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BW Offshore: Riding the Storm

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Abstract

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Author: Johan Peter Lundevall Arnet
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The modern company exists within an environment of constant change, brought on by economic interconnectedness and rapid technological progress. In this state of uncertainty, companies must actively create new value on a continuous basis in their pursuit for competitive advantage. In light of this precarious state of firm realities, two literature streams have been developed. Strategic Change theories focus on antecedents, processes and consequences of a major shift in an organisation's goals and scope. The Dynamic Capabilities framework aims to explicate the capabilities within a firm that allows it to continuously recreate competitive advantages. To illustrate the application of these theories this dissertation employs a teaching case recounting the crisis and rebound of BW Offshore, an oil technology lessor. The case starts in late 2015 when the company was experiencing the aggregate impact of an untenable business model, market recession, and industrial accident. Next, the case recounts the subsequent firm survival and launch of a disruptive new business model. The case demonstrates the internal and external factors that led to a strategic change within the company. Moreover, it shows that the use of dynamic capabilities can be instrumental in the creation of surprising value within the context of a recessionary market.

Resumo

Título da Dissertação: BW Offshore: Riding the Storm
Autor: Johan Peter Lundevall Arnet
Palavras-chave: Mudança Estratégica, Dynamic Capabilities, Petróleo e Gás (O&G), Exploração e Produção (E&P), tecnologias offshore, FPSO (floating production, storage and offloading), leasing

A empresa moderna vive num ambiente em constante mudança, causado pela instabilidade económica e pelo rápido progresso tecnológico. Nesse estado de incerteza, as empresas precisam de criar valor de forma contínua, em busca de manterem uma vantagem competitiva. À luz da realidade atual, foram desenvolvidas duas correntes de literatura. As teorias da mudança estratégica têm o seu enfoque nos antecedentes, processos e consequências de uma grande mudança nos objetivos e âmbito de uma organização. A *framework* das Dynamic Capabilities visa explicar as quatro dimensões que permitem recriar continuamente as vantagens competitivas. Para ilustrar a aplicação dessas teorias, esta dissertação apresenta um caso de estudo sobre uma situação de crise e a sua repercussão na BW Offshore, uma empresa no sector do Petróleo e Gás. O caso começa no final de 2015, quando a empresa apresentava um modelo de negócios insustentável, em resultado da recessão de mercado e de um acidente industrial. Em seguida, caso foca em como o lançamento de um modelo de negócios disruptivo permitiu a subsequente sobrevivência da empresa. O caso demonstra ainda quais os fatores internos e externos que levaram a uma mudança estratégica dentro da empresa. Além disso, mostra que o uso das dynamic capabilities pode ser instrumental na criação de valor no contexto de um mercado recessivo.

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Last but not least, I would like to thank all friends and other BW Offshore employees who gave of their time, shared resources, and provided valuable input.

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Figures and Tables

Abbreviations

DCs: Dynamic Capabilities

SC: Strategic Change

BWO: BW Offshore

FPSO: Floating, production, storage, and offloading

BWG: BW Group

BWE: BW Energy

NOC: National Oil Company

E&P: Exploration and Production

CDSM: Cidade de São Mateus

L&O: Lease and operate

EPC: Engineering, procurement and construction

IOC: International Oil Company

O&G: Oil and Gas

Glossary

OBX: Oslo Stock Exchange benchmark index

SBM: BWO competitor

Modec: BWO competitor

Brent: Trade classification and oil price commodity benchmark

Prosafe Production: acquired BWO competitor

1. Introduction

The objective of this dissertation to explore the conceptual and practical applications of strategic change (SC) and dynamic capabilities (DCs) during a period of crisis and recreation. The business environment is becoming increasingly volatile due to globalisation and technological progress (Reeves & Deimler, 2011). In a state of constant uncertainty, companies must adopt a mindset of change as a rule rather than the exception.

SC theories focus on the antecedents, processes and consequences of a major shift in a company's goals and scope of activities (Müller & Kunisch, 2018). The central question for managers becomes to what degree they can make an impact on the trajectory of the firm. Moreover, when strategic fit with the environment is a moving target, the definite appropriateness of any given change is a tenuous proposition (Zajac, Kraatz, & Bresser, 2000).

To achieve and sustain competitive advantage in a dynamic world requires firm capabilities that can continuously alter their current composition (Teece, Pisano, & Shuen, 1997). DCs is a developing framework that seeks to elucidate what these capabilities are, how they can be developed, and the impact of their deployment (Barreto, 2010)

The pedagogical relevance is an illustration of the applicability of modern strategic theory and the DCs framework on a firm type that is rarely encountered by students. Further, it seeks to provide qualitative arguments in support for the dialectical SC perspective and an indirect link between DCs and performance. For managers, the aim is to provide a reflection on their ability to influence SC. Moreover, it should highlight the importance of DCs in a firm's creation of competitive advantage.

BW Offshore (BWO) is a production facilities lessor that in the final days of 2015 was in the midst of a strategic crisis. A recession in the oil market had laid bare fundamental flaws in its business model. Industrial accidents, political turmoil and financial troubles would further threaten the survival of the organization. BWO and its leadership had to radically reconceptualize their business platform to both survive and provide new paths for growth. The story will place students in the shoes of BWO's management as the crisis unfolds. Pedagogically, the goal is for an expanded understanding of how exogenous and endogenous forces drive SC within a company. The subsequent management actions provide a granular depiction of DCs; and should help students elucidate the intricacies of the framework in a real-life organisation.

This dissertation will follow a five-part structure. The first section reviews the relevant SC and DCs literature. The second section contains the teaching case itself. The third section,

the teaching note, will provide a pedagogical overview of the case and its analysis. The fourth section provides a discussion to bridge the theoretical frameworks with case events. The final section contains the conclusion of the dissertation.

2. Literature Review

The literature review will cover two distinct theoretical streams, SC and DCs. For each stream, the review will cover: the fundamental concepts and framework; divergent branches of study; while simultaneously highlighting the most relevant theories to date in relation to the teaching case and subsequent discussion.

2.1 Strategic Change

Strategy at its most fundamental level is "the determination of the long-run goals and objectives of an enterprise, and the adoption of a course of action" (Chandler, 1962). The domain of SC is thus the attempt to explicate the antecedents, processes, and consequences related to a shift in an organisations priorities and scope (Müller & Kunisch, 2018; Rajagopalan & Spreitzer, 1997).

The current literature has converged on two baseline assumptions within the study of SC. Firstly, the motive for change is to align internal and external realities (Rajagopalan & Spreitzer, 1997; Zajac et al., 2000). Secondly, that change is "initiated and implemented from the top down" (Müller & Kunisch, 2018). Müller and Kunisch, in their encompassing review of the research to date, defines the central point of contention as the degree to which management or the environment are the predominant drivers of SC.

This section will examine the trifurcation of the stream into its three main branches; deterministic, voluntaristic, and dialectical. In addition, it will look at the concept of dynamic fit.

The Deterministic Perspective

The deterministic perspective views SC as primarily driven, and constrained by, exogenous variables. The role of managers in this perspective is either inactive or reactive to outside forces (Astley, 1983). This view assumes the presence of three key constraints "resource scarcity, structural inertia and convergence toward industry norms" (Müller & Kunisch, 2018).

Resource scarcity stems from the fact that no organization is entirely self-sufficient, and therefore relies on outside entities to fulfil their resource needs. A firm must thus operate in a way so that they can acquire external resources (Pfeffer & Salancik, 2003).

Structural inertia is derived from the ecological theory of natural selection. As modern society favours accountability and reliability, firms with these traits survive. These traits require firms to emphasise reproducibility, which in turn require internal structures. These reproducibility structures create an inertial pressure as "the very factors that make a system reproducible make it resistant to change" (Hannan & Freeman, 1984).

Convergence theory contends that as organizational fields become more established, they tend to increase the rate of isomorphism. Isomorphism being "a constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions" (DiMaggio & Powell, 1983). This institutional isomorphism can be driven by various mechanisms such as mimicry, where firms model themselves after successful firms in uncertain times (DiMaggio & Powell, 1983).

As the deterministic branch views change mainly as a response action, the study of SC focuses on what antecedents make this change more likely. This can range from organizational age, poor performance, and somewhat paradoxically, the existence of previous change. Where management does play a role is in breaking inertia; mainly through their existence within temporal and organizational contexts (Müller & Kunisch, 2018).

The Voluntaristic Perspective

In contrast, within the voluntaristic perspective, the importance of organizational actors is paramount. “Individuals and their created institutions are autonomous, proactive, self-directing agents; individuals are seen as the basic unit of analysis and source of change in organizational life” (Astley, 1983). Particular important in this branch is that actors are subjectively defining thein organization and environment on a continuous basis (Astley, 1983). Thus it is the management’s field of vision that is the primary determinant of the "real" environment (Hambrick & Snow, 1977).

It is in the illumination of the SC process that the voluntaristic perspective provides additional value. One of the dominant theories in this regard has to do with “sensemaking and sensegiving” (Gioia & Chittipeddi, 1991). As the voluntaristic school defines the current state as a product of cognitive models, it follows that any change must involve a process of cognitive alteration. Throughout the SC process, the change initiator and stakeholders are using sensemaking (understanding/cognition) and sensegiving (influencing/action) to arrive at the new intersubjective definition of organizational reality (Gioia & Chittipeddi, 1991). This model complements the contextual model of Hambrick and Snow, where the persuasion of reality

flows between the primary decision makers and stakeholders, and decisions made continuously shape the context and next strategic decision (Gioia & Chittipeddi, 1991; Hambrick & Snow, 1977).

Indeed, the perception of past decisions also seems to influence the SC process. For example, past successful strategic decisions tend to create a mental rigidity towards the current organizational form (Audia, Locke, & Smith, 2000). Coined "the paradox of success" in an empirical study by Audia et al., the findings show that past success has a determinantal effect on diverse information seeking and increased belief rigidity. This leads to organizational persistence and an inability to adapt to new paradigms (Audia et al., 2000).

The branch also examines how managers, and their experience, can shape perceptions and SC decisions. Multiple studies have found that outsiders have a higher propensity to instigate change than insiders (Weng & Lin, 2012; Zhang & Rajagoplan, 2010). Looking at executive migration, Boeker found that managers hired from a firm with a different strategic and product focus, within the same industry, increased the probability that the current firm would adopt a similar product-market strategy (Boeker, 1997). In a similar vein, Weng and Lin found that "CEOs are more likely to initiate strategic changes when the focal firms' existing strategies considerably differ from those of their previous firms" (Weng & Lin, 2012).

The Dialectical Perspective

The dialectical perspective sets forth that SC cannot be sufficiently understood from a purely objective or subjective framework, rather organizations are constrained by structures and at the same time inhabited by individuals with the ability to alter them (Müller & Kunisch, 2018).

Consequently, when looking at change processes, the main focus has been towards understanding the interaction between cognitive and organizational structures. An example of this type of interplay model was proposed by Bohman and Lindfors. Their model suggests two SC drivers, the strategic situation and the space for action (Bohman & Lindfors, 1988).

The strategic situation contains various subjective, intersubjective and objective components that in aggregate all have an impact on the SC process (Bohman & Lindfors, 1988). The space of action is the product of an interaction between the objective and subjective; which is framed by the situation. A financial downturn resulting in a loss of cash flow objectively reduces the space of action; however, how the events are perceived by strategic actors also shapes the space. These interactions occur over time as the objective and subjective collide to create new interpretations of the available space (Bohman & Lindfors, 1988).

Bohman and Lindfors also provide a phase progression visible in a recession. From the start of the downturn when the objective space action is reduced with little subjective recalibration; to the final stage where subjective perception can cause actors to eliminate an objective space of action through firm liquidation. The authors stress that the phase progression can be changed. The trajectory of the firm will always depend on starting conditions and continuous reinterpretations of the available space to act (Bohman & Lindfors, 1988).

The model echoes the subjective and intersubjective mental models proposed by the voluntaristic school (Astley, 1983) as well as the objective firm and market conditions stressed by determinists (Hannan & Freeman, 1984). Importantly, it highlights that the dualism of business realities can both be accounted for in an SC process theory.

Dynamic Fit

A common assumption among the three branches is that the motive for SC is to improve the fit (Müller & Kunisch, 2018). Fit is "the search for an organizational form that is both internally and externally consistent" (Snow & Miles, 1984). The central paradox of fit is that it must align with factors that are implicitly not consistent. This issue is explored by Zajac et al., in their development and study of dynamic strategic fit (Zajac et al., 2000).

The model proposed views the internal and external factors as environmental and organisational contingencies. This allows for a framework that can address the temporal and multivariate components needed to bridge SC and dynamic fit. Further, it advances several conditional issues concerning beneficial SC. Firstly, SC that increases fitness with multiple contingencies, either internal or external, will be more beneficial. Secondly, as contingencies vary over time, the resultant benefit of SC depends on its timing. Finally, that strategic fit is idiosyncratic to each organisation (Zajac et al., 2000).

2.2 Dynamic Capabilities

The DCs framework is an attempt at a general theory of firm competitiveness in an increasingly volatile business environment (Teece et al., 1997). Since its inception, it has developed into a distinct research field, with a plethora of papers seeking to solidify its theoretical grounding (Barreto, 2010; Zahra, Sapienza, & Davidsson, 2006). The combination of youth, fervour and weight of the questioned asked "how firms achieve and sustain competitive advantage" (Teece et al., 1997), has resulted in stream were even the most basic components of the framework are still up for debate (Barreto, 2010).

This section will review the evolution of the framework; market context and development; path dependencies; and outcomes.

Genesis and Evolution

DCs derives its theoretical genesis from the resource-based-view (RBV) which posit that sustained competitive advantage comes from possessing and exploiting; valuable, rare, inimitable and non-substitutable resources (VRIN) (Barney, 1991; Wernerfelt, 1984). RBV introduces the notion that "control of scarce resources is the source of economic profit", thus Teece et al., posit that the skills of acquisition, maintenance, and development of resources becomes central strategic issues (Teece et al., 1997).

Within the RBV, firm resources are broadly defined as including physical (e.g. specialized equipment), human (e.g. engineers), and organizational (e.g. reporting structures). These resources provide the basis for the value creation of the firm and their competitive advantage (Barney, 1991). Ordinary capabilities are the core competencies that utilises the resource bundle of a firm to deliver value, or as Winter puts it "how we earn a living now" (Winter, 2003). Shuen et al. categorised them as operational, administrative and governance activities (Shuen, Feiler, & Teece, 2014).

DCs, in contrast, can be thought of as the “orchestration capacities” of the firm that allows it to change its resource base and ordinary capabilities (Teece, 2007; Winter, 2003). This process of “resource manipulation” occurs in the form of integration, reconfiguration, or the gain and release of resources (Eisenhard & Martin, 2000).

