Olsen related companies. There are two related Fred. Olsen related companies, which are especially relevant. The first company is a subsidiary of Fred. Olsen Ocean Ltd, called Universal Foundation. They provide design, project management and engineering expertise. In 2009, Fred. Olsen Windcarrier acquired a 51% stake in Global Wind Service (GWS), one of Europe's largest suppliers of turbine expertise and services to wind farm projects. Up until now, Fred. Olsen Windcarrier have exploited the competence of GWS by cooperating with them in 5 out of 6 OW installation projects.

5.1.3 Offshore Heavy Transport AS

Table 5.3: Key facts about Offshore Heavy Transport AS (OHT, 2017; Proff.no, 2017b).

Owner	Spencer Finance Corp. (66.7%) Lotus Marine AS (33.3 %)
CEO	Torgeir Ramstad
Founded	2007
Headquarter	Oslo, Norway
Products and Industry	Semi-submersible heavy transportation for O&G industry, OWI, and other industries.
Operating Markets	World wide, with satellite offices in Singapore, Busan, Shanghai and Houston
Number of Employees	25
Subsidiaries	OHT Albatross AS OHT AS OHT Eagle AS OHT Falcon AS OHT Hawk AS OHT Osprey AS

Offshore Heavy Transport AS, (OHT), was founded in 2007, and currently consist of 25 employees. OHT was initially a company that transport large and heavy construction components for the offshore O&G industry. Their business activities entails the operation of five open deck semi-submersible heavy lift vessels. OHT chose to enter the OWI due to a desire to expand into related sub-fields. In 2016, OHT signed a contract with Technip (now Technip FMC), making them responsible for the transportation service of the Hywind Scotland Pilot Park. This was OHT's first task within the OWI, where they will use their existing lift vessel the "Eagle" to execute transportations. Today, they are developing a transportation and installation vessel for the OWI.

5.1.4 OWEC Tower AS

Table 5.4: Key facts about OWEC Tower AS (OWEC Tower, 2017; Proff.no, 2017c).

Owner	Keppel Ventus BV
CEO	Johan Ulric Fredriksson
Founded	2004
Headquarter	Oslo, Norway
Products and Industry	A foundation concept called the OWEC Quattropod, which include a complete substructure, and a middle section and jacket foundation for support.
Operating Markets	United Kingdom, Germany, Belgium, France
Number of Employees	5
Subsidiaries	No current subsidiaries

The Norwegian entrepreneurs Per Bull Haugsøen and Gunnar Foss established OWEC Tower AS in 2004. With experiences from foundations in the O&G industry, they started exploring solutions for foundations for OW through 2001-2002. In 2004 they filed a patent for their solution on a jacket based offshore wind turbine foundation, OWEC Quattropod. This technology is the company's primary product, which consists of a complete substructure concept, including a jacket foundation. This concept is especially suitable to support heavy turbines in difficult areas, such as deep water and demanding soil conditions, and is the only proven substructure with pre installed piles. In addition, it is designed to be adaptable to different foundation concepts, such as gravity based, suction buckets and drilled piles. OWEC Tower entered the OWI through the Beatrice project in Scotland in 2006. Since their entry, OWEC Tower have installed 86 foundations for three other offshore wind farms. Today, OWEC Tower is a wholly-owned subsidiary of Keppel Ventus BV.

5.1.5 Seatower AS

Table 5.5: Key facts about Seatower AS (Seatower, 2017; Proff.no, 2017d).

Owner	Prima Ocean AS(39.21 %), Electranova Capital(27.13 %)[others under 10%]
CEO	Petter Karal
Founded	2007
Headquarter	Oslo, Norway
Products and Industry	Gravity Foundations for Offshore wind turbines
Operating Markets	France, however focusing on business oppertunities all over Europe
Number of Employees	6
Subsidiaries	No current subsidiaries

Seatower AS is a Norwegian company, established in 2007 and consist of 6 employees today. Petter Karal, current CEO, along with some co-employees from the gas company Anchor Contracting, founded the company. Seatower's activities are fully within the OW sector, where they offer self-installing gravity foundations for OW turbines. The technology is based upon principles from the O&G industry, and shows that experiences from the oil and gas can be applied to the OWI. EDF Energies Nouvelles and DONG Energy owned Seatower's first project, Fécamp in France. According to Karal, the project was a result of Seatower's new French owner. The gravity-based foundations carried out in 2015 were installed in the British Channel.

5.1.6 Ulstein Group ASA

Table 5.6: Key facts about Ulstein Group ASA (Ulstein Group, 2017; Proff.no, 2017e).

Owner	Ulsmo As (57.69%), Naustneset As (16.89%), Bakkely Invest As (6.92%), Borgstein As (3.85%) [Andre under 3%]
CEO	Gunvor Ulstein (Ulstein Group ASA) Tore Ulstein (Ulstein International AS)
Founded	1999
Headquarter	Ulsteinvik, Norway
Products and Industry	Shipbuilding, Design & Solutions, Power & Control, Global Sales, Shipping
Operating Markets	Norway, Poland, Netherlands, Croatia, China, Singapore, Brazil
Number of Employees	700
Subsidiaries *(Under Ulstein Group ASA)*	Ulstein Verft AS and Ulstein Elektro Installasjon AS Ulstein Design & Solutions AS Ulstein Design & Solutions BV and Ulstein Equipment BV Ulstein Poland LTD SP. Z.O.O. and Ulstein Power & Control AS Ulstein Marine Equipment (Ningbo) CO Ltd. Ulstein Electrical Technology (Ningbo) CO Ltd. Ulstein Belga Marine Ltda. Ulstein Marine Systems (Shanghai) CO Ltd. Ulstein Asia Pte Ltd. Ulstein South America Servicos Ltda Ulstein International AS Ulstein Shipping

Ulstein is a family owned Norwegian company that was established in 1999. The origin of the company goes back to 1917, when Ulstein Mech. Workshop was established. Ulstein is a parent company that is engaged in ship design, shipbuilding, maritime solutions, power and control and shipping. Historically, the maritime firm has focused on the O&G industry. They have a strong focus on delivering innovative designs, which is proved through their development of the X-Bow and X-Stern technologies among others. After following the development of the industry closely since 2009, Ulstein entered the OWI by building and designing OW service vessels in 2014. The OW ships delivered so far are related to installation support, construction support and service operation. In addition the company have designed a next generation jack-up vessel, SOUL, in collaboration with the Dutch company SeaOwls.

5.2 Timeline

The timeline presented in Figure 5.2 show milestones for the six case companies as they entered the emerging OWI.

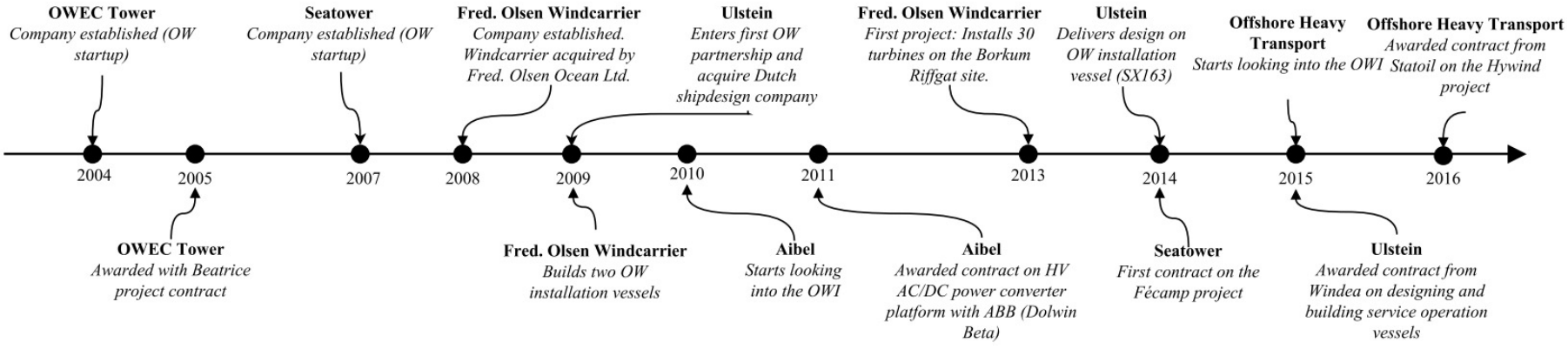
The early entrants, OWEC Tower and Seatower, were established in order to capitalize on the emerging OWI. OWEC Tower was the first firm to enter the industry by far in 2004. Fred. Olsen Windcarrier was established after Fred. Olsen Ocean Ltd. acquired Windcarrier in 2008. After this, they chose to enter the industry swiftly by building two installation vessels without a contract in place. These vessels were utilized in 2013 on the Borkum Riffgat site.

Ulstein chose to follow the industry closely for several years before they considered investing in a full commitment to the OWI. They positioned themselves by acquiring a ship-designing company, which could also be utilized in their existing business operations in the O&G industry. They got the first contract in 2014, and in 2015 Ulstein won the contract on designing and building service operation vessels with Windea. In 2011, Aibel won the contract on the power converter platform, Dolwin Beta. Aibel collaborated with ABB by using ABB's electrical system in their foundation design. Offshore Heavy Transport awaited their entry until 2016. They decided to enter the OWI by using existing vessels in order to gain industry experience, and position themselves for future investments in the OWI.

One trend, which is evident from the timeline, is the fact that the new firms entered early and that the established firms delayed entry by several years. This observation is in accordance with existing industry research and can be directly related to the findings made by Dedecca, Hakvoort, and Ortt (2016)[1]. The observation is also in coherence with the three step model[2], as well as Figure 4.3 - showing the exponential increase in OW farm size and number of farms. New firms enter early due to lower capital requirements and to gain industry knowledge (Erikson, Løvdal, and Aspelund, 2015; Dedecca, Hakvoort, and Ortt, 2016). On the other hand, established firms are often more risk averse, as they face a bigger loss in the event of entry failure. Therefore, they usually delay their entry due to OWI characteristics such as uncertainty and complexity (Dedecca, Hakvoort, and Ortt, 2016).

[1] See Section 4.1 on industry development in the Empirical Background.
[2] See Figure 4.2.

Figure 5.2: Timeline for the case firms.



5.3 Cross-Case Analysis

In order to execute the cross-case analysis, findings from the firms' transcribed interviews were compared within the following categories: Mode of Entry, Firm Collaboration, Industry Characteristics, Network, Relevant Knowledge and Timing of Entry. Tables that summarize empirical findings are presented for each category.

5.3.1 Mode of Entry

One main finding concerning the case firms was the fact that all established firms entered the OWI through diversification. Specifically, they entered through internal growth, by utilizing relevant pre-entry resources to build up necessary competence internally. It should be emphasized that some firms made acquisitions or established joint ventures prior to their industry entry. Nevertheless, they all entered as stand-alone firms during their actual OWI entry. In addition, Table 5.7 show that different past experiences result in diverging perceptions on the entry modes of acquisition and joint venture.

Table 5.7: Cross-case results related to modes of entry.

	Findings (Categorized)	
Case Firms	*With valuable pre-entry resources, firms were able to diversify into the OWI through internal growth.*	*The case firms show diverging perspectives on the entry modes of acquisition and joint ventures.*
Aibel	Established a new business unit by using internal resources, and therefore did not need to use a lot of extra resources.	
Fred. Olsen Windcarrier	Fred. Olsen Windcarrier exploited ship designs from Windcarrier, in addition to their parent company's equity and past industry experiences to enter the OWI.	Fred. Olsen Ocean acquired Windcarrier to gain relevant ship designs. After this, Fred.Olsen Windcarrier was established, and able to enter the OWI successfully.
Offshore Heavy Transport	Could use an existing transportation vessel in their OWI entry.	Favor cooperation over acquisition in order to gain necessary competence. OHT view acquisition as a volatile investment.
OWEC Tower		Considered to establish a joint venture with a Danish firm to increase their engineering capacity. This joint venture was later called off as the two firms found it challenging to come to agreements.
Seatower		Seatower state that a joint venture would not make sense for them, as they can't contribute to reduce risk for the other partner firms.
Ulstein	Found it important to design ships based on their own technology and premises in order to reduce expenses. Therefore, Ulstein did not want to cooperate with other firms when they entered the OWI.	Find it hard to collaborate and form partnerships with firms. Ulstein have experienced challenges related to the partner firms' market positions and strategies. Show a reluctance to form acquisitions, as they view them to be very costly and prolonged processes.

5.3.2 Firm Collaboration

Several case firms mention benefits of collaborating after industry entry due to OWI characteristics such as high complexity, capital requirements, in addition to the large comprehensiveness of contracts. Resource sharing and risk reduction are described as the main advantages of collaborating in the industry. In addition, the associated advantages of collaboration increase as the OWI develops due to higher project complexity. These findings are summarized in Table 5.8.

Table 5.8: Cross-case results related to firm collaboration.

	Findings (Categorized)
Case Firms	*Industry characteristics enhance the advantages of firm collaboration*
Aibel	Through a contractual cooperation with ABB, Aibel can offer platform concepts that integrate ABB's electrical system.
Fred. Olsen Windcarrier	Fred. Olsen Windcarrier is able to provide a large spread of services to it's customers due to cooperation with Fred. Olsen related companies such as Global Wind Service.
Offshore Heavy Transport	OHT are looking for partner firms to cooperate with, especially due to the entry barrier of high capital costs. As the OW projects have increased in complexity and size, OHT see advantages of risk diversification and the ability to combine competences through cooperation with other firms. By entering the industry through cooperating with well-established firms such as Technip and Statoil, OHT gained an important track record in the OWI.
OWEC Tower	From former contacts, OWEC Tower were able to cooperate with NTNU on detailed engineering, especially within the field of hydro dynamics.
Seatower	Seatower find it necessary to cooperate with large corporations who can handle the large capital requirements and gain banking guarantees.
Ulstein	

5.3.3 Industry Characteristics

From the interviews, the case firms generally view the OWI as uncertain, complex, turbulent, having high capital requirements and to some degree immature. These industry characteristics influence how the case firms enter the emerging OWI.