Zahra et al. tied the definition directly to the management’s perception of opportunities, willingness to change, and their ability to implement them (Zahra et al., 2006). The notion that top management is crucial for DCs is later echoed by Shuen, Feiler and Teece, who argue that “the ability of a CEO and the top management team to recognize a key development or trend, then delineate a response and guide the firm in co-creation and co-development activities, may be the most important element of the firm’s dynamic capabilities.” (Shuen et al., 2014).

Barreto, in an extensive review of the literature stream, resynthesized the definition to: "A dynamic capability is the firm’s potential to systematically solve problems, formed by its propensity to sense opportunities and threats, to make timely and market-oriented decisions, and to change its resource base.” Here DCs are turned into an “aggregate multidimensional construct” were all dimensions must be present to explain the concept (Barreto, 2010).

Velocity and Development

In their introduction of the framework Teece et al., explicitly define DCs within “rapidly changing environments”(Teece et al., 1997); since then, the relevant context has become a central point of contention (Barreto, 2010).

Eisenhardt and Martin posited that DCs is applicable in different contexts; but that the market velocity would shape the development of DCs. Moderately dynamic markets are characterised by stable industry structures, clear boundaries and players, and frequent but predictable change. In these markets, effective DCs rely heavily on existing knowledge among managers, rules of thumb, and well-organized activities (Eisenhard & Martin, 2000). In contrast, "high velocity" markets are those with unstable structures, unclear boundaries and changing players, and where change occurs frequently along unpredictable paths. These industries will rely on DCs that are less codified and more intuitive as the unpredictability of the market will make existing knowledge less valuable. When it comes to learning capabilities, the two markets can be summarised as "learning by doing” and “learning before doing” (Eisenhard & Martin, 2000).

Still, others have argued that the framework does not need an implicit definition of market context, but rather that they may be more useful in some markets than others (Zahra et al., 2006). A recent application of the framework on the upstream oil and gas sector, not traditionally considered high velocity, also questions the need for a contextual definition (Shuen et al., 2014). The authors instead focused on the need for DCs as a result of the deficits of previous static and external frameworks which: “will not bring into focus the fact that large incumbents may lack capabilities or resources to execute high potential investment opportunities” (Shuen et al., 2014).

The development of DCs has principally been focused on learning mechanisms (Barreto, 2010). Learning is based on repeated practice, the quality of the learning is dependent on individual and organizational skills, and learned knowledge must be codified into routines (Teece et al., 1997). This has been further built upon by Eisenhardt and Martin, who posited that an organisation’s environment affects practice. Firms in moderate velocity markets deepen their DCs through small but frequent variations in related experiences; and high-velocity market firms benefit more from a careful selection of the most valuable experiences in their learning process (Eisenhard & Martin, 2000).

Path Dependencies

There has also been made contributions to how DCs differ among firms. The concept of path dependencies was introduced in the framework's inception as "previous investments and its repertoire of routines (its history) constrain its future behaviour" (Teece et al., 1997). This narrowing of the evolutionary paths of the firm is based on the idea of localized learning; new knowledge is acquired by contact with current activities, and because the development and use of DCs require long-term cost commitments (Teece et al., 1997; Winter, 2003).

These path dependencies are further explored by Zahra et al. when looking at the organizational age and learning modes. In older firms, the discovery of DCs become increasingly reliant on experimentation, imitation and planned change rather than improvisation and trial-and-error. How the firm builds its capabilities also changes with age as it seeks to "both leverage what the firm is already doing while stretching its competence basis" (Zahra et al., 2006).

Outcomes

Perhaps the most contentious concepts in the current literature is the expected outcome of DCs (Barreto, 2010). Teece et al. in their original paper, along with other subsequent paper, express a direct causal effect between DCs and firm performance (Teece et al., 1997).

Another perspective comes from Eisenhardt and Martin, who argue that it is the quality and timing of the resource configuration brought about by DCs that provide competitive advantages, and not DCs in and of themselves (Eisenhard & Martin, 2000). This stems from the authors view that DCs are similar among firms and are equifinal. If different firms can achieve similar DCs from different starting points, they are not sustainable in the long-term perspective (Eisenhard & Martin, 2000). Zott, while still arguing for an indirect link, found that even if DCs are equifinal, the timing, cost, and learning in their deployment can lead to different performance outcomes (Zott, 2003).

Both these views are supported by Zahra et al., arguing that the relationship between performance and DCs are mediated by the resulting ordinary capabilities. However, still concede that given two firms equal in ordinary capabilities, the one with superior DCs is more likely to make timely decisions (Zahra et al., 2006).

3. Teaching Case – BW Offshore: Riding the Storm

It was a dark and stormy night outside the offices of BW Offshore (BWO) in Oslo, Norway. The gloomy forecast did not only shade the management teams' Christmas plans but reflected the overall state of the company. "We have to cut 35 percent of onshore staff," said CEO Carl Arnet, "this will of course affect many of you here in this room as well". In those last days of 2015, the offshore oil and gas (O&G) facility lessor was peering over the precipice.

It all started with the oil price collapse in mid-2014; ending half a decade of historically high crude prices [1]. While the shock rocked the O&G industry as a whole; it also exposed fundamental flaws in BWO's business model. A legacy of "hell and high water" contracts had been eroding margins and compounding risk. The next year turned a bad situation into a crisis; the company was hit by a deadly explosion and political turmoil in quick succession. With dwindling cash supplies, a plummeting stock price, and a bleak market outlook; the current state of the company was no longer tenable.

After the news of the upcoming organisational upheaval, the meeting was adjourned. Carl remained behind and looked pensively out the window. Outside the storm had gathered in full force, howling as if it wanted to tear the building down. The company needed a new course.

3.1 The Lay of the Ocean

The Oil Industry

The modern oil age can be said to have started in 1854 when Colonel Drake led the first drilling operation in Titusville, Pennsylvania [2]. From its relatively humble beginnings as a source for lighting oil, the black gold soon came to permeate all facets of modern life. Oil was foundational in the rise of rapid transportation through the automobile and aviation industries; increased food yields through pesticides and fertilisers; and the materials explosion in the way of plastics [2].

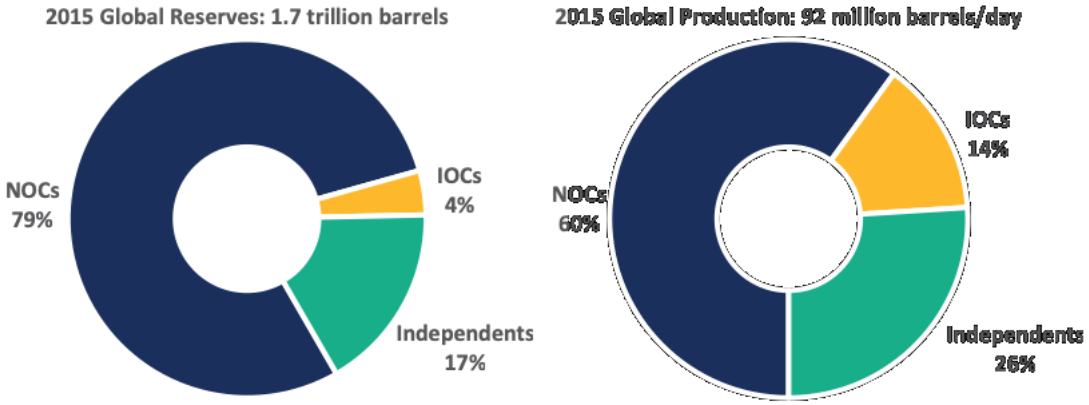
From the fields of Pennsylvania, the exploration and production (E&P) of oil quickly became a global pursuit. In its early history, the industry was dominated by private and state-sponsored conglomerates; such as Standard Oil and Royal Dutch Shell. However, after numerous political upheavals throughout the 20th century, most of the world's oil resources came under the control of national governments [2]. Beyond a purely economic impact, the control over oil resources also served as a catalyst for revolutions, wars and the rise of new geopolitical power paradigms.

By the 21st century, the industry could be broadly classified into three categories (F1).

- National Oil Companies (NOCs), large integrated state-controlled companies.
- International oil companies (IOCs), mainly privately owned and fully integrated conglomerates.
- Independents, small to medium-sized private firms that primarily focused on E&P activities.

The industry was further divided into upstream (E&P), midstream (transportation, storage and wholesale) and downstream (refining to end products).

F1: Upstream Structure [3]

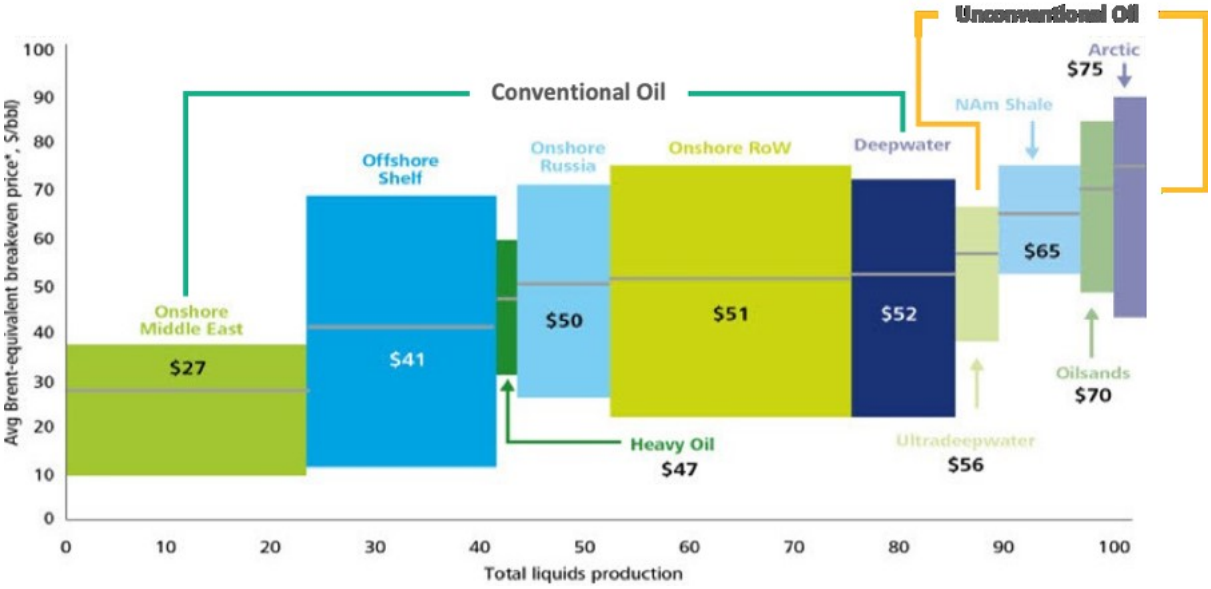


New Frontiers

An insatiable appetite quickly spurred investments into technologies that pushed the boundaries of extraction. This did not only lead to greater recovery but would soon open up new frontiers.

Offshore production, first initiated off piers in the 1890s [2], would eventually develop into Ultra-Deepwater projects going beyond 2.0 km water depths [4]. The use of offshore and technologies was expensive (F2) but justified by ever-increasing demand and commodity prices. In developing and deploying the technologies to make such projects possible; the industry broadened its global reach and deepened its operational complexity.

F2: 2015 Upstream Breakeven Prices[1][4]



As the industry matured, more and more of this complexity was handled by a bourgeoning service segment. E&P firms would often own and operate the field, while a whole host of sub-suppliers would build the necessary offshore architecture. An offshore oil play needed seismic firms to locate oil deposits; drill rigs to create the wells; production platforms; pipelines to the mainland; and numerous other supporting activities.

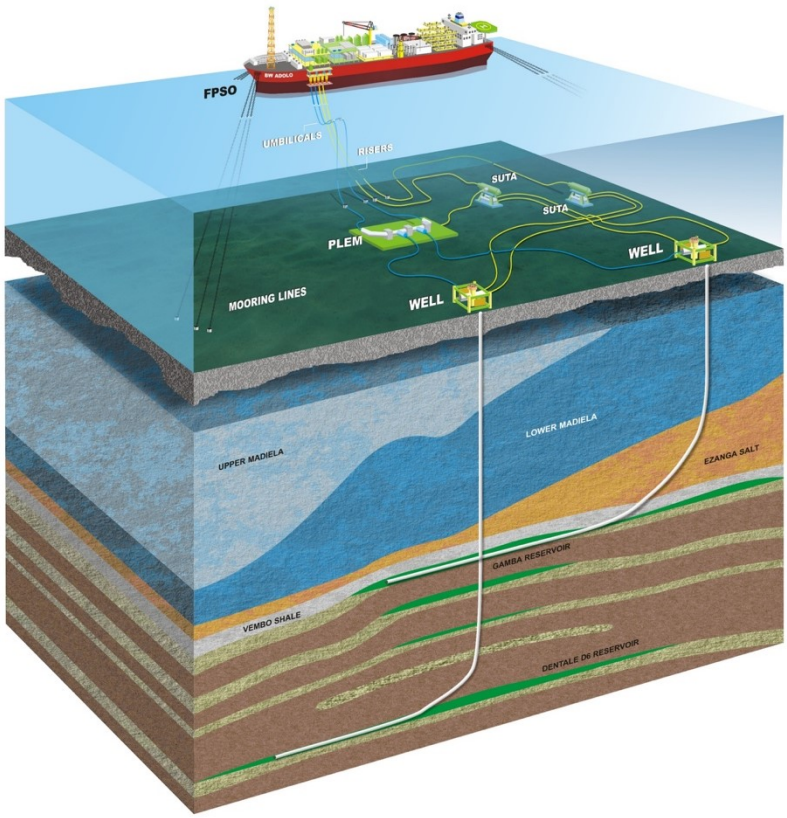
FPSO's and the Winner's Curse

One of the technologies developed in this race out onto the open sea was floating production, storage, and offloading (FPSO) units (F3). A marriage between an oil tanker and an oil platform, these units were created based on three perceived advantages.

1. As floating units, they could access oil deposits in extremely deep waters;
2. With onboard storage, they could operate in remote areas that did not have pipeline infrastructure, or where the building of pipelines was economically unviable (due to either field size or water depth);
3. Once all the economically viable reserves had been extracted, the unit could be made seaworthy again and redeployed to new fields; reducing future development costs.

[1] Unconventional oil: general term for shale oil, tar sands and other resources that were not deemed "conventional"

F3: FPSO [5]

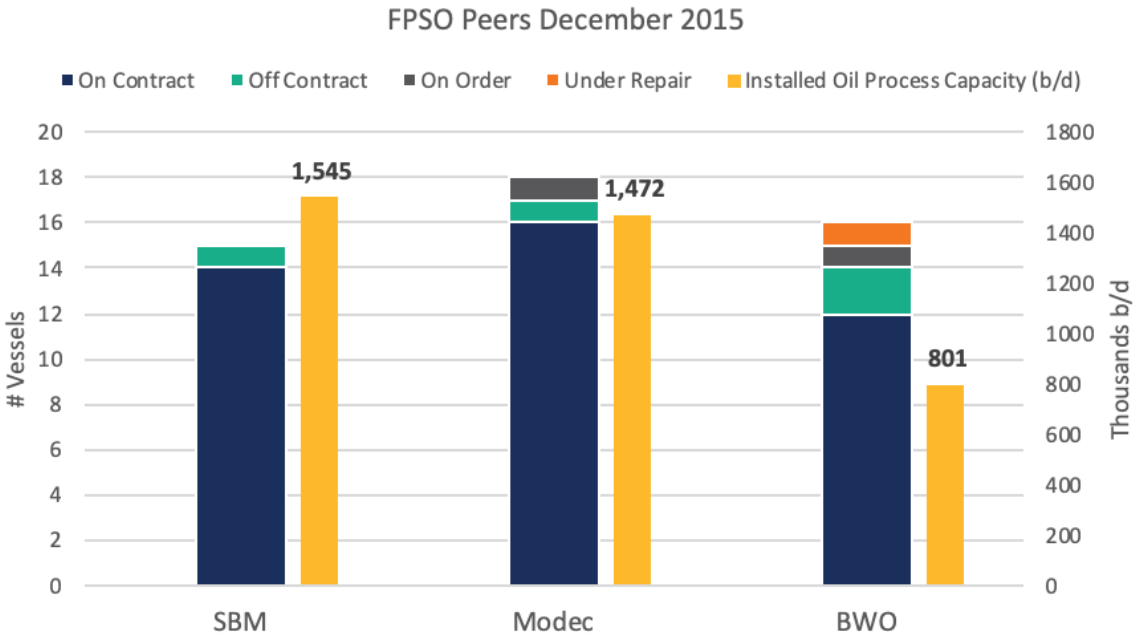


In the 1990s, the development of FPSOs emerged as its own niche segment. E&P firms would launch a tender for a new field, and specialised FPSO firms would bid their designs. The chosen firm would then oversee the final plans, construction, and installation of the unit to the field. These contracts would generally be drawn up as either an L&O (lease and operate) or EPC (engineering, procurement, and construction) deal. An L&O contract entailed an operational lease where the FPSO firm retained ownership of the unit. An EPC deal was a more straightforward asset sale.

After a downturn in the late 1990s oil prices rose quickly in the new millennium. E&P firms raced to develop offshore resources; this brought them to frontier oil regions such as West Africa and Brazil. These regions had many things in common such as deep waters, little existing infrastructure, and similar subsurface geology; the perfect environment for an FPSO. Spurred by the rising E&P activity in the 2000s, new FPSO companies were popping up left and right, each underbidding the other to capture the new contracts. With a surplus of suitors, the E&P firms could craft favourable contracts. The FPSO firms, on the other hand, had not yet fully understood the long-term costs of their contracts. The period became known as the "winner's curse" were the FPSO firms that survived were left with low returns and little excess capital to invest in new ventures.

By 2015, the segment was led by three major players; SBM, Modec, and BWO (F4). SBM, a Dutch company and the segment leader, had focused on large EPC contracts in the Brazilian market. MODEC, a Japanese firm, employed both contract types. Combined, the three companies accounted for 40% of units in the leasing segment, with 60% operated by smaller competitors [6]. Of all existing FPSOs, 50% was still owned and operated by E&P firms [7].

F4: Peer Group [6]



The Bull and the Bear

The BWO story started with a union between the east and west; when the Asian giant World-Wide acquired Norway's biggest shipping firm, Bergesen, in 2003 [8]. Together, the two firms rebranded as the BW Group (BWG). BWO began as a department within Bergesen when they delivered their first FPSO in 1982 [9]. In 2007, the business was listed on the Oslo stock exchange, with BWG retaining 49% of the shares.

The same year BWO bought Advanced Production and Loading (APL), a small Norwegian turret[2] specialist. The acquisition proved consequential, not only did it give BWO access to the most advanced anchoring technology at the time, but also the management duo that would helm the firm for the next decade.

[2] Turret: connects the FPSO to the subsea infrastructure

Carl Arnet was a mechanical engineer that had his start in Hydro, which at the time was Norway's second largest E&P firm. He had spent the 1980s as a platform manager during the golden age of Norwegian offshore oil discoveries. After an MBA and a few years in onshore management, Carl was headhunted to develop APL in 1996. His career trajectory was outside the norm. Most O&G careers would go from oilfield services to E&P, not the other way around, as E&P firms would hire talented services personnel to manage their growing reliance on sub-suppliers.

Knut Sæthre had a master's in finance and had earned his stripes as a project controller for various Norwegian oil technology firms. Knut was a consummate O&G service man; having worked with everything from loading systems to drilling technology. He was brought in as CFO of APL in 2005. Having grown the business from a small engineering specialist to a complete equipment supplier, Carl had further ambitions to take the company public and needed someone who could speak the language of the oil financiers in Oslo.

After the APL acquisition Carl was quickly promoted to CEO of BWO itself. Within a few months he had hired Knut as his CFO. The dynamic duo would come to be known as the Bull (Carl) and the Bear (Knut) due to their normative posture on business decisions.

> "Carl has always had vision, but sometimes it's the tunnel variety. He sees the upsides, but I have to keep an eye on the downsides" – Knut

> "In my world our job is about figuring out the impossible. We aren't paid to find problems we are paid to find solutions" – Carl

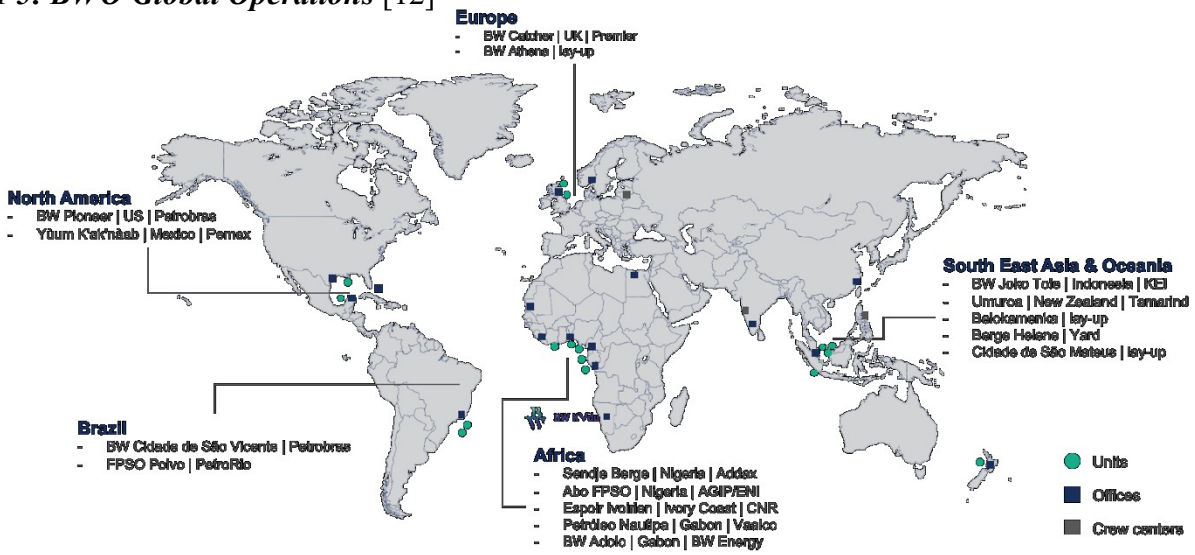
By the time the bull and the bear entered the scene BWO was a mid-tier FPSO L&O player. Under the new leadership, the firm would continue to grow its operations. The duo was quick to see the need for increased size and consolidation in the industry. In 2010, they acquired Prosafe Production, a larger competitor, financed through the sale of APL [10]. In 2012, the firm successfully delivered BW Pioneer; the first FPSO in the Gulf of Mexico and the deepest oil production field in the world at 2,500 water meters depth [11].

BW Offshore

BWO was in many ways an amalgamation of its Asian and Norwegian roots. The headquarters and CEO were located in Singapore; which brought them closer to the Asian yards where they oversaw the construction of their FPSO's. The second biggest office was in Oslo. With its more central time zone, it served as the seat for the COO and operational oversight. In addition, it was a natural location for the CFO considering the Oslo stock listing; and the city's importance as a centre for oil capital. Beyond these two main hubs, BWO had 13 offices around the globe.

In 2015, the BWO fleet consisted of 16 units, active in all the worlds continents (F5). While BWO had a global presence, its main client group was located along the West African coast. Brazil represented by far the world's largest FPSO market; however, the firm had struggled to compete in the region due to two main factors. First of which was an inability to agree on mutually beneficial contract terms with Petrobras, Brazil's NOC. The second was SBM, which had historically won the most lucrative contracts and was dominating the Brazilian market.

F5: BWO Global Operations [12]



At its core, BWO was a L&O specialist. This meant that their primary business activities were to win new contracts, oversee production, and redeploy units once they came off contracts. The motive of the E&Ps in outsourcing the FPSO was both to focus their cash on new fields and to reduce the risk of their own operations. In essence, BWO's business model was based on holding all the risks and costs of an FPSO, and in return, collect a fee based on their lease agreement. Relying on these long-term contracts meant that the firm had to balance the risks and rewards over seven to twenty-year time horizons.

Risks and Rewards

This balancing act was no simple task. For each contract and field, BWO had to build the right FPSO, at the right cost, in the right timeframe. An FPSO was a custom industrial plant, rather than universal pieces of equipment. As such, it was highly sensitive to the cost of parts needed in its construction. Some of these cost inputs moved in tandem with the industry as a whole. However, many of them did not. Gas generators were priced according to the demand of the airline industry, the biggest consumer, and not the O&G industry. The sum of these parts made FPSOs very expensive. Depending on the field, they could go beyond one billion dollars and was always the costliest single item of any new field development.

Holding such a large part of the field cost on their own books meant that BWO was exposed to various financial risks. The first, and most important from BWO's perspective, was residual risk. An FPSO's value, just as a company's, was dependent on its ability to generate cash. BWO could not justify the book value cost of the unit unless it was active on a field contract. This front-end investment was of course drawn out over the life of the field. However, once the field stopped producing, the FPSO lost its value. The reverse was also true; if the field operated longer than expected, BWO could harvest excess returns beyond their initial contract terms. This contract extension, beyond the fixed term, was in fact a large part of the profits given the tough competition. When a contract was not extended, they had to redeploy the asset to a new field. This redeployment capability of an expensive asset was at first perceived as a key advantage of the FPSO platform. In the real world, this did not play out. Each project often required costly customisation to the FPSO, due to irregular reservoir characteristics of each oilfield. Indeed, in the last ten years only 20% of all new market contracts had been captured by redeployed units [13].

The two other risks were reservoir and commodity risk. These risks were in principle held by the client, as they owned the field. Nevertheless, they both impacted BWO indirectly through their relationship with residual risk. If the oil reservoir performed worse than expected, the owner would try to stop operations earlier than anticipated or initiate hostile behaviour to minimize their payments. Similarly, if oil prices were too low to justify the operational expense of the field, the client would try to stop production. These scenarios were not adequately priced into the contracts, Knut explained:

> "We had inherited a bad legacy. We were sitting with a bunch of old contracts were the risk and rewards were out of whack. Even the new ones we initiated, after we took over, didn't give us enough margins."

3.2 The Brewing Storm

The Margin Squeeze

Demand was booming, and prices were up. From the period between 2010 and mid-2014, the average price per barrel was 103 dollars [1]. This led to a level of E&P activity never before seen as oil companies raced to develop resources at continuously higher costs. As the demand for oil field services boomed, so too did their rates. For E&P firms this was not a huge concern; they were after all selling barrels at historic prices. For BWO, it was the start of their troubles.

Unlike drilling and seismic firms, that operate on short-term three to six-month contracts, BWO was often locked into decade-plus deals. The crucial issue was that the contracts had been created for a different market, Knut explained "we had no OPEX[3] inflation adjustments, bad contracts became worse contracts and we were locked out of the upside." As prices rose from below, and E&P companies stuck to their contracts, the margins were eroded.

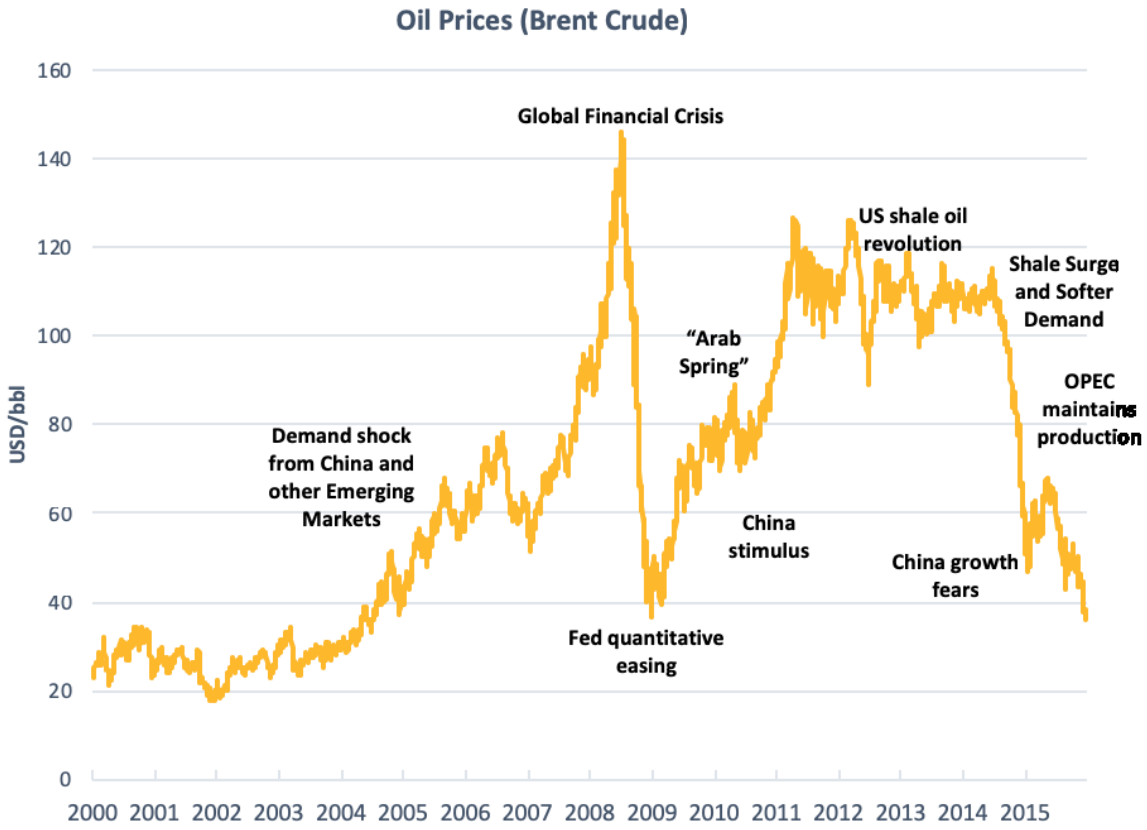
However, with high oil prices, new contracts were available. Extensions were also likely, for even though a field had passed its prime, the increase in lifting costs[4] was offset by the oil price. With their fleet size, BWO was able to deliver record results in 2014 [1], Carl explained: "the takeover of Prosafe gave us the economies of scale to balance out the margin reduction." But like all things, the level of activity and prices did not last, dark clouds were gathering on the horizon.