Uncertainty and Risk
Five out of six case firms argue that the industry characteristics enhance the importance of means to reduce risk and uncertainty. Empirical findings show that subsidies to some degree are related to industry uncertainty. Case firms state that with subsidies, changes in governmental and political processes affect the execution of projects and their project horizons. In contrast, national incentives do not increase industry uncertainty in any significant way. One way case firms reduce risk and uncertainty is by entering the OWI incrementally through small investments and adjustments, by utilizing existing resources from previous, relatable industries. In addition, several established firms postponed their industry entry in order to reducing risk. By waiting for other large actors to enter, the industry actor landscape would be easier to navigate in, thus reducing risk and uncertainty. The mentioned findings above are summarized in Table 5.9.

Table 5.9: Cross-case results related to uncertainty and risk.

	Findings (Categorized)		
Case Firm	*Industry characteristics enhance the importance of means to reduce industry risk.*	*Case firms find that subsidies can be tied to uncertainty in the OWI.*	*National incentives do not heighten uncertainty for firms entering the OWI.*
Aibel	Reducing risk by entering the OWI incrementally, using existing organizational units and use existing resources.	With subsidies comes political incentives. Change of government and political processes affect the execution of projects and project horizons.	
Fred. Olsen Windcarrier	Previous entry into new industries helped when analyzing and planning the entry into the OWI.		Experienced incentives for local value creation in the UK and Holland.
Offshore Heavy Transport	The opportunity to diversify put us in a favorable position when entering the OWI.		Have not experienced any big challenges of entering markets due to national incentives.
OWEC Tower	OWI projects carry great risk, which imply that one have to focus on risk assessment in every step.	As long as the OWI is dependent on subsidies, one is vulnerable to political changes. This may lead to added uncertainty. Several investors showed skepticism toward a subsidized industry.	Did not experience any national incentives in Europe that lead to challenges worth mentioning.
Seatower			Have experienced national incentives in varying degree between European countries, France in specific.
Ulstein	Postponed entry by five years since the OW industry was not seen as stable. Waited for the actor landscape to be more easy to navigate in, and for premise giving actors to establish some form of industry standards. It was found that being a "fast follower" would entail less risk and be more cost efficient.	Spent a lot of time analyzing how subsidies would affect the industry throughout its development. Delayed OWI entry as a result of an industry driven by subsidies.	The big OW companies choose subcontractors depending on their experience from offshore operations and, robustness of their solutions, rather than their country of origin.

Complexity

Large, time-demanding and complex project structures in the OWI lead to challenges for actors that have entered the industry. The OWI lack contract standardization in terms of size and content - partly due to industry immaturity. Several case firms find the lack of contract standards challenging, and argue that the contracting process in the OWI has made the industry more complex. Findings related to industry complexity is summarized in Table 5.10.

Table 5.10: Cross-case results related to complexity.

	Findings (Categorized)	
Case Firm	*Large, time-demanding OWI projects increase industry complexity.*	*The challenging contract structure in the OWI increase industry complexity.*
Aibel		The contracts in the OWI can be completely different, which is challenging. There is no industry standard, compared to the O&G.
Fred. Olsen Windcarrier		In the O&G and shipping industry, you always use a broker when contracting. In the OWI there are no standards for contracts, which have made it challenging to understand how the industry works.
Offshore Heavy Transport	Long project cycles give rise to added risk.	We may have to risk building ships without having a contract first.
OWEC Tower	The complexity in what we are doing was higher than what was initially expected. This led to heightened use of consultants, which in turn led to higher costs.	
Seatower	The extremely long sales cycles have been challenging.	
Ulstein		

Turbulence

Several case firms point out that the forming of actor relations are challenging in the OWI. This is a consequence of unknown and new customers, suppliers and market characteristics. Suppliers and customers often have misaligned views on how to execute offshore operations. Because of industry immaturity, the actor landscape increase industry turbulence. Another factor that contributes to an increased level of industry turbulence is the fast-paced development of the OWI. The rapid development of the industry has been challenging, especially for long-term investments decisions. The causes of turbulence are explained and summarized in Table 5.11.

Table 5.11: Cross-case results related to turbulence.

	Findings (Categorized)	
Case Firm	*Characteristics of the actor landscape increase industry turbulence.*	*The OWI develops more rapidly than initially expected, which makes long-term investment decisions challenging.*
Aibel	It is challenging to not know the new customers, actors and country characteristics in the market that you are entering. The industry was more immature than initially expected. This apply the customer base, suppliers and governmental requirements.	
Fred. Olsen Windcarrier	The supplier and the customer often have misaligned views on how offshore operations should be executed (especially in the early phases of the OWI).	The industry have evolved faster than initially expected. This has led to unexpected high costs, especially in terms of ship upgrades. Large investments are required, and one cannot be sure whether these investments last throughout the calculated time horizon.
Offshore Heavy Transport		
Owec Tower		There were more optimism for jacket foundations in the earlier OWI phases.
Seatower	A lot of effort has been put into understanding which factors that influence a customers buying decision.	It's hard to stick out as a small firm in the OWI, especially with the rapid growth of the OW farms.
Ulstein	It has been challenging to deal with an immature OWI in terms of the industry actor landscape.	

Capital Requirements

Entry barriers related to capital barriers can make it difficult for firms to introduce innovative technologies to the OWI due to risk averse financial institutions. In general, financial strength and capacity is especially important as actors face complex projects with long time horizons. Several case firm state that they focus on contributing to cost reductions in the OWI. The case firms also state that while the industry as a whole may be subsidy driven, their industry segments are not as affected. The cost levels in the OWI drops faster than expected and case firms state that the industry is not as dependent on subsidies anymore. See Table 5.12 for further insights.

Table 5.12: Cross-case results related to capital requirements.

	Findings (Categorized)		
Case Firm	*The case firms find the high capital requirements in the OWI challenging.*	*Case firms seek to reduce costs for the industry as a whole.*	*Case firms are influenced by the significant cost reduction that has been seen industry wide.*
Aibel		Every actor have to contribute to reduce the costs in the OWI.	
Fred. Olsen Windcarrier			The industry is not as dependent on subsidies. The OWI is on the right track, considering the great cost reductions during the past two years.
Offshore Heavy Transport	Claim that a financial strength and capacity is necessary for a firm to do complex and big OW projects.	Our solutions will contribute to reduce subsidies. It is beneficial to not be as dependent to political changes.	During the past few years, the OWI has reached cost levels that was not expected until 2020. Soon subsidies is not a factor anymore.
Owec Tower	Was in need of financial support, which was provided by Innovation Norway.		
Seatower	Difficult to get financial support from banks and other financial institutions as an innovator in the OWI. The banks are often risk averse, and usually do not support new technological solutions that demand high initial investments.	The funding gained from subsidies was effective and positive for the firm's entry.	
Ulstein		There is no point in delivering solutions that do not contribute to reduce the need for subsidies.	

5.3.4 Relevant Knowledge

The case firms point out the ability to manage and execute large and complex projects as the most important and transferable from the O&G industry to the OWI. The technological aspect is transferable to some degree, although the level of transferability is decreasing as the OWI develops. Moreover, experience in managing a large set of subcontractors in complex projects can be a major advantage for diversifying, established firms. It is also found that established networks from relatable industries can be crucial. Actors from the O&G industry in Norway have more than 50 years of experience and a strong "know-how". This has created close network relations between industry actors throughout the years. The impact of relevant knowledge is shown in Table 5.13.

Table 5.13: Cross-case results related to relevant knowledge.

	Findings (Categorized)
Case Firm	*Case firms agree that certain knowledge from the O&G industry is highly relevant*
Aibel	The ability to manage and execute large and complex projects are highly relevant. In contrast, the technological aspects are not transferable to the same degree.
Fred. Olsen Windcarrier	Knowledge from the O&G industry is somewhat transferable. However, Fred. Olsen Windcarrier were surprised by the differences between O&G and OW concerning contracts, offers and negotiations.
Offshore Heavy Transport	Experiences from O&G is of huge advantage. Especially within the operating procedures, design and the installation. No significant changes had to be done in the transportation job for Hywind.
OWEC Tower	Knowledge from O&G was transferable to a large degree, although several unforeseen challenges emerged as the industry developed.
Seatower	Nothing is directly transferable. Between network, business model and technology, technology is probably the least transferable. The network from O&G is important, as several firms diversify from O&G into OW.
Ulstein	It is obvious that the OWI is related to the the O&G industry. However, the O&G industry has too expensive and inefficient solutions for the purpose of OW. By utilizing relevant resources, Ulstein was able to build the innovative vessels X-Bow and X-Stern on their own premises.

5.3.5 Timing of Entry

For some firms, entry timing is a strategic decision based on industry actors, firm competence and industry demand. However, for others, entry timing is not something one have the privilege to choose. These differences are especially apparent between established and new firms. Initially, the OWI was characterized as highly uncertain. In order to reduce the associated industry uncertainties, Ulstein strategically waited for larger and more stable actors to enter the industry. With this, Ulstein let the customer base and market decide their entry, instead of planning the timing of entry directly. In contrast, Seatower and OWEC Tower, who are both new firms and 100% OW based, state that entry timing was not a decision to make. For them, it was important to enter the OWI early in order to promote their technology. In addition, the increased standardization as the OWI develops may make it even harder for inexperienced new firms to enter the industry successfully. A summary of findings concerning entry timing is presented in Table 5.14.

Table 5.14: Cross-case results related to timing of entry.

	Findings (Categorized)
Case Firm	*There are diverging perceptions of whether industry entry timing was a strategic choice or not.*
Aibel	Entered the industry as a result of a desire to expand. Therefore, timing was a result of internal factors
Fred. Olsen Windcarrier	
Offshore Heavy Transport	Timing was affected by internal factors as OHT were looking into expansion-opportunities.
OWEC Tower	For small firms, entry timing is not a decision. If you have an idea, you start working on it and take it from there. As the level of standardization increases, being new and inexperienced is even more challenging.
Seatower	The timing aspect of entry was never assessed. In retrospect: Despite the lack of contracts the first years, early entry might have been essential in order to brand the technology in a more immature industry.
Ulstein	Ulstein strategically delayed their industry entry, waiting for large, stable actors to reduce the high level of uncertainty. They did not want to be a first-mover as it would be too cost intensive. Being a fast-follower was the earliest entry alternative.

5.3.6 Network

Multiple firms explain that they did a comprehensive job in getting to know the markets, customers and competitors in advance. This was done in order to have a broad competence and network base when entering the OWI. From this, pre-established relationships was mentioned as a crucial factor in terms of winning OWI contracts. In addition, several firms have experienced how local connections can be advantageous in winning contracts in the respective markets. Lastly, the case firms showed little interest in joining Norwegian clusters. Table 5.15 summarize network related findings.

Table 5.15: Cross-case results related to network.

	Findings (Categorized)		
Case Firm	*The case firms are generally, not interested in joining Norwegian clusters.*	*Pre-established relationships from relevant industries can be crucial in winning contracts in the OWI.*	*A local network and local presence can be a good tool to win contracts.*
Aibel	As Aibel is a competence house, they do not currently see the benefits of discussing solutions outside the firm.	Aibel had the advantage of a network and pre-established relationships from the O&G sector relevant for the OWI. A well-established relationship to Statoil may have had an impact on the acquired Hywind contract.	Aibel traveled around to talk to people in the industry, in order to gain an understanding of the market, customers and competitors in the respective countries.
Fred. Olsen Windcarrier			They have offices and employees in most of their operating countries.
Offshore Heavy Transport	OHT have no interest in joining a Norwegian OW cluster.	Winning Hywind was critical in order to enter the industry and thereby start establishing an OWI network.	OHT believe that their convenient localization close to Staoil and Technip FMC had an impact on the Hywind contract, which they won.
OWEC Tower		OWEC Tower recommend to build up a network before industry entry, as they experienced benefits with it. A pre-established network was critical in order to develop their foundation technology.	
Seatower	Seatower do not see any advantages of joining a Norwegian cluster.	As many employees have worked in O&G, Seatower have contacts with over 50 years of experience within offshore technology.	The fact that Seatower got a French owner was, in their opinion, the main reason for why they got the contract on Fécamp in France.
Ulstein			

5.3.7 Summarized Findings - Cross-case Analysis

For each category of our cross-case analysis, we present one or more related findings. After these were analyzed in-depth, the findings result in several take-aways. The key take-aways from the cross-case analysis are summarized in Table 5.16 and Table 5.17.

Table 5.16: Summarized findings from the cross-case analysis (Part one).

Cross-case Analysis Category	**Summarized Findings for Each Category**
Mode of Entry	(i) With valuable pre-entry resources, case firms were able to diversify into the OWI through internal growth.
	(ii) The case firms show diverging perspectives on the entry modes of acquisition and joint ventures.
Firm Collaboration	(i) Industry characteristics enhance the advantages of firm collaboration.
Uncertainty and Risk	(i) Industry characteristics enhance the importance of means to reduce industry risk.
	(ii) Case firms find that subsidies can be tied to uncertainty in the OWI.
	(iii) National incentives do not heighten uncertainty for firms entering the OWI.
Complexity	(i) Large, time-demanding OWI projects increase industry complexity
	(ii) The challenging contract structure in the OWI increase industry complexity.

Table 5.17: Summarized findings from the cross-case analysis (Part two).

Cross-case Analysis Category	**Summarized Findings for Each Category**
Turbulence	(i) Characteristics of the actor landscape increase industry turbulence.
	(ii) The OWI develops more rapidly than initially expected, which makes long-term investment decisions challenging.
Capital Requirements	(i)The case firms find the high capital requirements in the OWI challenging.
	(ii) Case firms seek to reduce costs for the industry as a whole.
	(iii) Case firms are influenced by the significant cost reduction that has been seen industry wide.
Network	(i) The case firms are generally, not interested in joining Norwegian clusters.
	(ii) Pre-established relationships from relevant industries, can be crucial in winning contracts in the OWI.
	(iii) A local network and local presence can be a good tool to win contracts.
Relevant Knowledge	(i) The case firms agree that knowledge from the O&G industry is highly relevant
Timing of Entry	(i) There are diverging perceptions of whether industry entry timing was a strategic choice or not.

Chapter 6

Discussion

In this section, we will answer the RQs concerning emerging industry entry. From the first RQ[1], we see that the specific emerging industry characteristics of a high level of uncertainty and risk, complexity, turbulence and capital requirements affect how firms should enter such industries. In Section 6.1, we use these characteristics to justify the use of the OWI as a representative for emerging industries in general. Section 6.2, 6.3 and 6.4 is dedicated to answer the second RQ[2]. This is done by investigating how industry characteristics affect a firm's entry process, entry timing and the importance of a broad industry network, respectively. These main findings will be explained through theory from Chapter 2 and empirical findings from our industry study and multiple case study[3].

In Section 6.2, we discuss how emerging industry characteristics influence established and new firms' entry process in terms of entry mode, firm behavior and strategies in general. From this, we conclude with three success factors concerning emerging industry entry. These factors elaborate on the importance of an adaptable organizational structure, firm collaboration and relevant pre-entry resources. In Section 6.3, we describe how industry characteristics affect entrants' decision of entry timing. According to our analysis, it is evident that established firms should delay entry using a ROs logic. In contrast, new firms do not have the opportunity to choose timing of entry due to their limited resources. Section 6.4 discuss how the characteristics related to uncertainty, risk and a complex actor landscape influence the importance of having a broad network. Firms can benefit from existing networks from related technologically industries.

[1] Do emerging industry characteristics influence a firm's industry entry?

[2] In what way do characteristics of emerging industries affect industry entry among established and new firms?

[3] Whenever we use the words "empirical findings" or "empirical data", we refer to the industry study and the multiple case study.

6.1 The OWI as an Emerging Industry

Through emerging industry theory and empirical data from the OWI, we see that the OWI share many similarities to emerging industries in terms of industry characteristics and development. From this, it is evident that several characteristics act as industry entry barriers (see Section 2.2.3). A summary of our findings will be presented in Table 6.1.

Uncertainty and Risk
According to theory, uncertain actor landscapes, contract structures and subsidies, create uncertainties for emerging industries (Aldrich and Fiol, 1994; Bjørgum, 2016a; Forbes and Kirsch, 2011; Funk, 2010; Walker, Schlosser, and Deephouse, 2014). This coincides with characteristics evident from our OWI study in Chapter 4, and case study in Table 5.9. This characteristic act as an industry barrier, since it inhibits firms to enter easily.

First, a high entry and exit rate in emerging industries create turbulence, which makes it hard to understand actor relations and procurement processes between suppliers and customers. In addition, Offshore Wind Works (2015) emphasize that the industry has a low level of standardization in terms of components, contract structures and designs, which enhance the level of uncertainty. A low level of standardization often entail high costs. As a result, such industries are often subsidy dependent, which in some cases increase the level of uncertainty. This is not as prominent in all segments of the value chain in the OWI, especially in Europe (Offshore Wind, 2017). However, parts of the value chain are still subsidy dependent retaining the related uncertainty to some degree.

Complexity
From theory, it is evident that advanced technology, a high number of subcontractors and a lack of established actors create complexity in emerging industries (Aldrich and Fiol, 1994; Forbes and Kirsch, 2011; Funk, 2010). Dedecca, Hakvoort, and Ortt (2016) and Markard and Petersen (2009) support this in our industry study in Chapter 4. This is justified by the multiple units of components and services that must be integrated in OWPs. These findings also coincide with our empirical data from the OWI. From this, we find that unknown supplier and customer relations create a challenging and complex actor landscape in the OWI.

Turbulence
The lack of technological standards and designs in emerging industries usually lead to a fast paced and constant development of new technologies. Therefore, emerging industries are associated with high turbulence as firms continuously need to respond to new technological changes (Gustafsson et al., 2016; Bergek and Jacobsson, 2003). Despite some technological standards, our empirical findings from Table 5.11, relate to this rapid emerging industry development, supporting the choice of the OWI as a representative industry.

Capital Requirements
From both OWI specific literature and empirical findings in Table 5.12, we find evidence of that the OWI is highly capital intensive. The lack of standardization of contracting structure, components and design, increase production costs and hence, capital requirements (Offshore Wind Works, 2015). Emerging industry theory, to our knowledge, do not mention capital barriers in specific. Despite this, we argue that emerging industries share this OWI characteristic to a certain degree. Arguments promoting high capital barriers in the OWI are based upon characteristics such as large and complex projects, in addition to rapid industry development. This coincides with characteristics of emerging industries. Therefore, we believe that many emerging industries have high capital requirements, supporting the transferability between the OWI and emerging industries.

Table 6.1 shows a summary of the discussion above. With this, we see multiple traits that the OWI share with emerging industries in general. We argue that this justifies for the use of the OWI to represent emerging industries.

Table 6.1: Emerging industries compared to the offshore wind industry.

	Characteristics	**Emerging Industry**	**Offshore Wind Industry**
Uncertainty and Risk	*- Unstandardized Processes*	X	X
	- Subsidies	X	X
	- Long Project Cycles		X
Complexity	*- Technological*	X	X
	- Actor Landscape	X	X
Turbulence	*- Constant Development*	X	X
	- Lack of Dominant Design	X	X
Capital Requirement	*- Large and Complex Projects*	X	X
	- High Capital Intensity		X

6.2 Emerging Industry Characteristics Affect a Firm's Entry Process

We will now discuss how characteristics of emerging industries make certain entry modes, behavior and strategies among both established and new firms favorable[4]. In Section 6.2.1 we look at entry modes' attributes in the context of emerging industries. Based on these attributes, and emerging industry characteristics, we argue that an adaptable organizational structure, firm collaboration and relevant pre-entry resources to be success factors during emerging industry entry (see Section 6.2.2).

6.2.1 Comparison of Entry Modes

Diversification Through Acquisition
An important attribute of acquisition is the full ownership and control that the parent firm maintain after industry entry (Helfat and Lieberman, 2002; Bjørgum, 2016b). However, we argue that the parent company's full control can potentially lead to organizational biases and inertia[5]. This kind of inertia can create challenges, as it inhibits the parent firm to be innovative and creative. Acquisition is often argued to be the most effective way for a firm to obtain necessary pre-entry resources (Helfat and Lieberman, 2002). This argument is supported by Bjørgum (2016b) who state that acquisition is a relatively time effective mode of entry for catching up to technological development in an emerging industry.

We believe that there is a misunderstanding between the time it takes to obtain a firm's resources, compared to the time it takes for a parent firm to utilize these resources. The parent firm must sacrifice resources to integrate the acquired firm into its own organizational structure. In addition, this integration demand transaction costs, such as information processing and goal adjustments. Ulstein, who state that acquisitions are costly and prolonged processes, supports this argument. In addition, one must be aware that an acquisition is an all-or-nothing purchase. We believe that the parent firm will never find a firm that is one hundred percent compatible in terms of resource base or behavior pattern. Therefore, the parent firm might also have to use time and effort to incorporate redundant resources into their organization.

Diversification Through Internal Growth
Debates regarding established firms' choice of entry mode usually discuss the time and effort it takes to build up resources internally (Helfat and Lieberman, 2002; Mitchell and Singh, 1992). From this, internal growth is often considered

[4]We consider firm behavior and strategies during industry entry, in addition to choice of entry mode whenever we write "entry process".

[5]We follow the definition of *inertia* from the Oxford Dictionary; a tendency to do nothing or to remain unchanged.

a prolonged entry process, as resources must be built up internally. Similar to acquisition, the parent firm can experience organizational inertia through internal growth.

Despite a timely entry compared to other entry modes, we argue for low transaction costs during internal growth. This is because costs associated with alignment between different business structures and information processing across firms are avoided. Further, internal growth allows the parent firm to explicitly determine what kind of competence to build up. With this, internal growth avoid the costs of unnecessary resource integration, hence creating a more suitable resource profile in terms of industry entry. This is supported by Bjørgum (2016b), who state that firms who want to utilize their pre-entry expertise in certain ways usually choose entry modes that give them full control during industry entry.

Parent-company ventures

Similar to acquisitions, parent-company ventures are known to be an effective entry mode to obtain pre-entry resources, especially if they lack technological expertise or knowledge of the specific market (Helfat and Lieberman, 2002; Lockett and Thompson, 2001; Mitchell and Singh, 1992). This is further supported by Eisenhardt and Schoonhoven (1996), through an RBV. They explain how alliances tend to form in emergent and highly competitive industries. In addition, we argue that the potential for organizational inertia is reduced through parent-company ventures. This is because this mode of entry engage several firms who possess different perspectives on the industry of entry.

In contrast to the statements above, Mitchell and Singh (1992) and Lehtovaara et al. (2012) argue that managerial disagreements, diverging goals, or other technical or governance problems usually lead to the breakdown of an alliance. We argue that the alignment of different firm goals, organizational structures and business behavior lead to high transaction costs. In addition, a parent firm must sacrifice some ownership and control through this entry mode. Despite diverging perceptions of parent-company ventures, we argue that the advantages of risk and resource sharing are advantageous for firms who wish to enter emerging industries. This will be further emphasized in Section 6.2.2.

New firm Entry

Due to a lack of pre-entry resources, new firms are unattractive for firm collaboration. Therefore, Helfat and Lieberman (2002) argue that new firms can only enter industries as stand-alone entities. Despite this shortcoming, it is argued that new firms may possess attributes that are favorable in industries characterized by advanced technology, high innovation focus and rapid development (Choi, Lee, and Baek, 2016). As emerging industries share characteristics that are similar to the latter, we find this argument relevant to our discussion. We argue that new firms should take advantage of the absence of parent-company constraints,

as they are less exposed to organizational inertia. Choi, Lee, and Baek (2016) support this, and argue that new firms must develop a flexible organizational structure to be able to cope in turbulent environments.

Table 6.2: Summary of entry modes.

Entry mode	**Advantages**	**Disadvantages and Limitations**
Internal Growth *Established Firm Entry*	Full ownership and control for parent firm Relatively low transaction costs Can build a suitable resource profile and specify these based on internal premises	Time and resource demanding to build up competence internally Parent firm must be in possession of relevant pre-entry resources Danger of organizational inertia
Acquisition *Established Firm Entry*	Full ownership and control for parent firm Time-efficient to gain necessary pre-entry resources by purchasing a firm	Danger of spending time and effort on integrating irrelevant resources Demand a high level of equity from parent firm Relatively high transaction costs Danger of organizational inertia
Parent-company Venture *Established Firm Entry*	Time-efficient to gain necessary pre-entry resources Provide for risk spreading, resource sharing and reduction of project complexity Reduce the danger of organizational inertia	Parent firm must sacrifice ownership and control Relatively high transaction costs Danger of managerial disagreements and technical or governance problems
New Firm Entry	May have attributes which enhance their ability to cope in turbulent environments Reduce the danger of organizational inertia	Lack pre-entry resources Can only enter as stand-alone entities

6.2.2 Success Factors

In the following section, we use theory and empirical findings to introduce three factors which we find essential for a successful entry process into emerging industries. These factors are based upon attributes of different entry modes and emerging industry characteristics. Each success factor is summarized through a proposition.

The Importance of an Adaptable and Flexible Organizational Structure
There is a common agreement among scholars that new firms face a challenging process during new industry entry due to restricted resources and capabilities (Choi, Lee, and Baek, 2016; Helfat and Lieberman, 2002). Despite this weakness, new firms possess certain traits which can be beneficial when entering an emerging industry (See Section 6.2.1 about entry modes).

It is crucial to be adaptable and flexible in industries that are characterized by high technological intensity and rapid development (Choi, Lee, and Baek, 2016). We argue that emerging industries hold similar traits as those mentioned (See Section 2.1). Therefore, a firm should have an organizational structure that can cope in turbulent environments. Moreover, it is favorable to have a low level of organizational inertia to be able to employ innovative ideas during an industry entry. Although Choi, Lee, and Baek (2016) explicitly discuss the issue of new firms, we argue that the suggestions above are applicable for established firms as well. The mentioned industry characteristics also enhance the importance of established firms' ability to adapt to fast-paced, technological and innovative environments.