[3] Operational expenditure
[4] The cost of pumping oil

The Crash

The crash started in June 2014. From a high of 115 dollars per barrel, the price of Brent Crude[5] would fall 68% within 2015 (F6). The fall represented the sharpest decline since the financial crash in 2008 [14].

F6: Historic Oil Price [1], [15]



While the absolute demand for oil was still increasing, the forecasted demand growth had been downgraded. Emerging markets, in particular China, were seeing a sharp reduction in expected demand [16]. Europe and Japan, still struggling with their recovery from the great recession, further contracted the market. The forecast for global demand growth was cut by 230 thousand barrels per day[16].

The excess supply was aggravated by the frenzied E&P activity in the previous decade. The industry had been gripped by a peak-oil mentality, the fear that the world was running out of oil. As a result, investment in unconventional oil plays had been booming. Perhaps the most consequential was the rise of commercially viable fracking. Shale oil resources, previously thought unrecoverable, were starting to make a substantial impact on supply [16].

[5] The oil commodity benchmark price index

The effect on BWO was limited at first. Their long-term contracts ensured regular lease payments, even as seismic and drilling firms saw earnings plummet. But as soon as oil prices moved closer to breakeven field costs, extensions became less likely. BWO was already struggling with redeploying assets but this development was a greater cause of concern as Carl explained: "we had several units getting close to the end of their firm contract[6], without extensions the redeployment risk became compounded." As the severity of the market glut became apparent, the clients started to worry.

> "The long-term contracts were supposed to protect us in a downturn. But as the crisis worsened clients started to pressure us to lower the rates. We could either take the cuts or lose the contract all together. One company simply refused to pay. That burned a 50-million-dollar hole in our liquidity." – Knut

A golden area of E&P projects had come to a sudden end, but two events would in quick succession turn 2015 into a crisis year for BWO.

Operation Car Wash

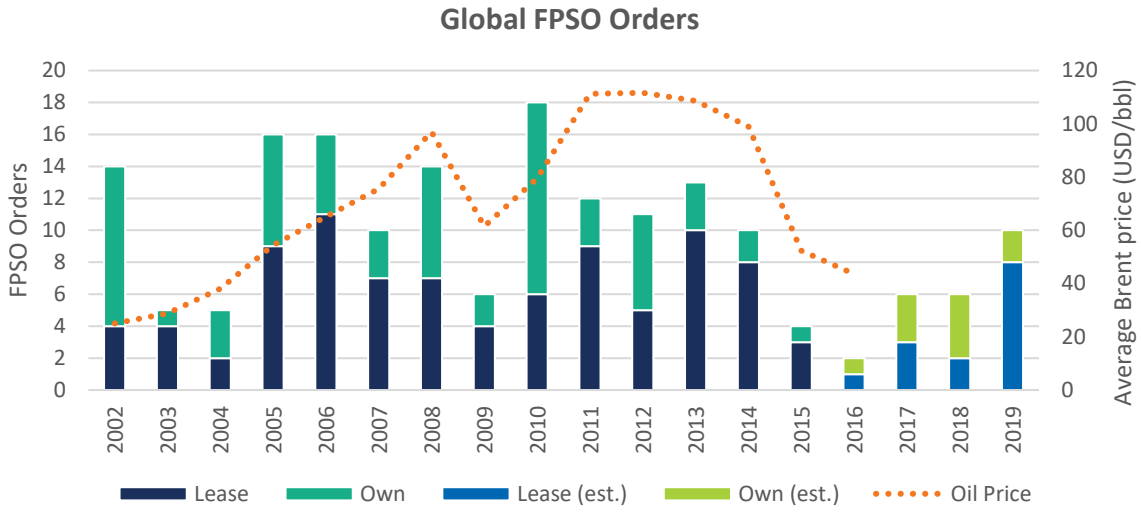
In January 2015 a former executive of Petrobras was arrested at Rio de Janeiro's international airport. At first, it seemed like a fairly non-consequential bribery arrest, the type that was quickly swept under the rug in Brazil. Instead, it was merely the first domino to fall in what would become one of the largest corruption scandals in history [17]. Operation Car Wash would eventually uncover more than five billion dollars in bribes. The investigation quickly spread to billionaires, political parties, and even former presidents. At the nexus of this vast web of misdeeds was Petrobras, Brazil's NOC and one of the largest oil producers in the world. Multiple sub-contractors in the oil industry had secured lucrative contracts through kickbacks to top executives at the firm.

One of those contractors was SBM. In December 2015, 12 people connected to the company, including two former CEOs, were charged with a litany of crimes ranging from price fixing to racketeering. From 1998 to 2012, it was estimated that 46 million dollars in bribes were connected to various FPSO contracts [18]. Neither BWO nor Modec were named in the scandal; however, the fall of the Brazilian giant affected everyone in the industry. Petrobras had been the most active client in the FPSO market; as the corruption scandal continued the prospect of new projects in the region vanished (F7).

[6] F13: Fleet Contractual Overview

"This explained a lot, both why we hadn't been able to win contracts and why things were so ineffective there. It was always this surplus of oilfield assets. While we had limited exposure to the Brazilian market itself the scandal sort of knocked us all over. Once all that surplus started spilling over to the rest of the global market the prices really started tanking" – Knut

F7: Global FPSO Orders [1], [6]



The Mateus Accident

Cidade de São Mateus (CDSM) was a BWO unit on contract with Petrobras, 120 kilometres off Brazil's southern coast. On February 11, an explosion occurred inside the pump room at the aft of the vessel. What started as a condensate leak and audible alarm, eventually led to a full-scale evacuation and unit abandonment. The tragic event killed nine and injured 26 workers onboard [19]. While not extending to environmental harm, the accident was one of the most severe in Brazil's O&G history [20]. Following the accident, an investigation was launched to uncover the root causes. Several factors, from unit design to personnel actions, were in aggregate deemed to have caused the accident [19]. The CDSM explosion led to an extensive reworking of the safety measures within BWO and the industry as a whole.

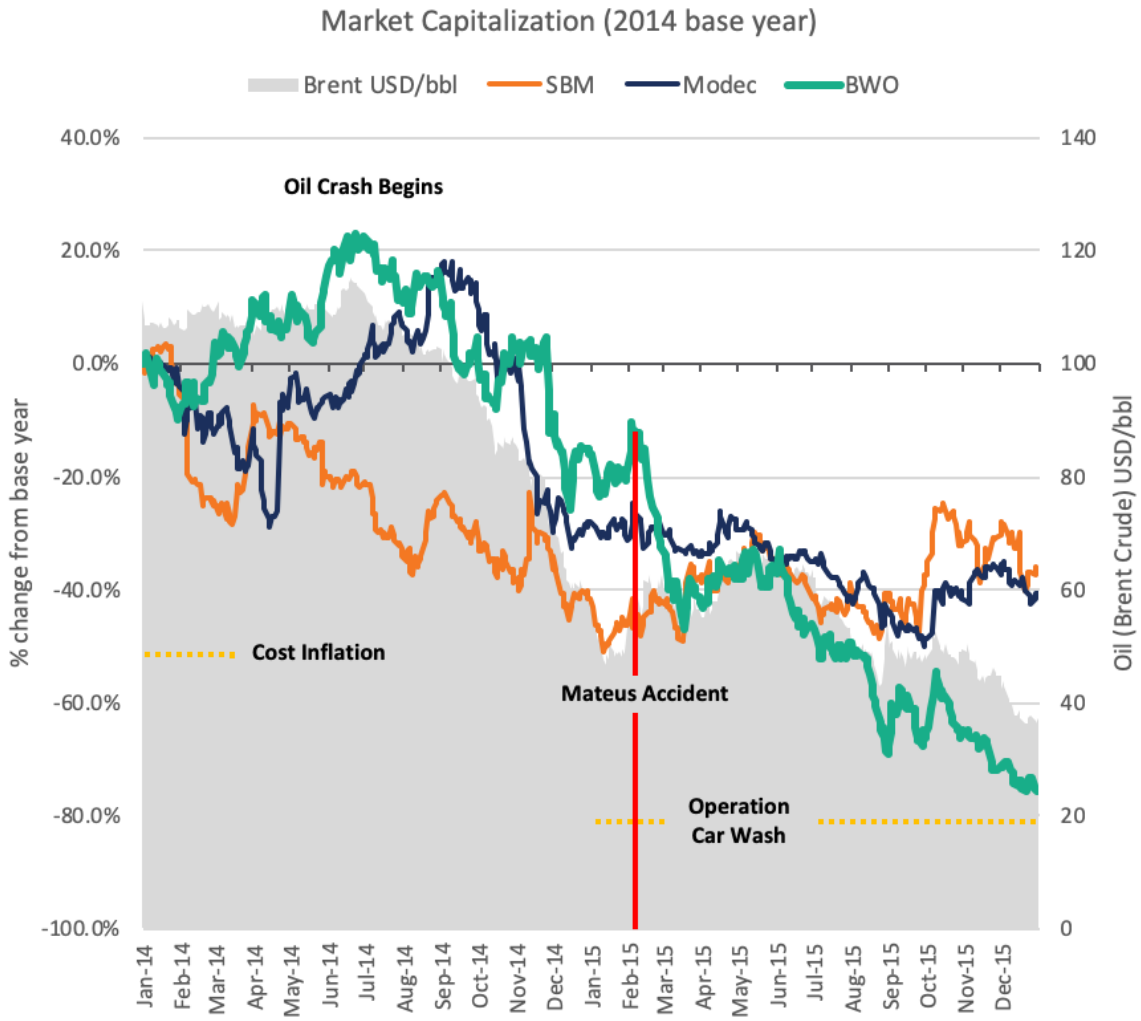
"In our industry HSSEQ[7] is paramount. It was a major reputational blow. We realised we had to make cultural changes within the offshore crew. The ILEAD program[8] started being implemented that year." – Carl

[7] Health, Safety, Security, Environment and Quality
[8] F14: BWO 5 principals of leadership

Taking on Water

The accumulation of tight margins, a recessionary market, and severe reputational loss caused the stock price to plummet (F8). With over 1.85 billion dollars in debt set to mature in 2018, and limited prospects for new contracts; it became clear that the company needed to make radical changes.

F8: Crisis Summary [1]



3.3 A New Course

Do or Die

Carl returned to the office in January 2016, and quickly started disseminating the new vision for the firm:

> "The main thrust of the reorganisation was to plan for a new decade. Within three years, we needed to emerge as a new organisation; at the same time, we had to stay fully operational."

The reorganisation started at the top[9]. The commercial, technical and operational departments were all reorganised under new leaders promoted from within. By February, onshore staff had been reduced by 35% [7]. The cuts were projected to save BWO 30 million dollars in the next fiscal year. Further plans to reduce offshore costs by 10 to 15% were also initiated [21].

As the organisational restructuring was unfolding, the company still had to remain operational. In fact, the company was in the midst of delivering their biggest project yet, BW Catcher, with a price tag of 1.2 billion dollars. Contracted in 2013 for a UK independent; the unit was scheduled for delivery by the end of 2017. An on-time and on-budget delivery of Catcher was crucial, a fact stressed by Carl at every meeting "we were building one of the world's most advanced FPSO and had no room for error". Catcher did not only represent a substantial future cash flow for the company, it was also the accumulation of lessons learned in the previous decade.

> "Catcher was the FPSO 2.0. A long FEED[10] stage ensured that the client knew exactly what they were buying, and we knew what we were building. We managed to remove late delivery penalties and add OPEX inflation adjustments. It was our new contract blueprint" – Knut

In the backdrop the market worsened, in February the oil price had dropped to 27 dollars, the lowest since 2003 [1]. Seeing the state of the industry, and eyeing their debt maturities, BWO entered into refinancing negotiations with its banks and bond holders in May [21].

> "Our perception was that the crisis would still be unfolding in 2018. BWO had the cash to make it until then, but we wanted to bite the bullet early" – Carl

[9] F15: BWO Management
[10] Front end engineering and design

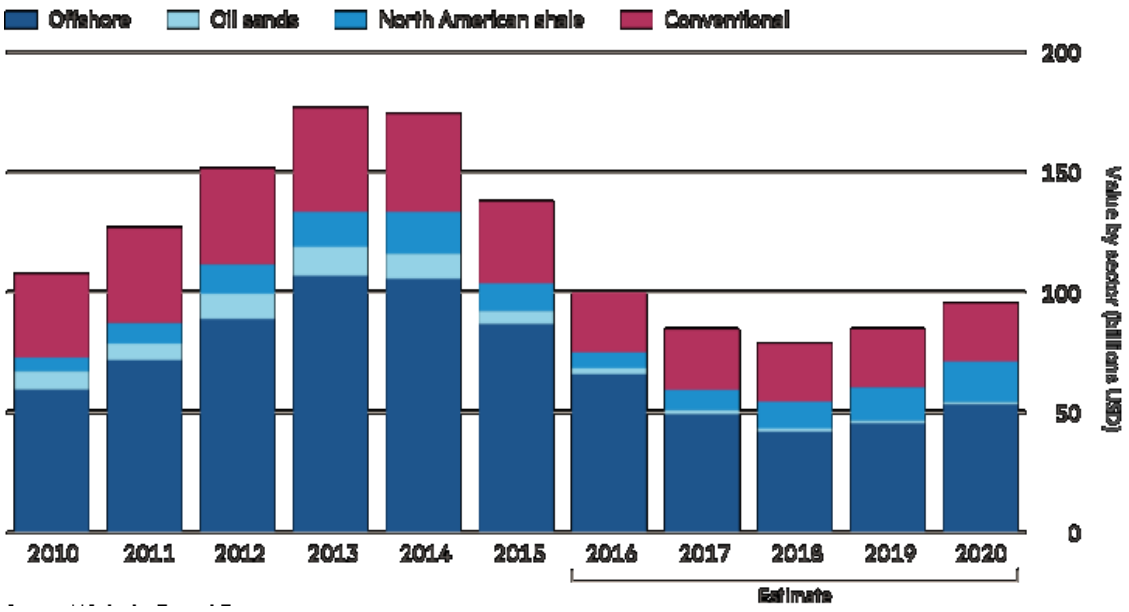
> "We saw no other option. We had to get our interest payments reduced and maturities pushed to remain liquid. We were one of the first out to get refinanced in the industry, the banks were still willing negotiate reasonable terms at that point" – Knut

Within August the company had successfully secured a new financial platform that would extend their credit until 2020. However, BWO could not only seek to survive. As the industry came to grips with the crisis, a new mentality was starting to take hold.