Several case firms experienced a faster industry development than initially expected (see Table 5.11). This enhanced the turbulence that characterize both the OWI and emerging industries in general[6]. Supported by theory and empirical findings, we suggest firms to have a high technological and innovative focus when entering industries associated with high turbulence. With this, a flexible organizational structure that is able to adapt to changes rapidly, in addition to a high R&D focus can be advantageous to enter emerging industries successfully.

Proposition (i) *Firms should obtain an adaptable organizational structure to cope with the turbulent environment that emerging industries hold.*

[6] See Section 2.1 and 4.2 on emerging industry and OWI characteristics respectively.

The Importance of Firm Collaboration

From empirical findings and emerging industry literature, we show that collaboration[7] after industry entry is advantageous for new and established firms due to certain industry characteristics. In addition, we argue that the advantages associated with firm collaboration will increase as emerging industries develop.

We found it interesting that both OWI and emerging industry literature often encourage the use of collaborative entry modes (Sovacool and Enevoldsen, 2015; Eisenhardt and Schoonhoven, 1996; Dedecca, Hakvoort, and Ortt, 2016). Through an RBV, alliances tend to form in emergent and highly competitive industries where firms attempt to develop innovative technologies (Eisenhardt and Schoonhoven, 1996). Similarly, Mitchell and Singh (1992) underline the importance of alliances in emerging industries specifically, while Sovacool and Enevoldsen (2015) explain how OWI specific characteristics such as "unique engineering, maintenance, capital intensity and scaling requirements" enhance the importance of collaboration.

Empirical findings also support the use of collaboration. Several case firms mention that the high complexity associated with large scale projects, the presence of high capital requirements and the large comprehensiveness of contracts increase the advantages of collaboration (See Table 5.8). For example, by collaborating with other Fred. Olsen related companies such as Global Wind Service, Fred. Olsen Windcarrier have been able to provide a wide specter of services to its customer. Moreover, contractual collaborations with large firms have been crucial for Seatower to promote their foundation technology in OWPs [8]. We argue that Seatower has overcome the OWI barrier of high capital requirements through collaboration.

We believe that the need to collaborate will increase as an emerging industry develops. This is because the characteristics of a complex industry actor landscape will decrease as an industry matures. In this way, challenges related to parent-company ventures in finding suitable partner firms vanishes (see Table 5.11). In addition, we argue that as emerging industries develop, the size of projects and costs will increase (see Table 5.8). This enhance the benefits of firm collaboration, such as risk and resource sharing among partner firms. From this, we recommend firms to enter through collaborative entry modes in the late development phases of an emerging industry (see three step model in Section 2.1.2).

Proposition (ii) *When emerging industries approach maturity, industry entry through collaborative entry modes is recommended.*

[7] Based on our understanding, it is the entry mode of joint ventures that is described in the mentioned literature of the following discussion. Therefore, collaboration, alliances and partnerships are used as alternative terms for joint ventures.

[8] As Seatower's CEO state: "Nobody wants to buy projects worth 300-400 million NOK from a company that is not even profitable, with only a handful of employees. Therefore, we need to collaborate with the big companies who can provide big guarantees - such as banking guarantees".

The Importance of Relevant Pre-entry Resources

The immaturity of emerging industries create uncertainty and risk due to unstandardized processes such as contracting, procurement and financing (Funk, 2010; Aldrich and Fiol, 1994; Forbes and Kirsch, 2011). From our cross-case analysis, it is evident that relevant pre-entry resources reduced the uncertainty and risk in the OWI (see Table 5.9). We want to emphasize this, as we consider these characteristics to be the most significant in emerging industries.

Diversification strategies specifically encourage established firms to enter related industry sub-fields where they can exploit existing resources and knowledge (Choi, Lee, and Baek, 2016; Mitchell and Singh, 1992; Helfat and Lieberman, 2002; Lockett and Thompson, 2001; Silverman, 1999). All the established case firms had prior experiences in industries such as O&G and other maritime operations, relatable to the OWI (see Table 5.13). Aibel for instance, state that their capability of handling large scale projects and manage subcontractors from O&G made them able to enter the OWI. By avoiding large, new investments, the risk and uncertainty associated with OWI entry was reduced.

Relevant pre-entry resources made it possible for several case firms to make relatively small investments and adjustments in their effort to develop OW competences and resources. This finding is in accordance with the ROs logic, which will be further emphasized in the discussion of entry timing (see Section 6.3). Bjørgum (2016b) state that firms using ROs logic during industry entry see flexibility as one important factor in order to reduce risk and uncertainty associated with emerging industry entry.

We also argue that relevant pre-entry resources enhance a firm's competitive advantage in highly complex emerging industries. The higher the project and actor complexity in an industry, the more important it is to have valuable pre-entry resources, which the firm can exploit and develop during industry entry. We argue that this is supported by the RBV, which shows that a firm's competitive advantage is dependent on its internal resources (Eisenhardt and Schoonhoven, 1996; Lockett and Thompson, 2001).

Proposition (iii) *Only firms with relevant pre-entry resources are recommended to enter emerging industries.*

6.3 Emerging Industry Characteristics Affect Entry Timing

Our empirical research shows that OWI characteristics influence firms' timing of industry entry. This is important to address as timing can be crucial to the success of emerging industry entry, shown in Section 2.2.4 (Agarwal and Bayus, 2004; Park and Kang, 2010). Industry characteristics such as high uncertainty create entry barriers that affect firms' desired time of entry. Mitchell and Singh

(1992) explain that established firms usually enter industries later due to high levels of uncertainty. Nevertheless, not all firms have the privilege to choose when to enter an industry. In this section we will discuss how industry characteristics might influence firms' entry timing. Afterwards, some suggestions for how firms should approach this issue will be made.

The OWI Development Affect Case Firms' Entry Timing
Based on existing research, established firms tend to delay entry, while new firms often enter early in the development of an industry (Mitchell and Singh, 1992). As presented in Section 4.1, this was also the case for the OWI (Dedecca, Hakvoort, and Ortt, 2016). The number of new firms was initially high, but decreased as the industry matured. In contrast, the number of established firms increased as the industry developed towards maturity. Our empirical findings support the arguments above, as shown in the timeline from Figure 5.2. Here, both new firms, Seatower and OWEC Tower, entered relatively early, while the established firms entered later.

When we compare the timeline in Figure 5.2 with the average OW capacity development in Figure 4.3, we see a positive correlation between the increase in OW farm size and established firm entry. This can be a result of higher scaling requirements and thus higher capital costs (Dedecca, Hakvoort, and Ortt, 2016). We argue that only large actors can handle the associated high capital investments. As a result, premise giving actors such as Siemens and Vestas laid the foundation for reducing the initial industry uncertainty that prohibited most established firms to enter the OWI (ORE Catapult, 2017; Wind Europe, 2017a). We argue that industry entry among such large actors can symbolize profitability and stability, and hence, draw other established firms into the industry.

Delaying Entry
When firms delay entry, they can better evaluate whether the industry develops in the right direction in terms of the firm's interest. Ulstein delayed their entry until larger actors had entered the OWI, in order to reduce uncertainty and risk related to industry entry. Larger, well-known companies can create a sense of industry stability, and hence decrease the level of uncertainty (Dedecca, Hakvoort, and Ortt, 2016). Before their OWI entry, Ulstein acquired a ship-design company. The acquisition was considered a relatively low-risk investment, as it can be used in their existing business area of ship design. We believe this acquisition to comply with the theory of ROs logic. Bjørgum (2016b) argue that some firms choose to enter emerging industries through small, low-risk investments in order to gain the opportunity to make better decisions in the future as the industry evolves. By entering through a ROs logic, firms reduce some of the uncertainty associated with emerging industry entry (Bjørgum, 2016b). Ulstein delayed entry in order to assess the direction of the industry development and obtain relevant industry

knowledge. This gave them the flexibility and relevant knowledge to enter the OWI through a larger commitment at a later point. We argue that OHT also used ROs logic when they entered the OWI. By using an existing transportation vessel, they were able to get the Hywind contract, which could provide them with insight in terms of industry practices and industry participants. Hence, OHT was able to enter the OWI through a relatively small investment, which gave them the flexibility to consider installation and transportation opportunities in the future OWI.

We argue that established firms with large resource bases have more to lose if they fail. Therefore, they are more vulnerable to high levels of industry uncertainty. Mitchell and Singh (1992) explain that established firms' fear of destroying built up resources and reputation tend to delay their timing of entry. Through late entry, some of the uncertainty that emerging industries hold will be reduced. Moreover, compared to new firms, established firms tend to evaluate variations in the competitive conditions to a larger degree before entry (Mitchell, 1989). As an industry develops, we argue that higher scaling requirements often lead to higher capital costs. Moreover, we believe that established firms who want to expand through diversification usually have the resources needed to overcome the increased capital requirements as an industry develops. The value of applying ROs logic for future investment opportunities increases with the level of uncertainty the industry is prone to (McGrath and MacMillan, 2009). As a result, established firms should delay entry in accordance with ROs logic in order to reduce uncertainty and risk during emerging industry entry.

Early Entry

We believe that delaying entry is not the solution for all type of firms. There is a fundamental difference between Ulstein and OHT, and OWEC Tower and Seatower. Ulstein and OHT entered the OWI by diversifying from relatable industry fields. Being established firms, they had a relatively large resource base in terms of capital and competence compared to OWEC Tower and Seatower. New firms tend to have little pre-entry resources, especially in terms of capital. As a result, they might not have the resources to delay industry entry due to the increasing capital and scaling requirements in which industry development bring. However, new firms are able to take on the risk of early entry as they have less to lose in terms of resources and reputation. In this way, new firms that enter early have the possibility to grow and learn as the industry develops, and thus build up a strong competence and resource base. This is crucial to do before larger firms enter, in order to increase their chances of survival. These arguments are also emphasized by Makadok (1998) and Park and Kang (2010) who advocate early entry. New firms usually enter industries through innovative and technological concepts (Choi, Lee, and Baek, 2016). This also enhance the associated advantages of early entry, as new firms need time to brand and

prepare the market for their new technological solution. This is supported by Seatower, who argue that early entry might be necessary for new technological firms to enter industries successfully. From this, we believe early entry to be advantageous for new firms.

The high capital and scaling requirements inhibit new firms to enter emerging industries in its later phases, hence early entry is favored for new firms. In contrast, established firms should delay entry as they can overcome high capital requirements. Moreover, they face the risk of a bigger loss in the case of industry entry failure. Therefore, ROs logic could be applied by established firms to reduce the level of uncertainty in the early development of emerging industries.

Proposition (iv) *New firms should enter early to avoid high capital requirements. Established firms should delay entry, preferably by applying ROs logic, to reduce the uncertainty that emerging industries hold.*

6.4 Emerging Industry Characteristics Enhance the Importance of a Broad Industry Network

This section will discuss the importance of industry networks and understanding of actor landscape in order to handle certain emerging industry characteristics. Empirical findings imply that a broad network proved to be crucial in the process of winning new contracts in the OWI. In addition, we argue that it is easier to find suitable partner firms by utilizing network effects.

The Importance of Networks in the OWI

The actor network structure in the OWI is not completely established. This finding is in line with Möller and Svahn (2009)'s observations in emerging industries. Established network relations pre industry entry helped several case firms in getting contracts. This is emphasized by the fact that all of the case firms mention how relevant knowledge from the O&G industry has been beneficial (see Table 5.13. However, not all of these capabilities are applicable at the same level, following the development of the OWI. Several case firms state that the technological aspects from related offshore industries are not transferable to the same degree as in the earliest phases of the OWI (see Table 5.3.4). This finding is also in line with Dedecca, Hakvoort, and Ortt (2016). Despite the lack of technological transferability, we argue that knowledge related to understanding complex industry processes, contracts and network relationships is important in emerging industries.

For several of the interviewed case firms, an understanding and participation in the industry's existing networks proved to be crucial in order to win contracts. This is in line with the business network perspective, where it is stated

that business relations serve as a critical factor for future cost efficiency and revenue generating capacity of the respective firm (Ritter, Wilkinson, and Johnston, 2004; Snehota and Håkansson, 1995). In retrospect, Aibel, OHT and OWEC Tower see the broad competence and network base to be crucial during their entry into the OWI. It is also argued from Section 2.2.1 that the capabilities of a firm arise from their business relations to some extent. The importance of actor relationships and network building is supported by Möller and Svahn (2009). They state that network theory serve as an important tool to better understand the complexities in technology-driven industries. From this, we argue that a heightened understanding of industry actor networks can reduce uncertainty and turbulence faced by the respective actor. Therefore, we state that it is beneficial to invest in activities that helps a firm to develop their position within an industry's network.

Utilizing Network Effects Makes It Easier To Find Suitable Partners
From Section 6.2.2, we recommend firms to collaborate in emerging industries characterized by high complexity and uncertainty. In a complex industry landscape, it proves to be challenging to understand the customer, supplier and other actor relations. This is reflected in our empirical data, where four out of six firms say that these relations are difficult to deal with (see Table 5.11). A firm's future capacity and capabilities is the result of how they handle these relations (Snehota and Håkansson, 1995). By leveraging network effects, we believe that firms will become better at finding actors in emerging industries, which can be utilized in terms of competence sharing and contract collaboration. As stated by Adler and Kwon (2002) and Möller and Svahn (2009), industry relations can be exploited to find out which actors one should influence and partner with, in order to align the industry network with the firm's goals. This can be achieved by investing in support mechanisms of important industry networks and by building up social capital (see Section 2.2.1). Examples of such mechanisms are: universities, research institutions, political organizations with industry influence and skilled competitors. By focusing on building broad industry networks, we argue that such relations can help firms in finding suitable partners and gain informational advantages. As a result, firms will be better at responding to the high complexity and rapid changes faced by emerging industries.