Peak Demand

The fear in the previous decade had been peak-supply; the growing sentiment among E&P firms was now peak-demand. Spurred on by the rise of renewables, electric cars, and climate change, the industry was coming under mounting pressure from investors. For the proponents of the theory, the logic was simple; with peak-demand imminent, the focus should be on short-term projects. The redefinition of E&P's as "energy transition companies" became a popular talking point among the IOCs [22]. The new mentality reverberated through the industry. The CAPEX[11] invested in new field developments was expected to decrease by 50% through the second half of the decade (F9) [22].

F9: Upstream Investment [22]



[11] Capital expenditure

However, some in the industry were sceptical of the new outlook. Demand was still rising, albeit at a slower pace. With lower prices, demand was likely to increase. Others worried about the supply side as well. Short-term projects such as shale oil reduced investment horizons, but the ability of it to sustain reserves were in doubt [22].

The new focus away from long-term offshore projects further eroded BWO's L&O model, Carl saw the trend clearly "Some clients were not going to return to commercially viable projects, even if prices improved". But the changing tides would also bring with it an unprecedented opportunity.

Pain and Gain

The changing prioritisation of E&P firms gave BWO an opening for a new strategic path. Long before the collapse in the oil price, it had become clear that the business model of BWO needed reworking. As a pure L&O provider, the company was always dependant on the right client having the right field in its development pipeline. Sitting with the FPSOs on their own books meant that they had an unlimited downside in the event of a bad project, but limited upside when the market was booming. Carl summarised their position: "the fundamental problem with our model was that we were only sharing in the pain, but not the gain". The clients held all the leverage as BWO needed to redeploy assets; and thus, could craft deals that would ensure that they would retain the potential upside. The solution was for BWO to become its own client.

The idea was not exactly new. In 2014, the company had launched an unsuccessful bid on a Brazilian field. The difference now was that the fundamental market forces had changed. In the middle of 2016, Carl laid out the primary driver for the new strategy:

> "There existed a unique arbitrage opportunity. The field development costs had followed the market down[12], an FPSO now presented an even bigger proportion of the total development cost. The E&P guys would have to spend billions because they can't do anything small, they have this "go big or go home" mentality since they are designed to optimise their NPV[13]. We were focusing on money at risk so we could control the CAPEX based on market conditions. We could deploy our de-risked vessels and develop the field cheaper than anyone else."

However, an arbitrage opportunity was not the only driver, Carl continued:

[12] F16: Upstream Cost Indexes
[13] Net present value

> "It was a buyer's market. The reduction in field investments meant that everyone was unloading field assets onto the market. The previous high E&P activity also increased the sheer amount of quality reserves available for a discount. We could be choosy, finding the right field for our units and minimize conversion costs."

The new strategy solved BWO's previous problem of unit redeployment, while at the same time allowing them to fully realise the upside of a lucrative field. With a new strategy in place, the next challenge was to find the inputs needed to realise the new vision.

Adolo Means Cash

The first hurdle to overcome was BWOs lack of E&P experience. While the company knew their way around an FPSO, few in the organisation had been involved in field developments. Carl recounts the initial pushback:

> "Some worried that we didn't have the required competences to pull it off. Maybe they didn't, but I did… But of course, the board was worried. Since we have one large strong owner our task became easier. Its already difficult enough to convince just one person."

The next challenge was the new financial platform. Having secured their liquidity for the coming years, it had also come with terms that curtailed their ability to raise additional capital. The announced E&P move ruffled some feathers as Knut explained: "Some banks claimed this wasn't the business they had invested in. We had to get this right".

The jump over the first hurdle had started back in 2013. BWO had then been contacted by a small independent for a L&O contract on Dussafu. Located outside Gabon, along the western coast of Africa, the field was estimated to contain 30 million barrels of proven reserves. BWO had operated a unit in a neighbouring field since 2002 for Vaalco, another independent. In the first months of 2016, BWO became aware of a team of ex-Vaalco employees that were looking at buying the Dussafu field. The downturn had not only affected asset costs but had also released talent onto the market. Carl recounted their interest: "we had operated in the area for close to two decades, we knew it well, and with the ex-Vaalco guys we could get both local expertise and E&P experience on the team."

BWO launched a development unit with the ex-Vaalco team and key internal employees. By December 2016, BWO, in partnership with BWG, acquired the Dussafu field at a cost of one dollar per proven barrel. BWO also had the perfect unit on hand to develop the field, Azurite.

Despite having most of the required components now at hand, BWO still needed a new source of capital to fund the field development.

Enter ICBC Leasing. The world's largest leasing firm aspired to enter the offshore industry. To do so they needed a partner they could trust and one with ample offshore pedigree – BWO was the ideal candidate. But with its financial restrictions, the company had to get creative. The solution was found through a form of capital recycling; the creation of a preferred share instrument on BW Catcher. The unit was on track to start production at the end of 2017, but the cash flow would not begin to materialise until 2018. BWO sold part of the future earnings in the form of dividends to ICBC Leasing, and in return received up-front cash. The deal, signed in April 2017, gave BWO 275 million dollars and a new strategic partner [23].

With the project, team, and cash now in place; BWO created BW Energy (BWE). The new subsidiary would forgo the expensive exploration part of E&P activities and instead focus on developing proven reserves[14]. In the summer of 2018, BW Adolo, a conversion of Azurite, set sail from Singapore to Gabon. Three months later the unit started production of first oil, Carl recounts the milestone: "It was the quickest FPSO deployment in history, and we got it within budget."

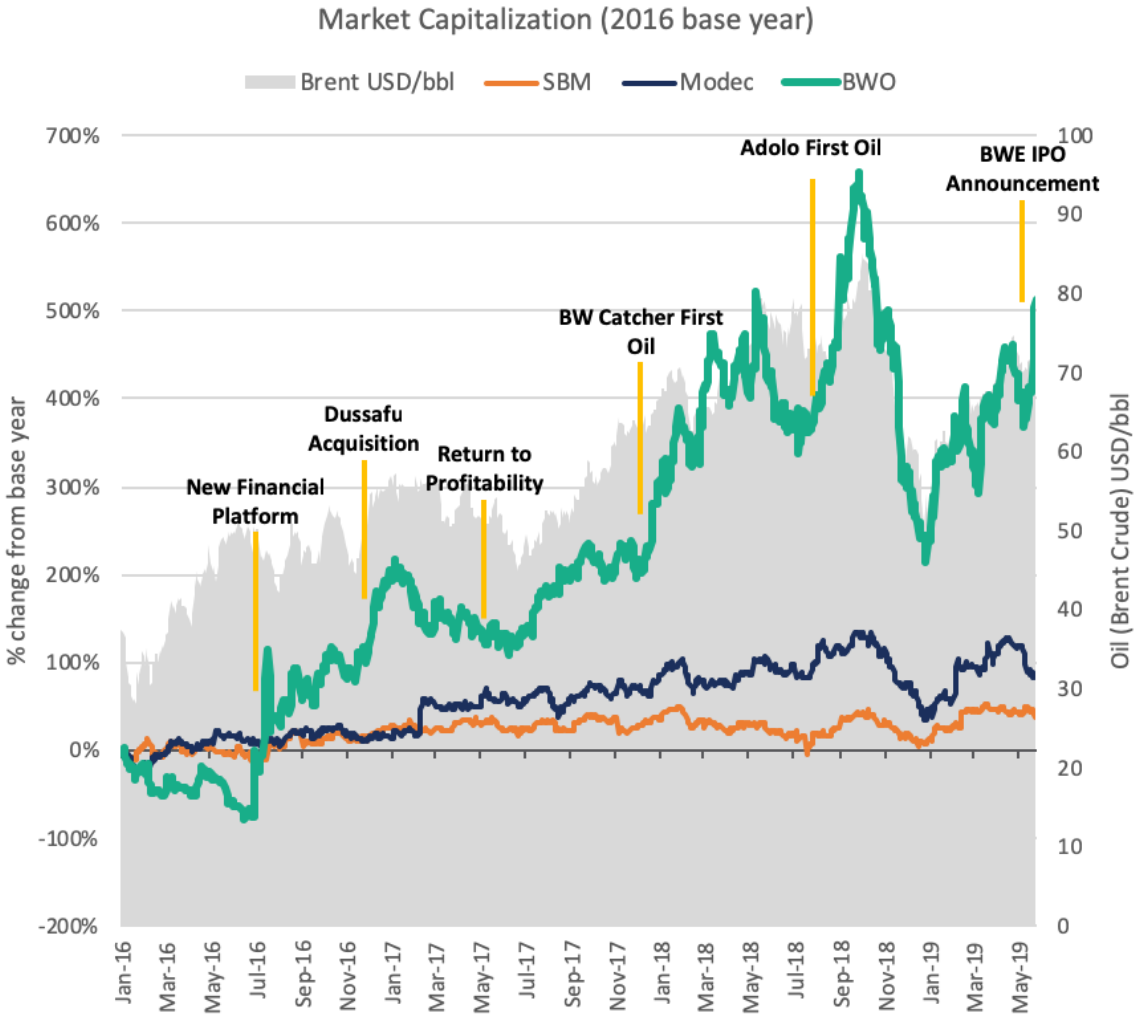
The OBX and Beyond

As BWO was reinventing itself, the markets slowly improved. Fear of declining shale oil output and production cuts by NOCs led to climbing oil prices throughout 2016 and 2017 [24], [25]. By the time Adolo reached first oil in September 2018, the price per barrel was rising beyond 80 dollars [1], [26]. From posting losses in 2015 and 2016, BWO returned to profitability in 2017[15]. With the successful installation of their most high-profile project, Catcher, and the creation of BWE, the company renewed investor confidence and became one of the most watched stocks in 2017. In mid-2018 it was announced that BWO would be included in the OBX, the reference index on the Oslo Stock Exchange [27].

[14] F17: BWE Business Model
[15] T18-21: Financial Metrics

The response to the crisis by BWOs main competitors had been mixed. Modec had continued with the old model of balancing out small margins with increased size. SBM, on the other hand, had returned with a renewed focus on EPC deals. BWO was still the smaller player, but by May 2019, their strategic moves had increased their market capitalisation by 513% (F10).

F10: Rebound Summary [1]



The beginning of 2019 would see the continued development of the new strategy. In April, the company announced the signing of acquisition rights for the Maromba field in Brazil [28]. In May, during the first quarter presentation, it announced the initiation of a second phase of Dussafu developments based on better than expected reservoir performance [29].

> "People are starting to understand what we are doing now. I talked to a banker recently who said "Knut, this is disruption!" We are looking for the projects the rest of the segment doesn't know how to deal with. For the IOC's everything has to be gold plated, max production from the get-go is expensive. We are playing a long and cautious game; the developments are essentially risk free after the first phase" – Knut

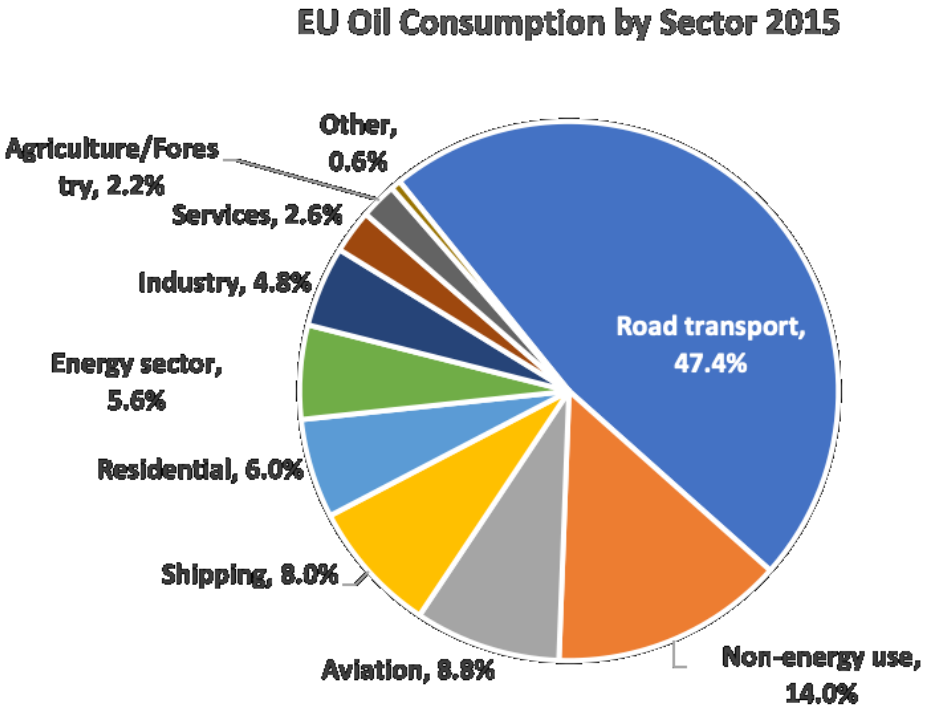
In the same presentation, the company announced two changes that would again alter BWO's trajectory. First, that BWE would be listed on the Oslo Stock Exchange by the end of the year.