Proposition (v) *Firms should invest in network relations in order to gain informational advantages and find suitable partners in emerging industries.*

6.5 Limitations

In this section we will discuss limitations of using the OWI to generalize findings related to entry into emerging industries. Despite many common characteristics, we argue that the applicability of the OWI may be reduced due to the fact that the OWI is in its last emerging industry phase, which Dedecca, Hakvoort, and Ortt (2016) describe as the market stabilization stage (See three step model in Section 4.1). The transferability might be reduced by the fact that the OWI have dominant designs within some technological areas. In contrast, general emerging industries are characterized by the lack of dominant designs. In addition, we believe that the high capital intensity and low subsidy-dependency in the OWI (See Table 6.1) inhibit some applicability of using the OWI in the thesis.

Bjørgum (2016a) and Walker, Schlosser, and Deephouse (2014) argue that many emerging industries are subsidy dependent, which may heighten the level of uncertainty. The emerging industry trait of being subsidy driven is of less relevance for the current OWI, in its stabilization phase (Dedecca, Hakvoort, and Ortt, 2016). With approximately 20 years of experience, certain segments within the European OWI supply chain are not subsidized anymore (Wind Europe, 2017a). Fred. Olsen Windcarrier and OHT emphasize the former argument and state that the OWI has reached lower cost levels than initially anticipated in the past years[9].

Capital requirements was not emphasized in theory regarding emerging industry characteristics. However, from our empirical research it is evident that large and complex projects, in addition to a rapid industry development, lead to high capital requirements in the OWI. The distinct OWI characteristics related to multidisciplinarity and high uncertainty and risk, also enhance these requirements. Therefore, we believe that capital requirements have a higher impact in the OWI compared to emerging industries in general. Our arguments is also supported by industry related articles, such as the strategic OW report from NORWEA (2016).

From the previous segments, we see that certain OWI characteristics diverge from general emerging industry theory. Despite these differences, we want to emphasize our initial choice of using the OWI in this thesis by looking at the significant similarities between the OWI and emerging industries (see Table 6.1). Therefore, we still believe the OWI serves as a good representative for emerging industries in general.

[9]This is also observed in industry reports, as elaborated upon in Chapter 4 (Wind Europe, 2017a).

6.6 Implications for Managers

Throughout the thesis discussion, we present how emerging industry characteristics affect the entry process, timing of entry and the importance of exploiting network effects. We believe our study to be valuable for managers in firms considering to enter emerging industries in general, and the OWI in specific.

We argue that managers in firms entering emerging industries should be aware of the characteristics of high turbulence and uncertainty. As a result, firms should strive for an adaptable and flexible organizational structure, to cope with such traits. This should be emphasized for entrants into the OWI. OWPs have experienced an exponential increase in size and a sudden fall in costs long before what was initially expected. This enhance the level of turbulence, which make an adaptable and flexible organizational structure for entrants into the OWI even more important.

We only recommend emerging industry entry for firms with relevant pre-entry resources. This is because valuable pre-entry resources is identified as one of the main factors for successful industry entry due to the high level of complexity present in emerging industries. With such resources, firms can enter through relatively low investments and adjustments. As a result, firms can exploit existing competences such as project management in order to reduce risk and uncertainty related to industry entry. The OWI is characterized by a high level of complexity, due to large projects and technological intensity, in addition to high capital requirements. Hence, according to our analysis, relevant pre-entry resources is crucial to be able to enter the industry, successfully.

Moreover, we want to emphasize the importance of developing and investing in industry networks for firms entering emerging industries. This is because firms that manage to position themselves and influence the industry's network structure can exploit the resources and capabilities from other industry actors.

Another interesting implication is that established firms should enjoy the benefits of having the opportunity to delay full engagement into emerging industries. The fact that most emerging industries are highly uncertain enhance the advantage of delaying entry. For managers, this entail that a real options logic should be considered when entering emerging industries. In this way, firms can enter through relatively small investments, in order to gain the opportunity to develop these investments into a fully committed entry in the future.

Lastly, we argue that the particularly high level of complexity and capital barriers, which continue to increase as OW farms grow in size, enhance the value of collaboration for both new and established firms in the OWI. Several case firms underline the importance of collaboration as a result of long project cycles and high technological complexity. We argue that the importance of collaboration will increase with the development of the industry, as complexity and capital barriers increase with scaling requirements.

6.7 Implications for Future Research

Firstly, we would suggest for qualitative case studies on emerging industry entry with a broader range of firms. This way, the generalizability for emerging industries in general would increase, especially as the answers between established and new firms varied distinctively. It could also be of interest to study these two types of firms separately.

In addition, other emerging industries should be studied. The OWI is close to developing into a mature industry, hence it does not represent emerging industries perfectly. Therefore, a multiple industry study would enhance the representativeness for emerging industries in general. Industries that are earlier in its industry development might be of great interest.

The study of entry into emerging industries could also benefit from a quantitative study using for example the 4C Offshore database, containing all relevant information of current OWI actors. In this way, we could get results representing all current industry actors.

Lastly, we would suggest for further research on collaborative entry modes for established firms. These turned out to be one of the most favorable modes of entry. Moreover, collaborative entry modes are evaluated to be even more favorable in the future. As scaling requirements usually increase during industry development, these entry modes can reduce the resulting entry barrier of high capital costs and industry complexity.

Chapter 7

Conclusion

From our first RQ[1], it is evident that characteristics of emerging industries affect the way firms should enter such industries. We see that the characteristics which seem to impact entry into emerging industries is uncertainty and risk, complexity, turbulence and capital requirements. Answering the second RQ[2], we see that these characteristics influence a firm's industry entry in terms of industry entry process, entry timing and importance of industry network.

The high level of turbulence in emerging industries indicate that firms should strive for a flexible organizational structure during their entry process. In addition, the presence of turbulence and actor complexity illustrate the importance of industry networks, as it can provide firms with informational advantages and suitable industry partners. Moreover, the high technological complexity and uncertainty makes it difficult to enter emerging industries without relevant pre-entry resources, and is therefore not recommended. As an emerging industry develops towards maturity, decreased actor complexity and increased capital requirements insinuate that firms should enter through collaborative entry modes. The continuous increase in capital requirements during an emerging industry development makes early entry advantageous for new firms. In contrast, established firms are recommended to delay entry in order to avoid the high level of uncertainty, preferably by applying ROs logic.

[1] i) Do emerging industry characteristics influence a firm's industry entry?

[2] ii) In what way do characteristics of emerging industries affect industry entry among established and new firms?

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Appendix A

Author(s)	Title	Research method	Research focus	Findings	Journal
Acs and Audretsch (1989)	Small-firm Entry in US Manufacturing	Quantitative, cross-sectional empirical analysis	Research on the entry behavior of small firms	Small-firm entry is at least partially determined by entry barriers, industry-specific characteristics facilitating retaliatory conduct by incumbent firms, and the reliance upon innovative strategy by small firms	Economica
Agarwal and Bayus (2001)	Does Entry Size Matter? The Impact of the Life Cycle and Technology on firm survival	Quanititative, empirical research based on multiple earlier empirical stidies	Examine whether the relationship between size of a firm when entering an industry and the likelihood of survival holds under different technological conditions and across the different stages of the industry life cycle	The relationship between firm size and the likelihood of survival is shaped by technology and the stage of the industry life cycle. The likelihood of survival confronting small entrants is generally less than that confronting their larger counterparts, the relationship does not hold for mature stages of the product life cycle, or in technologically intensive products.	Industrial Economics
Agarwal and Bayus (2004)	Creating and surviving in new industries	Quantitative, survey data	Evaluation of a firm's survival rate given the time of entry	Entrants durting the prefirm take-off stage have higher survival rates than later entrants. There is no real option value in waiting when one considers survival as a performance measure	Advances in Strategic Management
Aldrich and Fiol (1994)	Fools Rush In? The Institutional Context of Industry Creation	Qualtative, evaluating strategies that founders can pursue are studied	The social processes surrounding the emergence of new industries, from the early pioneering ventures through the early stages of growth, when the form proliferates as the industry becomes established	Promising activities never realize their potential because founders fail to develop trusting relations with stakeholders, are unable to cope with opposing industries, and never win institutional support.	The Academy of Management Review
Barney (1991)	Firm resources and sustained competitive advantage	Qualitative, analysis of competitive advantages through empirical indicators, framework	Attempts to describe the environmental conditions that favor high levels of firm performance and what attributes that describe an attractive industry. Sustained competitive advantages and their connection to firm resources.	Contributes with new insights into the relationship between firm resources and sustained competitive advantages through a proposed framework built on the following resource attributes: value, rareness, imperfect imitability and substitutability	Journal of Management
Bennett and Estrin (2013)	Regulatory Barriers and Entry into a New Competitive Industry	Qualitative, formulation of a model for the effects of license fees and bureaucratic delay	Investigation of the effects of license fees and bureaucratic delay on firm entry into a new competitive industry, whose profitability is initially unknown	A license fee alone reduces the number of first movers and the steady-state number of firms. The combination of license fee and delay may cause some entrepreneurs to purchase licenses speculatively, only using them to enter production later if profitability is revealed to be sufficiently favourable.	Review of Development Economics
Bergek and Jacobsson (2003)	The emergence of a growth industry: a comparative analysis of the German, Dutch and Swedish wind turbine industries	Qualitative, developing a fraework applied to a cross-country comparative analysis og the win dturbine industry in Germany, the Netherlands and Sweden over a period of about twenty years	Comparing the evolution of the wind turbine industry in Germany, the Netherlands and Sweden	Four factors stand out in explaining the relative success of the German industry: (1) creation of variety in an early phase, (2) establishment of legitimacy of wind energy, (3) the employment of advanced market creation policies in a later phase and (4) the use of industrial policy to favour the domestic industry.	Change, Transformation and Development
Bjørgum (2016a)	New firms developing novel technology in a complex emerging industry: The road towards commercialization of renewable marine energy technologies	Qualitative, a doctoral thesis construced based on four papers constructed from multiple-case studies of firms in the emerging marine energy industry	The thesis focuses on how new firms can overcome their challenges related to limited resources and limited socio-political legitimacy	Firms can access resources such as funding and technology competence through international activities. This will help them to further develop their technology towards commercialization. Further, MNCs should choose modes giving flexibility (minority investments) or control (internal development or acquisition).	-
Bjørgum (2016b)	MNCs entering an emerging industry: The choice of governance mode under high uncertainty	Qualitative, multiple case study methodology, including interviews with members of five MNCs and the perspective of their investees	Provides insights into the choice of governance mode among relatively similar multinational companies (MNCs) entering into an emerging industry characterised by high uncertainty related to technology, market and policy framework	Firms with relatively similar pre-entry resources could take different approaches (RO or TCE) to assessing the same uncertainties when entering an emerging industry	Cogent Business & Management
Burkhard and Gee (2012)	"Establishing the resilience of a coastal-marine social-ecological system to the installation of offshore wind farms	Quantitative	Culture, Environmental services, Regimes, Social-ecological systems	Offshore wind farming is shown to lead to a potential slow regime shift in the marine ecosystem, as well as a more rapid regime shift in the seascape. These shifts lead to changes in the available ecosystem services and conflicts between new and traditional sea and seascape values.	Ecology and Society
Callon (1984)	Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay	Qualitative, Case study	ANT, Translation,	In conclusion it is noted that translation is a process, never a completed accomplishment, and it may (as in the empirical case considered) fail.	Sociological Review
Callon (1990)	Techno-economic networks and irreversibility	Qualitative	ANT, Translation, Techno-economic networks and irreversibility	Explores the heterogeneous processes of social and technical change, and in particular the dynamics of techno-economic networks.	Sociological Review
Choi, Lee and Baek (2016)	"Growth of De Alio and De Novo firms in the new and renewable energy industry	Quantitative, global company panel data	Firm growth, new and renewable energy, R&Cs, de alio, de novo, new firm, resource-based view, innovation, R&D	Results indicate that accumulated resources and new entrants' former experiences in other industries have positive effects, contributing to initial success after market entry for a limited time.	Industry and Innovation

Church and Ware (2000)	Industrial organization: A strategic approach	Qualitative, literature review, case studies	Industrial organizations and and how incumbents deter entry.	Barriers to entry exist when incumbents are able to exercise market power but entrants anticipate nonpositive profits. Incumbents often have an incentive to engage in strategic entry deterrence to protect both market power and economic profits.	Book, Chapter 14, McGraw-Hill
Coates and McDermott (2002)	An exploratory analysis of new competencies: a resource based view perspective	Quantitative, a longitudinal (1995–2000) study of a radical innovation project at Analog Devices	This study addresses this gap in the literature by examining the successful development of new resources and competencies that were created when Analog Devices developed an emerging technology. The paper is exploratory and identifies the new competencies and Analog Devices' ability to capitalize upon them	The current study illustrates how the resource based paradigms can explain the success and unique market position of the firm. The findings of this study also suggest that core competencies can be built and that the ability to link these capabilities is crucial	Journals of Operations Management
Corvellec and Risberg (2007)	Sensegiving as mise-en-sens: The case of wind power development	Qualitative	Mise-en-sens, Sensegiving, Wind power, Infrastructure development	Suggest in conclusion that mise-en-sens could serve to describe not only the activity of wind farm developers but also, for example, that of project managers or entrepreneurs in generalsince they too are engaged in the management of meaning.	Scandinavian Journal of Management
Cressman (2009)	A brief overview of actor-network theory: Punctualization, heterogeneous engineering & translation	Qualitative	Actor-Network theory (ANT), Technology, Sociotechnical network	Puts forward an overview of ANT that draws upon those concepts that make ANT a valuable tool within the social study of technology.	
Dedecca, Hakvoort, and Ortt (2016)	Market strategies for offshore wind in Europe: A development and diffusion perspective	Qualitative. Application of the development and diffusion pattern model, offshore wind barrier identification from the pattern, analysis of market strategies	Market strategies available to private actors developing offshore wind farms in Europe, such as decisions of when and how to participate in the offshore wind farms	Wind farm development became more international and alliances more common. Innovation studies call for the integrated design of wind turbines, wind farms and the supply chain. Onshore wind and oil & gas companies remain active in offshore wind. Wind farm developers must consider how contemporary forms of cooperation improve or hinder their market strategies	Renewable and Sustainable Energy Reviews
Díaz A., Antonio and C. Urquhart (2010)	The affordances of actor network theory in ICT for development research	Quantitative, multiple case study based on cross-sectional data	Seeks to use actor network theory (ANT) to examine the different phases – i.e. translation process – of an information and communication technology (ICT).	ANT analytic dimensions of convergence and devices afford a great deal of insight into the underlying anatomy of the project and its assumptions.	Information Technology & People
Eisenhardt and Schoonhoven (1996)	Resource-based View of Strategic Alliance Formation: Strategic and Social Effects in Entrepreneurial Firms	Qualitative	Strategic alliances , entrepreneurship, top management teams , product innovation, resource-based view of the firm	Find that alliances form when firms are in vulnerable strategic positions either because they are competing in emergent or highly competitive industries or because they are attempting pioneering technical strategies.	
Forbes and Kirsch (2011)	The study of emerging industries: Recognizing and responding to some central problems	Qualitative, literature review	The emergence of new industries is an important phenomenon that remains relatively neglected by researchers. The article address several theoretical and methodological problems that impede the study of emerging industries.	To advance the study of emerging industries, scholars should develop several distinct categories of research, make more extesive use of qualitatice and historical data, collaborate across traditional boundaries of domain and method and engage key practitioners, including professional archivists and institutional entrepreneurs	Journal of Business Venturing
Funk (2010)	Complexity, critical mass and industry formation: a comparison of selected industries	Qualitative, based on cross-country comparisons studies	Summarize and contrast the challenges involved with industry formation and examine why specific industries were formed in some countries before other ones	Greater complexity increased the need for new laws and regulations, the cost of developing a system and thus the benefits from government purchases and support for R&D, and the challenges of finding agreements on appropriate business models between firms.	Industry and Innovation
Geroski (1995)	What do we know about entry?	Quantitative and qualitative, data on entry and case studies on market entry. Stylized facts based on data and case studies	A general understanding about what drives entry and the effects entry has on markets	De novo entry appears to be relatively easy, but survival is not. Entry seems to play an important role in stimulating industry evolution at precisely those times when the current activities of incumbent firms are most out of line with exogenous changes in costs and demand	International Journal of Industrial Organization - Elsevier
Gustafsson et al. (2016)	Emergence of Industries: A Review and Future Directions	Qualitative, literature reviews and the theoretical and methodological approaches employed	Systematic review of the literature on the emergence of industries	The analysis reveals that industry emergence can be depicted as a three-stage process. In the first, initial stage, a disruption to the existing industrial order triggers the second, the co-evolutionary stage, which includes four sub-processes related to developments in technology, markets, activity networks and industry identity. The convergence of these sub-processes leads to the third stage, a growth stage and the birth of a new industry	International Journal of Management Reviews
Helfat and Liebermann (2002)	The birth of capabilities: market entry and the importance of pre-history	Qualitative, analysis is based upon prior studies of market entry and the resources and capabilities of individual firms	The birth of capabilities and resources within organizations and within industries, and their historical antecedents, at the time of market entry	The greater the similarity between pre-entry firm resources and the required resources in an industry, the greater the likelihood that a firm will enter that particular industry, and the greater the likelihood that the firm will survive and prosper. In addition, resource gaps affect the likelihood, speed, and mode of entry	Industrial and Corporate Change

Hollensen (2008)	Essentials of global marketing	-	A starting point in the SMEs and the five main decisions that SMEs (and larger firms) face in connection with the internationalization process.	-	Prentice Hall
Iskandarova (2016)	From the idea of scale to the idea of agency: An actor-network theory perspective on policy development for renewable energy	Qualitative, Project specific case study	Actor-network theory, policy shaping, renewable energy, Wave Hub, policy as actant	Revealing the most prominent policy issues in relation to wave energy, the case study adds to our understanding of policy shaping processes instigated by technology development.	Science and Public Policy
Jacobsson and Karltorp (2012)	Formation of competences to realize the potential of offshore wind power in the European Union	Qualitative, interviews with offshore wind industry actors and universities, industry scenarios	To (a), make a preliminary assessment of the types and magnitude of engineering competences required to sustain a large-scale expansion of offshore wind energy and to (b), draw lessons for universities that wish to respond to this challenge.	A rough estimate indicates a need for more than 10 000 new engineers until 2020. The nature and volume of the competences required raise serious questions for the scale and organization of training programmes at universities. A variety of competences are required, including deep electrical and mechanical engineering, engineering physics, civil engineering and computer science.	Energy Policy
Karlsson and Nyström (2003)	Exit and Entry over the Product Life Cycle: Evidence from the Swedish Manufacturing Industry	Quantitative, the data used in the paper is collected by Statistics Sweden and is covering the Swedish manufacturing industry. Regression analysis	The process of exit and entry of plants in the Swedish manufacturing industry is investigated within the framework of the product life cycle	Firms exiting and entering in the early stages of the product life cycle are more knowledge intensive than plants who exit or enter in later stages. There are also some indications that entrants in early stages of the product life cycle should be more knowledge-intensive than incumbents.	Small Business Economics
Kern, Smith, Shaw, Raven and Verhees (2014)	From laggard to leader: Explaining offshore wind developments in the UK	Quantitative, case study, ANT	UK renewable energy policy, Offshore wind, Technology politics	Explain how a fairly effective protective space was constructed through the enroling of key political and economic interests.	Energy Policy
Klepper and Graddy (1990)	The Evolution of New Industries and the Determinants of Market Structure	Qualitative, analysis based on empirical regularities	To bring together and extend the empirical regulatrities concerning the ecolution of new industries and to use these regulations to gain further insight into the forces governing industry evolution	A construced model emphasizes how factors governing the early evolution of industries may shape their market structure at maturity.	The RAND Journal of Economics
Latour (1996)	On actor-network theory. A few clarifications plus more than a few complications	Qualitative	Clarifications with regards to ANT	Reviews those difficulties and tries ot overcome them by showing how they may be used to account for the consturction of entities, that is for the attribution of nature, society and meaning.	Soziale welt
Latour (1999)	On recalling ANT	Qualitative	Clarifications with regards to ANT	Tries to refocus the originality of what is more a method to deploy the actor's own world building activities than an alternative social theory.	The Sociological Review
Law and Hassard (1999)	Actor network theory and after	Qualitative	Clarifications with regards to ANT	This controversial and path-breaking volume extends ANT beyond studies of technology, power and organisation to the body, subjectivity, politics, and cultural difference, and puts it into cutting-edge dialogue with feminism, anthropology, psychology and economics.	Blackwell Publishing
Lehtovaara et al. (2012)	Collaborative entry into the offshore wind power market	Qualitative. Based on a literature review and financial, patent and potential partner analyses	Analyze the key actors in the offshore wind power markets, and evaluate how new entrants with novel products could enter the market.	Leading players, new entrants and challengers, in collaboration with whom a new small-scale entrant could execute the commercialization of novel products. The study provided evidence of the importance of collaboration, especially for SMEs that often have scarce resources and competences, and hence could benefit significantly from collaboration with other actors	Mechanika
Levitas and Ndofor (2016)	What to do with the resource-based view - A few suggestions for what ails the RBV that supporters and opponents might accept	Qualitative, literature research	Question whether the RBV was ready for generalization, and point out the key weaknesses of the resource-based view (RBV) and provide prescriptions for curing them	Make three general observations. First, the RBV's "paradox" of generalizability simply does not exist. Second, we argue that RBV researchers have not used valid operationalizations for RBV constructs. Third, we argue that proponents and opponents of the RBV must look toward recent progress in the RBV (e.g., on dynamic capabilities and other related research streams) on which to base future work	Journal of Management Inquiry
Lieberman and Montgomery (1988)	First-mover advantages	Qualitative, literature research	First-mover advantages	Surveys the theoretical and empirical literature on mechanisms that confer advantages and disadvantages on first-mover firms.	Strategic Management Journal
Lieberman and Montgomery (1998)	First-Mover (Dis)Advantages: Retrospective and Link with the Resource-Based View	Qualitative, a reflection on "First-mover advantages", a price-winning paper published 10 years earlier.	Linking empirical findings on first-mover advantages with the complementary stream of research on the resource-based view of the firm.	The resource-based view (RBV) and first-mover advantage (FMA) are related conceptual frameworks that can benefit from closer linkage.	Strategic Management Journal
Lockett (2001)	The resource-based view and economics	Qualitative, literature research	Analyzes the link between economics and the resource-based view (RBV) of the firm.	Identify a number of reasons that may have limited the explicit use of the RBV in economics, which include the problems of causal ambiguity, tautology and firm heterogeneity.	Journal of Management
Loring (2007)	Wind energy planning in England, Wales and Denmark: Factors influencing project success	Qualitative, Case Study	Wind energy planning, Public participation, Network theory	The presence of a stable network of supporters is not found to be related to project acceptance and success; however, the absence of a stable network of opponents is found to be necessary for project acceptance and success in receiving planning permission.	Energy Policy

Makadok (1998)	Can first-mover and early-mover advantages be sustained in an industry with low barriers to entry/imitation?	Quantitative, case study, hypothesis testing	Examines whether first-mover and early-mover advantages can be sustained in anindustry where the barriers to entry are generally low and new product innovations can beeasily imitated.	Finds that first-movers and early-movers enjoy both a highly sustainable pricingadvantage and a moderately sustainable market share advantage.	Strategic Management Journal
Manjón-Antolín (2010)	Firm size and short-term dynamics in aggregate entry and exit	Quantitative, econometric modelling	The size of firms and the reaction-adjustment period are important conditions that are missing from the empirical models typically used in this literature.	This study have soundly argued that small and large firms have dissimilar entry and exit behaviours. Estimates from errorcomponent systems of equations provide evidence of a conical revolving door phenomenon and of dynamic partial adjustments in the replacement–displacement of firms.	International Journal of Industrial Organization - Elsevier
Markard and Petersen (2009)	The offshore trend: Structural changes in the wind power sector	Qualitative and quantitiative. Descriptive analysis based on offshore wind parks and offshore wind park ownership data. Explanatory part based on personal and telephone interviews	Analyze what impact offshore wind power may have on ownership and organizational structures in the wind power sector by comparing on- and offshore wind park ownership in Denmark, the UK and Germany	The offshore wind power in all three countries is dominated by large firms, many of which are from the electricity sector. In Denmark and the UK, also investors from the gas and oil industry play an important role in the offshore wind business	Energy Policy
Mata (1991)	Sunk costs and entry by small and large plants	Quantitative	Entry, costs, sunk costs, market contestability	Entry, costs, sunk costs, market contestability	Entry and market contestability: An international comparison
McAfee, Mialon, and Williams (2003)	Economic and Antitrust Barriers to Entry	Qualitative, literature review	Review of existing literature on barriers to entry in order to introduce a refined definition and calssifications of entry barriers.	Refining the definition of barriers to entry by classifying structural and strategic barriers into economic (standalon or ancillary) and antitrust (standalone or ancillary) barriers.	Pazarlama Araştırmaları
Meyer and Estrin (2001)	Brownfield Entry in Emerging Markets	Qualitative	Focuses on the brownfield entry mode, as a special case of acquisition, in which the resources transferred by the investor dominate over those provided by the acquired firm.	The resource requirements have to be matched with resources available to the investor through an acquired firm, and the decision has to account for the costs of acquiring and integrating the resources.	Journal of International Business Studies
Mitchell (1989)	Whether and When? Probability and Timing of Incumbent's Entry into Emering Industrial Subfields	Quantitative study, with preductions supported with analysis of 30 years of entry data	The probability and timing of entry by industry incumbents into emerging technical subfields	An incumbent is likely to enter a new subfield if the firm's core products are threatened or if it possesses industry-specialized supporting assets. The greater the competitice threat, the less likely an incumbent is to enter but the earlier it will do so.	Administrative Science Quarterly
Mitchell and Singh (1992)	Incumbents' use of pre-entry alliances before expansion into new technical subfields of an industry	Quantitative data. 30 year retrospective colletion of data of 87 incumbent firms' pre-entry alliances before expansion into new technical subfields. Data from published and unpublished academic, industry, business, and government sources. Interviews and logistic regression	interorganizational alliances used by incumbents to expand into new technical subtields of the industry	A firm's possession of key supporting assets will influence its entry strategy as it attempts to realize the returns from innovation. Collaborative ventures are an important means employed by some types of incumbents to test the technical and market waters of emerging subfields. Collaboration allows them to leverage their specialized assets and gain access to market and product information, while spreading risks in uncertain conditions	Journal of Economic Behavior and Organization
Möller and Svahn (2009)	How to influence the birth of new business fields — Network perspective	Qualtitative. Integrate existing theory. Uses the network approach as a main perspective	Explores the management challenges of emerging new business fields by using a network perspective. Look at the extent to which individual firms, by mobilizing cooperative networks of actors, can influence the emergence of radically new business fields	Increases the understanding of the birth of radically new business fields describing the environment and phases of new business emergence. This complex socioeconomic and technological process can be captured through three interlinked phases. Managers should adopt a network perspective for capturing these phases, as they are constituted by complex interorganizational linkages among firms, government agencies, universities and research institutions etc.	Industrial Marketing Management
Newbert (2008)	Value, rareness, competitive advantage, and performance: A conceptual-level empirical investigation of the resource-based view of the firm	Quantitative, used a sample of 664 firms on the mailinglist for the Micro and Nanotechnology Commer-cialization Education Foundation (MANCEF), descriptive statistcs	Empirically examines the relationships between resource- value, rareness, competitive advantage, and performance	The results suggest that value and rareness are related to competitive advantage, that competitive advantage is related to performance, and that competitive advantage mediates the rareness-performance relationship	Strategic Management Journal