> "We have proven the attractiveness of our field development strategy with the Dussafu development. Our E&P activities now have a scale where it is natural to invite external investors to add to BWE's project execution capacity and growth potential." – Carl

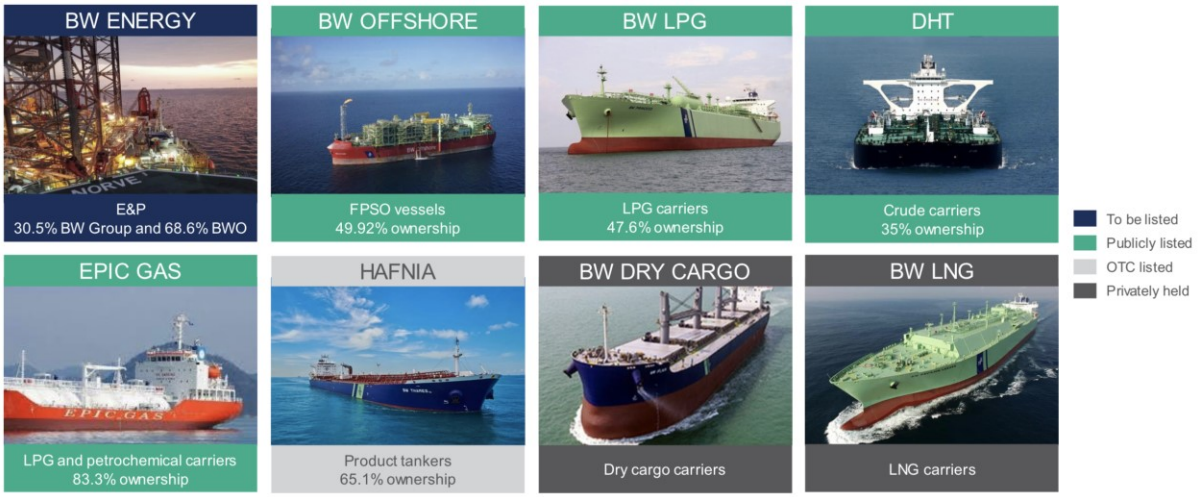
Second, the exit of the Bull and the Bear from the company. Carl and Knut would move into BWE, retaining their previous titles, while a new duo was set to take the helm at BWO. In their wake it seemed as if the company was entering calmer waters. BWO was profitable again and popular on the stock exchange. BWE would function as a sister company, allowing it to unlock the potential of FPSOs as they came off contract. Further, the traditional FPSO market was starting to improve as project pipelines were re-opened upon rising oil prices. However, the market was unlikely to return to pre-2014 levels of E&P activity. The mentality of the IOCs had fundamentally changed, and with the continued rise of unconventional oil and renewables, the offshore market had mounting competition.

3.4 Additional Figures

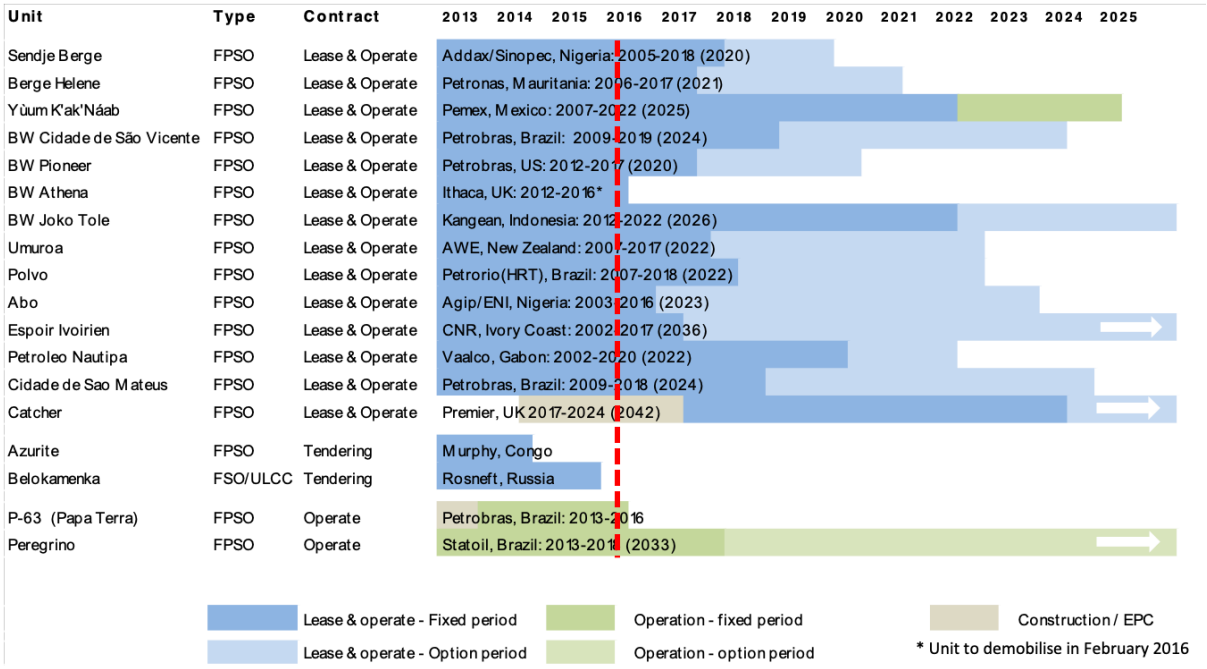
F11: Oil Consumption by Sector [30]

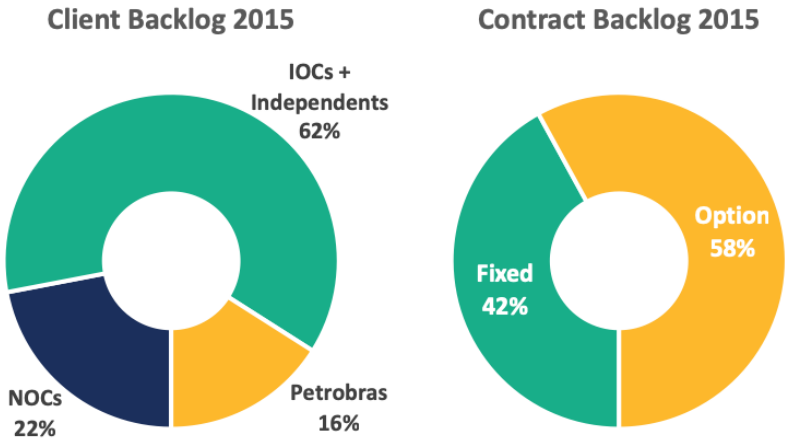


F12: BWG Summary [31]



F13: Fleet Contractual Overview [7]





F14: BWO 5 principals of leadership [32]

I Integrity

Do what you say you will
Be trustworthy
Be transparent
Be authentic

L Leverage the team

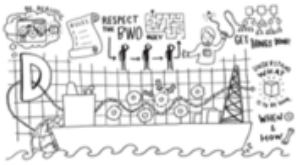
Collaborate and share
Respect the individual
Talk to and not about each other
Inspire and influence

E Excellence

Be good at what you do
Anything worth doing is worth doing well
Be part of the solution
Create value

A Accountability

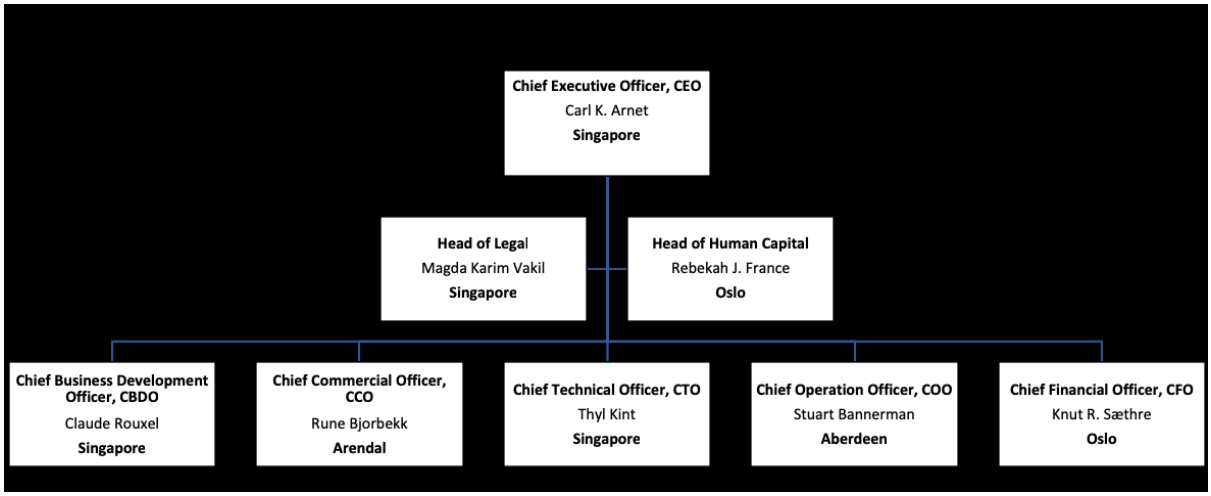
Value the company's resources as your own
Take responsibility
Take ownership
Engage

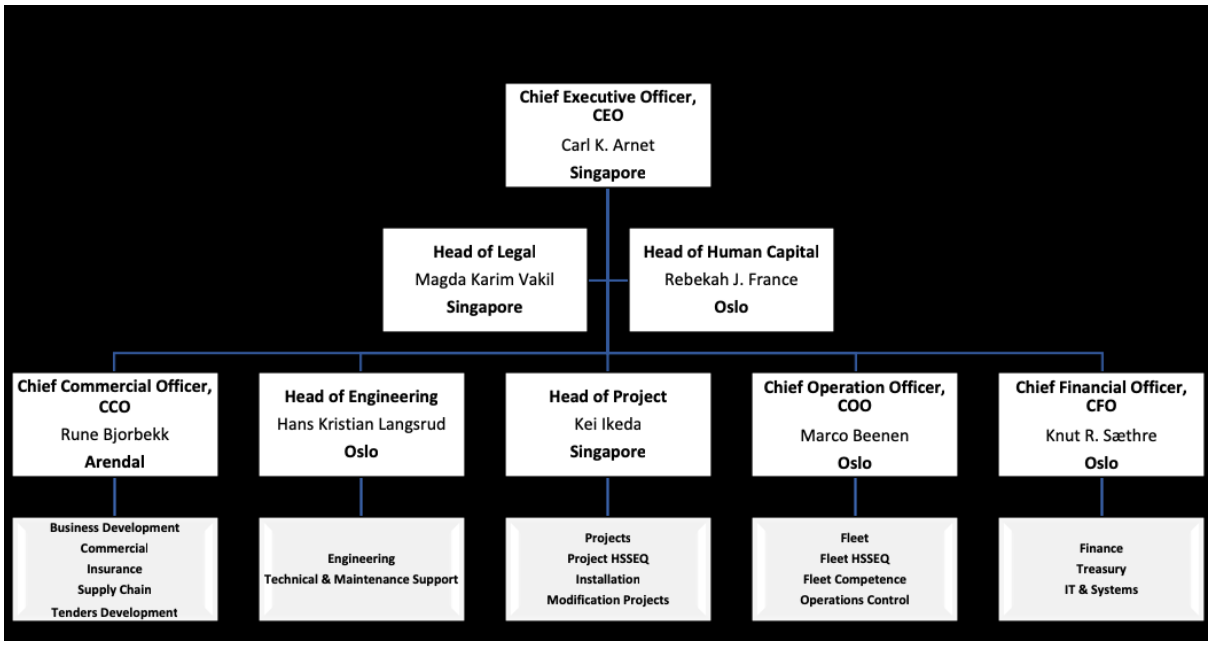


D Disciplined delivery

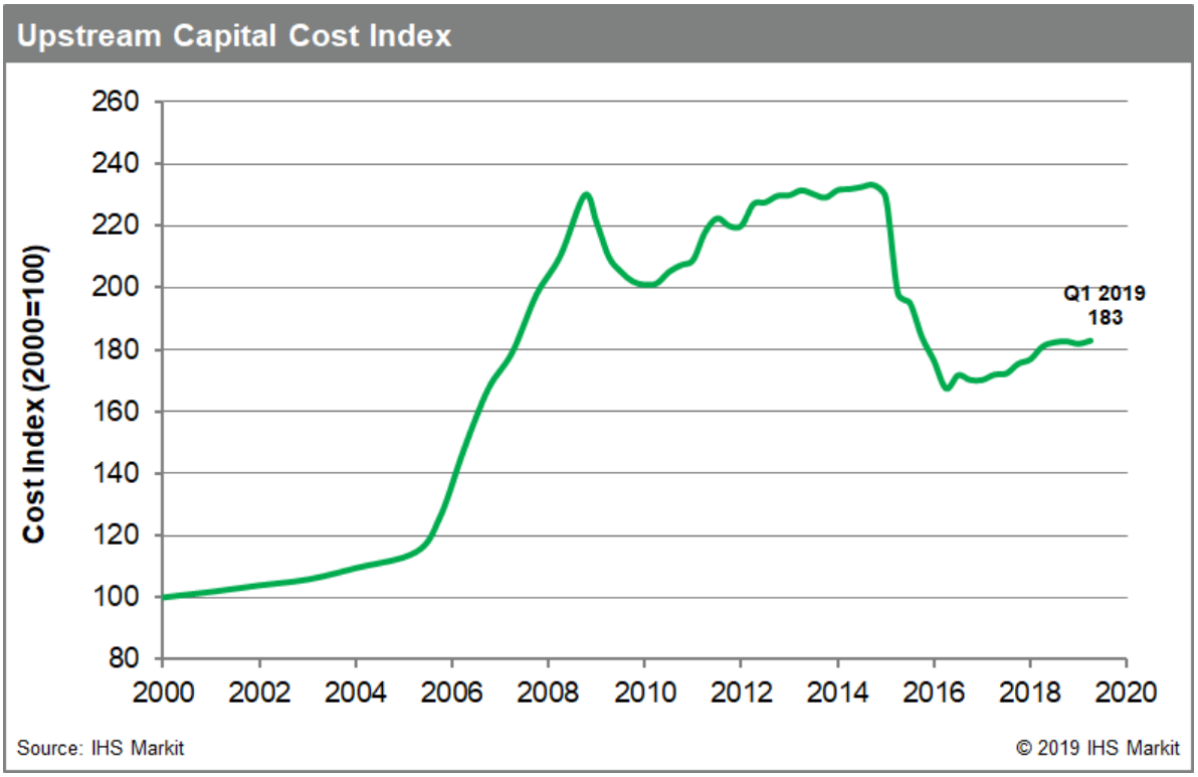
Be realistic
Understand what is to be done, when and how
Get things done
Respect the BWO system

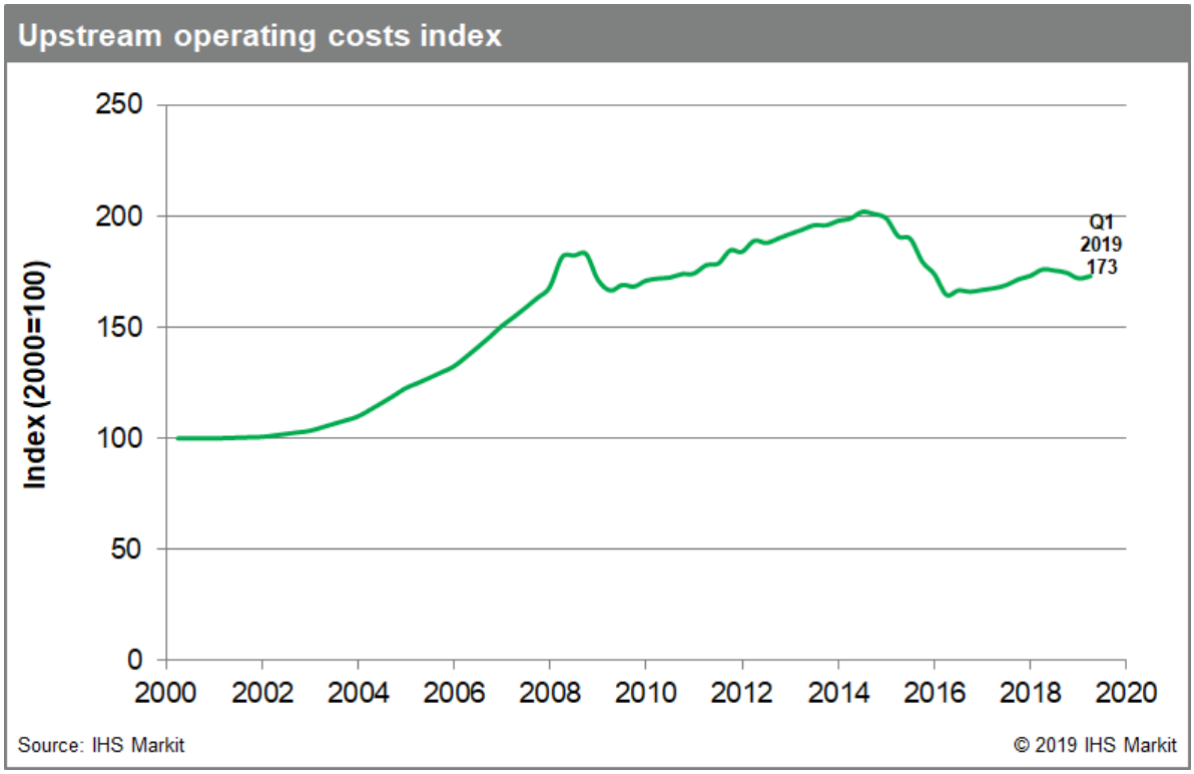
F15: BWO Management [7]





F16: Upstream Cost Indexes [33]





F17: BWE Business Model [31]

Key field investment criteria

- **Access to attractive projects**
  - Major divestment efforts of offshore assets by large players
  - Developments not prioritised by established E&P companies due to their size failing to meet return requirements under the traditional development model
- **Leverage BWO's global operating experience**
  - FPSO related oil & gas assets
  - Located in countries and geologies well known to us
- **Solid understanding of the field's subsurface**
- **Deploy existing FPSOs**
  - Lower cost of initial infrastructure
  - Potential for phased development / de-risking development
  - Robust base case with significant upside

The BWE model solves the traditional E&P challenge

Parameters	BWE approach	Conventional oil company approach
Minimum case	P50-P90 reserves with good upside potential	P50 reserves + prove up total field
Costs	At a minimum to sanction P90	Escalating to capture all reserves
FPSO contract	Reflecting minimum capex	Hell-and-high-water: Reflecting high capex
FPSO termination fee	Limited	Yes, supported by guarantees
Reservoir risk	Shared	None
Upside FPSO contractor	Long-term contract supported by phased development and upgrade work	None
Upside Oil Co.	More reserves	More reserves
Alignment of interest	Yes	Limited

T18: Income Statements [34]

USD million (except per share data)	2014	2015	2016	2017	2018	TTM*
Revenue	1,070	1,108	845	626	870	974
Cost of revenue	467	493	311	246	333	360
Gross profit	**604**	**615**	**533**	**380**	**537**	**614**
Sales, General and administrative	20	18	14	15	18	
Other operating expenses	301	322	324	259	370	414
Total operating expenses	321	340	338	274	388	414
Operating income	**283**	**275**	**195**	**107**	**149**	**200**
Interest Expense	65	50	46	40	80	83
Other income (expense)	8	(401)	(249)	(24)	7	(15)
Income before taxes	225	(176)	(100)	44	77	102
Provision for income taxes	38	40	33	2	40	47
Net income from continuing operations	187	(216)	(133)	41	36	55
Other				(1)	(3)	(11)
Net income	**187**	**(216)**	**(133)**	**40**	**34**	**44**
Net income available to common shareholders	187	(216)	(133)	40	34	44
Earnings per share						
Basic	1.77	(2.04)	(1.47)	0.22	0.18	0.23
Diluted	1.77	(2.04)	(1.47)	0.22	0.18	0.23
Weighted average shares outstanding						
Basic	105	105	90	185	185	185
Diluted	105	105	90	185	185	185
EBITDA	**514**	**136**	**173**	**312**	**495**	**551**

*Trailing twelve months

T19: Balance Sheets [34]

USD million (except per share data)	2014	2015	2016	2017	2018
Cash and cash equivalents	215	120	107	144	141
Total cash	215	120	107	144	141
Receivables	210	201	146	190	117
Inventories	7	7	14	32	64
Prepaid expenses	12	15	15	15	19
Other current assets	109	257	315	43	123
Total current assets	**552**	**600**	**597**	**424**	**465**
Gross property, plant and equipment	4,022	4,436	4,804	5,284	2,878
Accumulated Depreciation	(1,262)	(1,730)	(2,155)	(2,399)	(31)
Net property, plant and equipment	2,760	2,706	2,650	2,886	2,847
Goodwill	187				
Intangible assets	4	4	4	3	2
Deferred income taxes	5	4	3	12	12
Prepaid pension benefit			2	-	
Other long-term assets	161	125	114	98	90
Total non-current assets	**3,116**	**2,840**	**2,771**	**2,999**	**2,952**
Total assets	**3,669**	**3,440**	**3,368**	**3,423**	**3,416**
Short-term debt	371	281	174	223	261
Accounts payable	59	57	34	44	33
Taxes payable	46	42	38	22	21
Other current liabilities	227	229	192	233	282
Total current liabilities	**703**	**608**	**438**	**521**	**597**
Long-term debt	1,434	1,461	1,567	1,198	1,113
Deferred taxes liabilities	1	3	3	-	2
Deferred revenues				323	244
Pensions and other benefits	14	12	4	4	5
Minority interest				288	325
Other long-term liabilities	319	411	436	117	136
Total non-current liabilities	**1,768**	**1,887**	**2,010**	**1,930**	**1,824**
Total liabilities	**2,471**	**2,495**	**2,448**	**2,451**	**2,421**
Common stock	7	7	92	92	92
Additional paid-in capital	1,085	1,085	1,096	1,096	1,096
Accumulated other comprehensive income	106	(148)	(268)	(216)	(192)
Total stockholders' equity	**1,198**	**944**	**920**	**972**	**996**
Total liabilities and stockholders' equity	**3,669**	**3,440**	**3,368**	**3,423**	**3,416**

T20: Cash Flow Statements [34]

USD million	2014	2015	2016	2017	2018
Net income	225	(176)	(100)	44	77
Depreciation & amortization	223	262	227	229	339
Investments losses (gains)	14	10	12	(32)	14
Change in working capital	61	(80)	(27)	316	(28)
Inventory					(32)
Other working capital	61	(80)	(27)	316	4
Other non-cash items	25	422	276	103	35
Net cash provided by operating activities	**549**	**438**	**388**	**660**	**436**
Investments in property, plant, and equipment	(365)	(482)	(401)	(443)	(357)
Property, plant, and equipment reductions	-	86			
Acquisitions, net	(57)	(3)			
Purchases of investments				(35)	
Other investing activities	2	3	2	2	2
Net cash used for investing activities	**(420)**	**(396)**	**(400)**	**(477)**	**(355)**
Debt issued	633	548	415	374	241
Debt repayment	(508)	(564)	(421)	(726)	(278)
Common stock issued			100		
Dividend paid	(82)	(34)			
Other financing activities	(89)	(86)	(96)	208	(47)
Net cash provided/used by financing activities	**(46)**	**(136)**	**(3)**	**(144)**	**(84)**
Net change in cash	83	(94)	(15)	39	(3)
Cash at beginning of period	132	215	122	107	146
Cash at end of period	**215**	**122**	**107**	**146**	**142**
Operating cash flow	549	438	388	660	436
Capital expenditure	(365)	(482)	(401)	(443)	(357)
Free cash flow	**184**	**(43)**	**(14)**	**216**	**79**

T21: Peer Group Ratios [34]

	2014	2015	2016	2017	2018	TTM*
EBITDA USD million						
BWO	514	136	173	312	495	551
SBM	840	332	568	367	664	664
Modec	206	177	309	268	289	276
EBITDA Margin %						
BWO	0.48	0.12	0.20	0.50	0.57	0.57
SBM	0.15	0.12	0.25	0.20	0.30	0.30
Modec	0.06	0.08	0.15	0.16	0.14	0.13
EPS						
BWO	1.77	(15.72)	(1.47)	0.22	0.18	0.23
SBM	2.75	0.14	0.87	(0.76)	1.04	1.04
Modec	0.92	0.82	3.29	2.96	3.52	3.65
ROA %						
BWO	5.33	(6.09)	(3.90)	1.17	0.98	1.28
SBM	6.31	0.26	1.59	(1.38)	2.02	2.02
Modec	1.92	1.66	6.11	5.95	6.59	7.09
ROE %						
BWO	16.12	(20.19)	(14.26)	4.21	3.41	4.34
SBM	25.65	1.18	7.26	(6.18)	8.26	8.26
Modec	6.47	5.87	18.71	14.99	15.14	16.32
ROIC %						
BWO	8.15	(6.34)	(3.85)	2.99	2.78	4.45
SBM	11.16	1.62	5.03	(1.73)	5.72	5.73
Modec	4.15	3.52	11.58	9.28	9.74	10.79
Debt/Equity						
BWO	1.20	1.55	1.70	1.23	1.12	0.83
SBM	1.79	1.99	2.21	1.74	1.53	1.53
Modec	0.16	0.49	0.35	0.23	0.16	0.11
Quick Ratio						
BWO	0.73	0.92	1.26	0.68	0.52	0.49
SBM	1.49	2.21	0.67	0.50	1.14	1.14
Modec	1.18	1.26	1.36	1.37	1.31	1.10
Interest Coverage						
BWO	4.46	(2.54)	(1.17)	2.10	1.96	2.23
SBM	5.19	1.70	1.94	1.07	2.37	2.37
Modec	23.04	11.63	20.55	19.04	32.08	30.20

4. Teaching Note

4.1 Overview

This case analyses the environmental volatility, organizational constraints, and firm actions of BWO from 2014 to 2019. The case is structured around five sections, as outlined below.

Sections	Contents
0. Introduction	• Outlines the main business challenges facing BWO in 2015.
1. The Lay of the Ocean	• Provides a broad industry context. • Describes relevant technologies and their application. • Recounts a brief company history and introduces the two main protagonists of the case. • Explicates BWO's business model in 2015.
2. The Brewing Storm	• Outlines the market forces that undermine the business model. • Recounts external and internal shocks that further threaten the survival of the company.
3. A New Course	• Returns to the timeline of the introduction and describes the immediate actions taken to keep the firm afloat in 2016. • Takes stock of the ongoing changes in the external environment. • Explicates the new business model and firm actions that set it into motion. • Recounts the consequences of the firm actions from 2017 to 2019 and closes the story with a contemplative outlook towards the future.
4. Additional figures	• Contains supporting company and industry information.

4.2 Teaching Objectives

The intended audience for "BW Offshore: Riding the Storm" are master level students, ideally with a background in strategic and financial courses. The overarching teaching objective of the case is for students to examine how a firm can successfully recreate its business model within the context of an internal and external crisis. In support of the primary goal, the case aims to provide three additional teaching objectives.

Firstly, for students to gain an understanding of an industry that is fundamentally entwined in the fabric of the global economy, and consequently how macroeconomic forces affect firm constraints and opportunities within a segment of the industry.

Secondly, for students to analyse firm resources and capabilities within an unfamiliar business activity, with a particular focus on the value of intangibles.

Thirdly, students should be able to explicate how a firm employed DCs to actualize the new strategic path of the business, with an emphasis on how the interplay between intangibles and tangibles can aid transformation.

4.3 Intended Contribution

The intended contribution of the teaching case is threefold.

Firstly, the case seeks to reaffirm the notion that the DCs framework is applicable in mature industries. Further, that market velocity, which the DCs seek to tackle, can come from an intersection of technological, geopolitical and macroeconomic drivers.

Secondly, and more firm-specific, the case intends to show how the actions of BWO can be mapped onto the DCs and SC frameworks. More importantly, that the utilisation of DCs can explicate the successful turnaround of the company.

Finally, the case aims to contribute to a broader discussion of SC and DCs by applying the concepts to an industry segment that is not often considered at the vanguard of strategic theory.

4.4 Pedagogical Overview

To analyse the case, the students should be given the teaching case itself, the abbreviations list, additional figures, and the case questions. From a theoretical perspective, the students should have covered the basics of SC and DCs. The recommended articles for review are "Central Perspectives and Debates in Strategic Change Research" by Müller and Kunisch,

2018; and “Dynamic Capabilities: A review of past research and an agenda for the future” by Barreto, 2010. As a supplement “Dynamic capabilities in the upstream oil and gas sector” by Shuen et al., 2014, is recommended to help students bridge DCs concepts to the case.

The instructor should prepare by reading through the case and teaching notes. The supplemental article by Shuen et al. is also highly recommended for the instructor.

4.5 Assignment Questions

1. What were the external forces that led to BWO’s strategic change? Score each according to its importance as low, medium or high.
2. What were the resources and capabilities of the company in December 2015?
3. Evaluate BWO using Barreto’s four dimensions of dynamic capabilities, then score them as either low, medium, or high.

Discussion Question: BWO decided to further expand their scope into an industry that is likely to see mounting threats from substitutes such as unconventional oil plays and renewables; do you think the company should have used their moment of transformation differently?

4.6 Analysis

Question 1

Oil price collapse – High

The reduction in commodity prices severely reduced the likelihood of new project developments. This hampered BWO’s ability to redeploy assets currently off contract. Also, with more units available than its peers, BWO was in a comparatively worse position. Perhaps even more importantly, BWO had multiple units that were set to go off their firm contract period, with the low oil prices extensions were unlikely. This further compounded their overall redeployment risk.