Park and Kang (2010)	Entry conditions, firm strategies and their relationships to the innovation performance of an emerging green industry: The case of the solar cell industry	Qualitative and quantitative. Review of past research on entry conditions, firm strategies, and their relationships on innovation performance. Empirical research through analysis of data collected from the worldwide solar cell or photovoltaic (PV) industries	Examines the multidimensional effects of entry conditions and firm strategies in the emerging solar cell industry. It extends prior research on entry conditions, specifically entry timing and entry size	Empirical results reveal that after market entrance, collaboration strategy of the firm is positively related to innovation performance. However, any positive effect of collaboration is relatively diminished for early entrants. In contrast, the effect holds true for late entrants who require aggressive collaboration	Asian Journal of Technology Innovation
Peltoniemi (2011)	Reviewing Industry Life-cycle Theory: Avenues for Future Research	Qualitative, literature review of theory based on a review of 216 industry life-cycle studies	This paper investigates the key mechanisms and research themes of industry life-cycle theory and assesses the extent to which empirical evidence supports such an approach.	Industry life-cycle theory has spawned well-established theoretical arguments that have been tested and elaborated upon. However, each of the empirical research themes leaves room for further inquiry of the phenomena and their causal relationships.	International Journal of Management Reviews
Pouloudi, Gandecha, Atkinson and Papazafeiropoulou (2004)	How Stakeholder Analysis can be Mobilized with Actor-Network Theory to Identify Actors	Qualitative	Stakeholder analysis actor-network theory (ANT) actors stakeholders Implementation	Argue that they can be instrumental in providing a generic, context-free guidance to stakeholder identification that is currently missing from ANT studies.	Information Systems Research
Powell, Koput and Smith-Doerr (1996)	Interorganizational collaboration and the locus of innovation: Networks of learning in biotechnology	Quantitative, Hypothesis testing	The knowledge base of an industry is both complex and expanding and the sources of expertise are widely dispersed, the locus of innovation will be found in networks of learning, rather than in individual firms.	Results from pooled, within-firm, time series analyses support a learning view and have broad implications for future theoretical and empirical research on organizational networks and strategic alliances.	Administrative Science Quarterly
Rao and De' (2013)	Organizational assimilation of technology in a sunrise Industry– a story of successes and failures	Qualitative	Structuration theory, Actor network theory, Technology diffusion, Technology assimilation	ANT is used to analyze the role of heterogeneous actors in altering the structures as the actor network adapts to the technological innovations and changing contexts.	International Working Conference on Transfer and Diffusion of IT
Santos and Eisenhardt (2009)	Constructing markets and shaping boundaries: entrepreneurial power in nascent fields	Qualitative, inductive, longitudinal study of five ventures	Examination of how entrepreneurs shape organizational boundaries and construct markets	Construction of a framework of how successful entrepreneurs attempt to dominate nascent markets by co-constructing organizational boundaries and market niches using three processes: claiming, demarcating, and controlling a market	Academy of Management Journal
Schwanitz and Wierling (2016)	Offshore wind investments – Realism about cost developments is necessary	Quantitative, data analysis (4COffshore database), real option mathematical framework to model costs and investments in the offshore wind industry	Evaluates whether offshore wind will becomes competitive with other energy technologies in the near future and criticise current cost regimes as optimistic. Challenges and cost development for the offshore wind industry.	Policy incentives for building larger and more complex offshore wind parks bear a high risk to fail in their aim of bringing down investment costs. Policies that instead incentivize the optimization of offshore wind technology - in particular by increasing the load factor and material efficiency and bringing down decommissioning costs - are more sustainable.	Energy
Shim and Shin (2016)	Analyzing China's Fintech Industry from the Perspective of Actor–Network Theory	Qualitative, case study	Applies the lens of actor–network theory to conduct a multi-level analysis of the historical development of China's financial technology industry.	Discusses policy implications for China's fintech industry, focusing on the changing role of the state in fostering the growth of national industry within and outside of China.	Telecommunications Policy
Silverman (1999)	Technological Resources and the Direction of Corporate Diversification: Toward an Integration of the Resource-Based View and Transaction Cost Economics	Quantitative	Diversification, Resource-Based View, Transaction Cost Economics, Patents	The findings point to circumstances where resources can be and are exploited through contracting rather than through diversification.	Management Science
Sovacool and Enevoldsen (2015)	One style to build them all: Corporate culture and innovation in the offshore wind industry	Qualitative, literature review	Explores how Vestas and Siemens Wind Power manage technological innovation in the offshore wind power industry	Vestas and SWP have the same elements and attributes of closed and open styles. They are both open in their stakeholder involvement and collaboration	Energy Policy
Sun, Huang and Wu (2012)	The current state of offshore wind energy technology development	Qualitative, literature research	Provides a brief overview of the current development status of offshore wind power in different countries and also explore the technical, economic and environmental issues around its development	Currently, high cost is still the main barrier preventing the successful implement of offshore wind power. If its costs cannot be considerably brought down in time, offshore wind could lose its attractiveness to the market. Optimal offshore wind technology needs to be developed in order to adapt to the marine environment and meanwhile provide high efficiency, robust and reliable performance	Energy
Sutton (1997)	Gibrat's Legacy	Qualitative, looks at how recent studies on entry and the size distribution of firms have modified thinking in this area	Looks at how recent studies on entry and the size distribution of firms have modified thinking in this area	Finds a positive coorelation between firm size and a firm's likelihood of survival in an industry	Journal of Economic Literature
Tadelis and Williamson (2012)	Transaction cost economics	Qualitative	Discusses the operationalization of transaction cost economics.	Friction, the economic counterpart for which is transaction costs, is pervasive in both physical and economic systems.	Handbook of Industrial Organization

Troshani and Wickramasinghe (2014)	Tackling complexity in e-health with actornetwork theory	Qualitative, ANT, Case study	ANT, emerging industry	In order to improve current understanding and tackle such complexity, we argue how research in pervasive e-health can be enhanced by using actor-network theory (ANT).	IEEE
Wagner (1992)	Firm Size, Firm Growth, and Persistence of Chance: Testing GIBRAT's Law with Establishment Data from Lower Saxony	Quantitative, using data for some 7000 manufacturing establishments	Testing the validity for GIBRAT's Law of Proportionate Growth	Firm Size, Firm Growth, and Persistence of Chance: Testing GIBRAT's Law with Establishment Data from Lower Saxony	Small Business Economics
Walker, Schlosser, and Deephouse (2014)	Organizational ingenuity and the paradox of embedded agency: the case of the embryonic Ontario solar energy industry	Qualitative, literature review, process model of managing contradictions	Present a typology and process model that integrate dialectical and paradox perspectives on managing contradictions in organizations.	An integrated model suggests that dialectics researchers pay attention to the strategies managers use to productively manage tensions between contradictory elements, take a contingent view of transformation, and recognize that acceptance of contradiction may play a role in transformation. Hence this integrated model suggests a broadened agenda for both paradox and dialectics researchers.	Sage Pub Organization Studies
Wieczorek, Negro, Harmsen, Heimeriks, Luo and Hekkert (2013)	A review of the European offshore wind innovation system	Qualitative, country wide case studies	Offshore wind, Technological innovation system, Systemic problems, Systems functions, Systemic instruments	call for a systemic policy instrument that would support the innovation system around this technology and contribute to its wider diffusion in Europe.	Renewable and Sustainable Energy Reviews
Williamson (1989)	Transaction cost economics	Qualitative	Discusses the operationalization of transaction cost economics.	Friction, the economic counterpart for which is transaction costs, is pervasive in both physical and economic systems.	
York and Lenox (2014)	Exploring the sociocultural determinants of de novo versus de alio entry in emerging industries	Quantitative, analysis of longitudinal data set, hypothesis testing	How the sociocultural environment, defined as the unwritten, decentralized "rules of the game," influences founding rates in emergent industries, and how these noneconomic factors differentially influence entry by new entrepreneurial (de novo) firms versus diversifying incumbent (de alio) firms.	Utilizing a unique dataset on entry in the green building supply industry, we find that, while economic and policy factors are highly correlated with de alio entry, the sociocultural environment exerts a greater influence on de novo firms. Our findings contribute to the literature on corporate demography, institutions and entrepreneurship, and industry emergence.	Strategic Management Journal

Appendix B

In our preliminary project thesis a thorough literature review was conducted on the topics of emerging industries, industry entry and the emerging offshore wind industry. The methodology and list of articles from this review is presented in Appendix B.

5.3 Theoretical Framework

In order to build a theoretical framework for entry into emerging industries, a review of existing literature on industry entry and emerging industries were conducted. This review form the basis for both the theoretical framework and our empirical literature findings. The scope study narrowed down the number of relevant articles and was further used to guide the review. The following procedure was used to evaluate the existing literature on topics related to industry entry and emerging industries:

(i) *Search method.* We found that the literature databases Web of Science, Google Scholar and Oria gave the best search results and thus selected these as our literature search engines. In order to navigate the literature search, we used various search word combinations related to the introduced topics. The search combinations, the overlying topic they are related to, and the number of selected articles for each topic are listed in Table 5.

(ii) *Screening and selection criteria.* For each search conducted, we went through the resulting article suggestions. This was done by following a top-down approach, i.e. started with the article with the most citations and iterated through the list in descending order. Further, we did a screening of articles based on their title and abstract. In addition, the respective article's published journal ranking and the number of citations were assessed during the screening process. After this screening the number of articles were narrowed down to 80. These were put into an article database and categorized according to their topics.

(iii) *Structured analysis of articles.* Several of the articles included in the database after the initial screening were not relevant to the specific topics we wanted to include in our theoretical framework. Therefore, in order to reject articles that were off topic, we did a assessment of each of the 80 articles. This procedure entailed the following steps:

- First we classified the 80 articles in our database into different sub categories: industry entry, entering strategies, emerging industries, emerging industry entry, emerging industry characteristics, offshore wind industry, transaction cost economics, actor-network theory, resource-based view, barriers to entry and entry modes.
- Thereafter we went through each category and did a full read-through of articles where the abstract mentioned topics related to industry entry, emerging industries and entry into emerging industries with industry characteristics which was considered relevant for the OWI. Articles that diverged significantly from these central topics were rejected.
- Further, we did a more in-depth analysis of each of the selected articles. These were classified according to author(s), title, research method, research focus, main findings and the journal in which they were published. The results of this analysis can be found in the data table in Appendix A.
- Finally, we summarized the data table (Appendix A) and put it into a more compact format (see Table 6). This table serves to visualize the theoretical landscape, as well as illustrating the different theoretical perspectives used in this research article.

(iv) *Final inclusion.* Finally, we went through the reference lists of the included articles and added articles we found specifically relevant (the so-called Snowball method). As can be seen in Tables 5 and 6, the number of articles included in the final set was 63 (see Appendix A for data background for each article).

5.4 Empirical Literature Findings

Our empirical literature findings consists of two separate steps. In the first step, *existing literature* on emerging industry entry is introduced. We found that the existing research on emerging industry entry is limited. In the second step we utilize theory introduced through our theoretical framework (Chapter 4) on industry entry and draw lines between these theories and emerging industry characteristics (Section 4.1).

Table 6 summarizes and categorizes the selected articles that were found through our literature search algorithms (see search word combinations in Table 5). This table was made to visualize the existing theoretical landscape on industry entry and emerging industries. The data table seen in Appendix A creates the foundation for Table 6. As one can see, some of the articles on industry entry, with its sub categories: modes, barriers, size, timing, RBV, ANT and TCE, also accounts for the concept of emerging industries. Although this is the case, most of the articles on emerging industries discussing industry entry do not discuss the theoretical topics on the field explicitly. As an example, the only entry barriers mentioned explicitly in existing literature on emerging industries are related to regulatory barriers. However, from the emerging industry characteristics we find that several barriers are implicitly given, for instance barriers related to uncertainty and risk. This challenge is addressed in the latter part of our empirical literature findings, where industry entry theories are combined with emerging industry characteristics - i.e. expanding the limited theoretical foundation of emerging industry entry.

Table 5: Search combinations, related topics and number of selected articles for the respective categories.

Search Combinations	**Related Topic**	**Number of Selected Articles**
Industr* + Entry/Enter* Entry/Enter* + Modes Entry/Enter* + Barriers Entry/Enter* + Timing	*Industry entry*	49
Emerging + Industr* New + Industr* Intro* + Industr* Embryonic + Industr* Nascent + Industr*	*Emerging industries*	30
Combinations of the above (i.e. Entry/Enter* + Emerging + Industr*)	*Entering emerging industries*	20
Total number of articles		**63**

Table 6: Selected articles based on search algorithms forming the background for the sections "Theoretical Framework" and "Empircal Literature Findings" (Based on data in Appendix A).

Author(s)(year)	Research Type	Industry Entry							Emerging Industries	OWI
		Timing	*Modes*	*RBV*	*Barriers*	*TCE*	*ANT*	*Firm Size*		
Acs and Audretsch (1989)	QN							x		
Agarwal and Bayus (2001)	QN							x		
Agarwal and Bayus (2004)	QN	x							x	
Aldrich and Fiol (1994)	QL								x	
Barney (1991)	QL	x			x					
Bennett and Estrin (2013)	QL				x				x	
Bergek and Jacobsson (2003)	QL								x	x
Bjørgum (2016a)	QL								x	
Bjørgum (2016b)	QL					x			x	
Callon (1984)	QL						x			
Callon (1990)	QL						x			
Choi, Lee and Baek (2016)	QN			x					x	
Church and Ware (2000)	QL, LR				x					
Coates and McDermott (2002)	QN			x						
Corvellec and Risberg (2007)	QL						x			
Cressman (2009)	QL						x			
Dedecca, Hakvoort and Ortt (2016)	QL									x
Díaz A., Antonio and C. Urquhart (2010)	QN						x		x	
Eisenhardt and Schoonhoven (1996)	QL			x						
Forbes and Kirsch (2011)	QL, LR		x						x	
Funk (2010)	QL		x		x				x	
Geroski (1995)	QN	x	x							
Gustafsson et al. (2016)	QL, LR		x		x				x	
Helfat and Liebermann (2002)	QL	x	x						x	
Hollensen (2008)	-					x				
Jacobsson and Karltorp (2012)	QL									x
Karlsson and Nyström (2003)	QN	x								
Kern, Smith, Shaw, Raven and Verhees (2014)	QN								x	
Klepper and Graddy (1990)	QL								x	
Latour (1996)	QL						x		x	
Latour (1999)	QL						x			
Law and Hassard (1999)	QL						x			
Lehtovaara and Karvonen (2012)	QL, LR		x							x
Levitas and Ndofor (2006)	QL, LR			x						
Lieberman and Montgomery (1988)	QL, LR								x	
Lieberman and Montgomery (1998)	QL	x							x	
Lockett (2001)	QL, LR			x						
Makadok (1998)	QN	x			x				x	
Manjón-Antolín (2010)	QN							x	x	
Markard and Petersen (2009)	QL, QN									x
Mata (1991)	QN							x		
McAfee, Mialon, and Williams (2003)	QL				x					
Meyer and Estrin (2001)	QL		x							
Mitchell (1989)	QN	x	x						x	
Mitchell and Singh (1992)	QN	x	x						x	
Möller and Svahn (2009)	QL						x		x	
Newbert (2008)	QN			x						
Park and Kang (2010)	QL, QN	x						x	x	
Peltoniemi (2011)	QL, LR				x				x	
Pouloudi, Gandecha, Atkinson and Papazafeiropoulou (2004)	QL						x			
Santos and Eisenhardt (2009)	QL								x	
Schwanitz and Wierling (2016)	QN									x
Shim and Shin (2016)	QL						x		x	
Silverman (1999)	QN			x						
Sovacool and Enevoldsen (2015)	QL, LR									x
Sun, Huang and Wu (2012)	QL, LR									x
Sutton (1997)	QL							x	x	
Tadelis and Williamson (2012)	QL					x				
Wagner (1992)	QN							x	x	
Walker, Schlosser, and Deephouse (2014)	QL, LR								x	
Wieczorek, Negro, Harmsen, Heimeriks, Luo and Hekkert (2013)	QL						x			
Williamson (1989)	QL					x				
York and Lenox (2014)	QN		x						x	
A total of 63 articles Of which 30 are directly related to emerging industries and 8 are related to the OWI.		10	10	7	8	4	12	7	30	8

Abbreviations: LR=Literature review; QL=Qualitative; QN=Quantitative; RBV=Resource-based view; TCE=Transaction cost economics; ANT=Actor-network theory; OWI=Offshore wind industry

Table 7: Selected articles on the offshore wind industry. These articles form the empirical background of this paper. In addition they are used in order to relate the OWI to emerging industry entry theory in the discussion (see Section 9).

Author(s)(year)
4C Offshore (2015)
Bergek and Jacobsson (2003)
Burkhard and Gee (2012)
Dedecca, Hakvoort, and Ortt (2016)
E24 (2016)
Ekeland (2015)
Energy Post (2016)
European Comission (2016)
Eurostat (2016)
EWEA (2016)
EY (2015)
Forbes and Kirsch (2011)
FTI Consulting, Inc. (2015)
Global Wind Energy Council (2016a)
Global Wind Energy Council (2016b)
Jacobsson and Karltorp (2012)
Kern, Smith, Shaw, Raven and Verhees (2014)
Lehtovaara et al. (2012)
Offshore Wind Works (2015)
Markard and Petersen (2009)
Njøs et al. (2013)
NORWEA (2014)
NORWEA (2016)
Offshore Wind Works (2015)
Schwanitz and Wierling (2016)
Sovacool and Enevoldsen (2015)
Sun, Huang and Wu (2012)
Statkraft (2009)
Statkraft (2016)
Statoil (2016)
U.S. Energy Information Administration (2016a)
U.S. Energy Information Administration (2016b)
Wieczorek, Negro, Harmsen, Heimeriks, Luo and Hekkert (2013)
A total of 33 articles

Appendix C

Interview Guide

Background and pre-entry

1. Hva er deres forretningsfokus i OWI?
2. Hva førte til avgjørelsen om å gå inn i OWI?
3. Var det på linje med OW noen andre industrier dere anså som aktuelle å gå inn i? Eventuelt, hvorfor falt valget på OW foran disse?
4. Med deres eksisterende kompetanse innen (...) hvordan gjorde dette det ekstra attraktivt å gå inn i OW?
5. Møtte dere på noen utfordringer ved å overføre deres eksisterende kompetanse over til OW, eventuelt hvilke?
    a. Var det noen form for kompetanse dere anså som åpenbart overførbar som bød på uforutsette utfordringer?
    b. Hva er den største forskjellen på måten dere opererer på/gjør business på i OW i forhold til i kjernevirksomheten/tidligere kjernevirksomhet?

How have Norwegian companies entered the OWI?

1. På hvilken måte gikk dere inn i OWI?
   Eks: Gikk dere inn i industrien i partnerskap (kontraktuelt) med et eller andre norske/utenlandske aktører?
2. Var samarbeidet med noen spesielle aktører innen OWI kritisk for vellykket inngang i OWI? Eventuelt hvilke/hvorfor?
3. Har dere vurdert å gå inn i industrien på andre måter, gjennom enten oppkjøp av bedrifter eller etablere joint ventures?
4. Hvordan er dere fornøyde med prosessen rundt å etablere seg i industrien?
    a. Hvis dere skulle entret igjen, var det noe dere kunne gjort annerledes?
    b. Var det noen spesielle faktorer dere ikke var klar over?
    c. Bydde forretningskulturen i landet dere gikk inn i på utfordringer?
5. Hvilke aktører ser dere på som de største konkurrentene deres?
6. Vet dere hvordan konkurrenter har gått inn i industrien?
    a. Er det noen forskjell mellom norske aktører vs internasjonale aktører?
    b. Hvis dere gjorde det annerledes, var det noe spesiell grunn for dette?

What are the main critical factors for successful entry into the OWI?

1. Hvilke faktorer ser dere på som de viktigste for å lykkes i OWI?
2. Hvilke faktorer ser dere på som kritiske for at dere skal opprettholde lønnsomhet og fortsette å operere i bransjen?
    a. Er det et scenario (eller flere) som kan tvinge dere til å måtte gå ut av OWI?
3. Hva tror dere var hovedårsaken til at dere fikk ... kontrakten?
4. Network
    a. Hadde dere et eksisterende nettverk dere benyttet dere av under etableringsprosessen? Hvilke personer/aktører i nettverket hadde størst betydning?
    b. Var det et nettverk dere ikke hadde, men burde hatt under etableringsprosessen?

5. *Timing of Entry:* Er dere fornøyd med avgjørelsen om å gå inn i OWI på gitt tidspunkt, sett i ettertid?
    a. Var det noen spesielle hensyn dere tok når det gjelder tidspunktet på etableringen i industrien?
    b. Var det noen gang et alternativ å utsette satsingen eller entre tidligere?
6. Har OWI endret seg siden dere gikk inn - hvis ja, hvordan? Og på hvilken måte har det eventuelt påvirket hvordan nye norske bedrifter som ønsker å gå inn i OWI bør gå inn?
7. Er det noen spesielle karakteristikktrekk man bør ta hensyn til når man entrer/opererer industrien?

What are the main challenges and barriers for OWI entry among Norwegian companies?

1. Møtte dere på noen uforutsette utfordringer da dere skulle gå inn i OWI? F.eks. noen uforutsette barrierer som høye kostnader, langsiktige prosjekter eller høy risiko?
2. Mange land har nasjonale insentiver for å holde arbeidsplassene lokalt. Har dere selv opplevd at dette har skapt problemer for å etablere dere internasjonalt?
3. Regulatory barriers
    a. Per dags dato er OWI avhengig av subsidier, til hvilken grad synes dere dette er en stor barriere for å entre OWI?
    b. Er dere som selskap direkte avhengig av subsidier?
4. Usikkerhet: Var dere skeptiske til å investere mye i OW, gitt usikkerheten, spesielt rundt standarder? F eks. floating foundations vs monopile foundations og da eventuelt mangel på én dominant teknologisk løsning?
5. Risiko: På tross av at OWI er preget av høy usikkerhet og høy risiko valgte dere å gå inn, mens mange andre firmaer ikke var villige til å ta denne risikoen - hva gjorde dere i stand til å gjøre dette?

Post-entry (avsluttende)

1. Hvorfor tror dere at flere norske selskaper har gått ut av OW eller senket aktiviteten sin de siste årene?
2. Hva tror dere industrien kommer til å være preget av i fremtiden i form av nye teknologiske løsninger og politiske reguleringer?
    a. Har dere troen på at industrien kommer til å være uavhengig av subsidier i nær fremtid?

Interview Guide

Background and pre-entry

1. What is your main business focus in the OWI?
2. What led to the decision to enter the OWI?
3. Did you consider entering other industries than the OWI? In that case, why did you chose the OWI?
4. Did your existing competence within (...), make it particularly attractive to enter the OWI?
5. Was some knowledge areas from you existing industry hard to transfer/irrelevant for entry into the OWI?
    a. Were you surprised that some areas you expected to be relevant, was not?
    b. What is the main difference in how you operate/to business in the OWI, in contrast to how it is done in your extant industry?

How have Norwegian companies entered the OWI?

1. In what way did you enter the OWI?
   Ex: Did you enter the industry through partnerships (contractually) with one or more Norwegian/international actors?
2. Was the cooperation essential for successful entry into the OWI? How/Why?
3. Did you consider entry through other entry modes, for example through acquisition or joint ventures?
4. Are you satisfied with the entry process?
    a. If you were to enter now, would you do it differently?
    b. Did some factors that you were not aware of pre entry affect the entry process?
    c. Was the business culture in the country of entry challenging?
5. What actors are your biggest competitors?
6. Do you know how competitors have entered the industry?
    a. Is it a difference between Norwegian and international actors?
    b. If you entered differently, what was the reason for that?

What are the main critical factors for successful entry into the OWI?

1. What factors do you identify as most important for successful entry?
2. What factors are critical for the firm to maintain profitability and keep operating in the industry?
    a. Can one (or more) scenarios push you out of the OWI?
3. What do you consider the main reason for being awarded the … contract in OW?
4. Network
    a. Did you benefit from an existing network when entering the OWI? Was any people/actors in you network of great impact? Why?
    b. Are you under the impression that your should have had a larger network before entry?
5. *Timing of entry:* In retrospect, are you satisfied with the decision to enter the OWI industry at the given time?

    a. Did you take any special considerations when deciding on entering the industry?
    b. Did you even consider delaying enter?
6. Has the OWI changed since you entered? How? Why? In what way have that changed how Norwegian companies should enter the industry?
7. Should any specific characteristics be considered when entering/operating in the industry?

What are the main challenges and barriers for OWI entry among Norwegian companies?

1. Did you experience any unforeseen challenges when entering the OWI? For example any barriers such as high costs, prolonged projects or high risk?
2. Several countries have national incentives to keep the workplaces locally. Have you experienced this as challenging for industry entry internationally?
3. Regulatory barriers
    a. Currently, the OWI is dependent upon subsidies. To what degree is this a barrier to enter the industry?
    b. Are you as a firm directly dependent on subsidies?
4. Uncertainty: Did the high level of uncertainty, especially due to lack of standards, make you sceptical towards industry entry? For example floating foundations vs monopile foundations, and the lack of one technological solution.
5. Risk: You entered the OWI despite the industry being characterized as having a high level of uncertainty and risk, while other firms were not able to take on this risk. What made you capable to enter the OWI considering this?

Post-entry

1. In your opinion, why have Norwegian firms exited the OWI or lowered their activity in the industry the last years?
2. What do you think the industry will be characterized by in the future, in terms of technological solutions and political regulations?
    a. Do you believe that the industry will be subsidy independent in near future?