Increasing investment towards unconventional oil plays – High

Unconventional oil investments were a direct competitor to offshore developments. The effects of a shrinking level of E&P activity, due to the oil price, was further compounded when a larger slice of the pie went towards unconventional oil plays. However, this trend was also positive

for BWO. The change in investment focus, oil price collapse, and the previous period of E&P activity meant that the market was filled with a high variety of prime reservoirs at a substantial discount.

Mateus Accident – High

The Mateus accident was a major reputational blow to the company. While the event itself can be characterised as endogenous to the company, the perception of it by the rest of the industry is an exogenous factor.

Rise of renewables – Medium

Renewables do not, at the time of the case, directly threaten the survivability of offshore developments. Global oil demand was still rising, and renewables were not a replacement for all oil products (e.g. plastics). However, the threat seems likely to grow over time. Renewables can power electric cars, seeing as transportation is the largest share of the downstream market, this should worry firms like BWO. Renewables also has a superior public image compared to fossil fuels, which will likely continue the current trend of large E&Ps pivoting towards greener investments.

Cost-deflation of sub-suppliers – Medium

As the oil price collapsed, the costs of sub-suppliers were reduced. This would help overall margins in the L&O model, but more importantly, it would reduce the breakeven cost of Dussafu and similar oil plays. In addition, the cost deflation also increased the relative proportion taken up by the FPSO in a field development, which in turn increased the size of the arbitrage opportunity.

Operation Car Wash – Low

While it was important for the overall industry, BWO had comparatively fewer units in Brazil than its competitors SBM and Modec. While this was a bit of a red herring, reduced activity in Brazil could mean that BWO would experience more competition in other regions.

Question 2

Resources

FPSOs

- Advanced and versatile offshore oil assets that can be used at the extreme frontiers of oil production.
- The buildup of FPSO's can either be viewed as a liability in terms of lost value, or as a resource that can be used to unlock oilfields.

BW Catcher

- The unfinished FPSO and field contract as a source for future cash flows.
- Also represents further reputational risk if not delivered on time and within budget.

BWG

- Being part of a larger consortium gives access to general maritime expertise and financial backing.
- Is also a source of reputational value for the firm. Generally, just in sheer size and history. More specifically, the unique Norwegian and Asian heritage is a valuable resource for the company.

Global Footprint

- Gives access to a broad and diverse talent pool.
- Access to various industry backchannels.

Labour

- A large technical pool of engineers and offshore staff.
- Legal and financial labour skills that know how to operate across multiple regulatory environments.

Capabilities

Engineering capabilities

- Can design complex production units able to withstand the vast hydrodynamic forces out on the open sea.

Coordination capabilities

- Able to coordinate the construction of an FPSO with a global web of sub-suppliers.
- Can coordinate the installation of FPSOs in remote oil regions around the globe.

Operational capabilities

- Able to operate multiple highly complex industrial plants (FPSOs) out on the open ocean 24/7.

Administration capabilities

- Operates multiple offices over several continents; capability to manage a high degree of cultural and regulatory diversity.

Management capabilities

- CEO: extensive and unique (for the segment) E&P management capabilities, extensive oil technology management capabilities.
- CFO: extensive oil service management capabilities, ability to launch IPO and source O&G capital.

Cross-cultural capabilities

- Firm-level ability to work with various nationalities.
- Specific Africa specialisation.

Question 3

Propensity to Sense Opportunities and Threats – Medium

Opportunities - High

The presence of an excellent opportunity sensing apparatus is apparent throughout the case.

- Was able to successfully gauge the opportunity to vertically diversify into the E&P business, as a result of both the oil price crash and the subsequent changing investment prioritisation of incumbents.
- Saw the strategic and financial opportunity represented by ICBC Leasing's interest in the offshore market.
- Quickly recognised the value of the ex-Vaalco team proposition to buy Dussafu, allowing them to both acquire the physical and labour assets that they needed.

Threats - Medium

The company scores slightly lower in their ability to sense threats.

- Inability to sense the threat of increasing unconventional production and supply glut, was not ready for the price crash.

- Did not sense the financial threat of contract terms. While the new leadership was aware of the precarious position before the crisis, one could argue that this realisation should have occurred before they entered into contracts (especially the ones after taking over the firm).
- The company showed acumen in limiting their exposure to the Brazilian market. Undoubtedly some of this was due to competitors outbidding them, but they also showed a prudent scepticism towards Petrobras' contract terms.

Ability to Make Timely Decisions – Medium

One can argue two ways for this dimension, depending on the temporal aperture in which one views the firm/case.

- BWO quickly decided on organisational changes and refinancing.
- They judged their entry into the E&P business perfectly, buying the assets while the oil prices were at its lowest and starting production as the market was improving.
- Was able to reconfigure itself as an E&P capable firm with the span of one and a half years.
- The company did not react before the crisis was in full motion; as a result, it had to cut staff, perhaps more than needed if changes had been made earlier.
- Did not change their fundamental business model before it was forced to by market movements.

Ability to Make Market Decisions – High

The content of BWO's decisions, while not always timely, was undoubtedly valuable.

- Provided a new FPSO contract strategy.
- Became a buyer when the market wanted to unload a varied group of oilfields.
- Entered into financial negotiations when the capital markets were still active.
- Became its own client.
- Provided a new low CAPEX field development strategy for themselves and other E&P firms.

Ability to Reconfigure the Resource Base - High

The company's capacity for resource configuration is perhaps its strongest dimension; this was shown through multiple instances in the case timeline.

- Released unnecessary resources through a reduction in size and cost of the onshore portion of the organisation in order to adapt to a smaller market.
- Gained needed resources by acquiring the ex-Vaalco team and Dussafu field.
- Integrated the ex-Vaalco team and commercial personnel to create BWE.
- Integrated tangible (Catcher) and intangible assets (offshore experience and Asian heritage) into a deal that allowed them to gain a strategic partner (ICBC Leasing) and immediate financial capital.
- The CEO reconfigured his own untapped E&P experience into a crucial management expertise that could guide the new strategic path of the firm.
- Reconfigured their business development capability from one that was client searching to one that was asset searching, as shown by their rapid acquisition of a second oil asset (Maromba).
- Integrated tangible and intangible resources and capabilities into a new business platform with a differentiated value proposition.
    - Tangible: FPSO, oil resources, capital.
    - Intangible: FPSO experience, CEO E&P experience, past client/contract experience.

Discussion Question

This question is meant for student reflection on the timing and direction of SC as well as the use of DCs. It should be open to various interpretations depending on the student's previous experience and reading of the case.

One possible position is that BWO should have used the moment of transformation to start pivoting into a market that is not oil related. This could bring multiple benefits such as: increased diversification of cash flows; lower exposure to a commodity price that is affected by non-market factors, and environmental goodwill. It could be facilitated by employing their engineering capabilities, operational maritime experience, and global coordination abilities. Possible markets could have been tidal energy, offshore wind farms, and aquaculture.

Another perspective would be that BWO astutely leveraged their experience in a way that created new value for the firm and shareholders. Their actions were based on an accumulation of firm and management experience; the resultant change made maximised the return on their learned knowledge. Additional, move away from O&G would have created an unfocused organisation.

4.7 Board Plan

Activity	Time (min)
Strategic Change Review	10
Dynamic Capabilities Review	10
BWO Case Review	15
Question 1	15
Question 2	10
Question 3	15
Discussion question	10
Conclusion	5

5. Discussion

The central point of contention within SC literature is the role of endogenous and exogenous forces. The BWO story exemplifies the trifurcation of the stream; as each perspective can be used to explain the nature of SC within the case.

On one hand, BWO exists within an industry that fully embodies the three constraints laid out in the deterministic branch (Müller & Kunisch, 2018). Firms are highly reliant on others to provide services; consistent production and safety leads to structural inertia; and companies operate within industry norms. These constraints certainly acted on the firm and hindered their ability to make meaningful change before its management was forced to react to the crisis. Looking forward at the SC they made also supports the weight of exogenous effects. It would be highly improbable for BWO to pivot into E&P activities without the right environmental conditions. This notion is supported by the fact that the company was unable to make the same SC when the prevailing market forces had not yet moved into an ideal position. The deterministic view thus gives a realistic framework to understand why the change happened *when* it did. However, beyond poor performance as an antecedent to the change, the perspective does not provide an answer to *why* it occurred or the contents (*what*) of the SC. The branch's view of management effects is also not informative, as the core team remained unchanged throughout the timeline.

In contrast, the voluntaristic perspective helps explicate the specific role of the management. Executive migration theory, in particular, provides a convincing explanation for the *whom* and *what* (Boeker, 1997; Weng & Lin, 2012). It seems highly unlikely that BWO

would have made the same SC without the explicit E&P background of its CEO. This view is further supported by the fact that neither of its competitors chose to enact similar SC; even though they were reacting to the same market forces and holding comparable resources and capabilities. The perspective's theory on processes also allows for an explanation of the *how*. The CEO and CFO both needed to engage in back-and-forth cognitive persuasion with various stakeholders (Gioia & Chittipeddi, 1991; Hambrick & Snow, 1977). Further, the perception of a business model that was no longer tenable, might also explain the lack of rigid mental model towards what type of firm BWO had to be (Audia et al., 2000). However, confining the analysis solely to organizational actors fails to explain the timing of the SC.

Since both of the dichotomous perspectives hold convincing arguments; one must conclude that the dialectical perspective is the most valid. Indeed, it is the only view that can account for both the needed structural changes in the industry and the individual proactive role of management. The perspective also provides possible insights into the internal process that allowed for the successful firm rebound, specifically the space of action. BWO's management could have viewed the reduction in cash and projects as a limiting objective factor, but instead, their subjective views on the market opportunities, born out of the crisis, helped drive SC. The continuous positive reinterpretation of firm's actors may explain how they escaped a convergence towards zero space (Bohman & Lindfors, 1988).

In closing the discussion on SC, a final point should be made towards an area in which all perspectives unanimously agree; the goal of change is to improve fit (Müller & Kunisch, 2018). The dynamic strategic fit theory allows for sound analysis for the quality of the SC (Zajac et al., 2000). BWO's ability to align with multiple contingencies in its external and internal environment can explain the magnitude of the rebound. The timing of the SC was also crucial, as an earlier deployment of the same directional change would have been unlikely to align with the external environment. Finally, the idiosyncratic emphasis provides a credible answer to why seemingly similar firms in the same industry could react and survive so differently in the aftermath of a foundational market change.

Much like the current state of the framework itself, the BWO story provides a plethora of divergent arguments concerning the nature of DCs.

Returning to the fundamentals, BWO displays the orchestration capabilities needed to modify their existing activities (Teece, 2007). Looking at the four-dimensional model proposed by Barreto, it seems that all four propensities were relevant in the transformation process (Barreto, 2010). Of note is the importance of top management in the development and

deployment of DCs. One could, based on this case, argue for the inclusion of the management factor within the definition as some authors have suggested (Zahra et al., 2006). However, a more convincing argument can be made for a definition that does rely on a strict relationship between roles and DCs. Going back to Barreto's model, one can analyse the importance of management while still allowing room for a more extensive firm-level analysis (Barreto, 2010).

Moving to the specific market context, the O&G industry appears to fit neatly into the moderate-velocity market described in the literature (Eisenhard & Martin, 2000). Structures between players are clear, existing knowledge is vital, and activities are organized. However, a case can also be made for a high-velocity delineation. While demand and supply conditions are reasonably clear; the industries entwinement with political affairs cause unpredictable market fluctuations. In addition, continuous technological advancements in unconventionals and renewables create further market uncertainty. Nevertheless, the learning mechanisms witnessed in the case tends to be better described by the medium-velocity market (Eisenhard & Martin, 2000). The BWO management learnt over a long time through frequent variations in projects, before they were able to accumulate the knowledge into a new model that could work. The company is reliant on structures, and the focus on safety required a “learning before doing” approach. This seeming inability to definitively categorise BWO's environment has two implications. First, that in an increasingly interconnected world with accelerating technological progress, it is difficult to find any business arena that is not dynamic. Thus, a distinction between market velocities are becoming increasingly blurred. Second, it affirms the exclusion of market context within the nature of DCs as advanced by some authors (Zahra et al., 2006). However, while not needed overarching definition it can still provide some value in describing the learning mechanisms of companies and how management could best develop DCs depending on their given market context.

The case also serves as a reaffirmation of the path dependencies factor laid out at the inception of the theory (Teece et al., 1997). BWO’s specifically used their experience and long-term commitments to change the path of the firm. The contract changes and BWE venture can also best be characterised as experiments. The central interest of the firm was to leverage current capabilities and resources while also stretching the scope of the business (Zahra et al., 2006).

Finally, the outcomes of DCs application is one of the most debated within the literature. As summarised by Barreto, there currently exist two perspectives, direct and indirect (Barreto, 2010). Looking at the BWO case, there does seem to exist a causal relationship between the DCs and competitive advantage. The new direction of the firm would certainly not have been possible without the new strategy, which creation is a DCs in and of itself. Moreover, the

management's ability to manage several stakeholders, create new partnerships and find talent were all essential in the recreation of the firm and their subsequent success. However, there are also arguments for a more indirect link between performance and DCs. The transformation to a niche proven reserve oil company required DCs, but it also needed a specific resource bundle comprised of an FPSO and the needed capabilities to deploy it (Eisenhard & Martin, 2000). To extend Teece's orchestration metaphor (Teece, 2007), the core of BWO success was in the combined symphony; the learning, adaption and reconfiguration of the existing firm would have been mute without the right "instruments".

BWO case provides a useful exercise in both applying and discussing the DCs framework. The use of the four dimension model allowed for an analysis of the firm actions and subsequent firm reinvention (Barreto, 2010). Further, it served as a fertile ground for discourse in relation to the theoretical underpinnings that are still up for debate. Most consequentially, it serves as an argument for the inherent value of the DCs framework. BWO's transformation seems unlikely to have taken place if one solely relied on an external and static understanding of their situation (Shuen et al., 2014). Rather, it is through the application of the DCs framework that one can truly explicate the process that led to their new competitive advantage.

The objective of this dissertation was the application of the SC and DCs on a firm in crisis and recreation. The main conclusions derived from the discussion is that; SC can be best understood through a dialectical perspective; and that there is an indirect link between DCs and firm outcomes. Moreover, the work serves as a qualitative analysis of an industry that has only seen a few applications of the DCs framework (Shuen et al., 2014).

The managerial implications of the dissertation are twofold. Managers must both understand their objective environment, while also seek to positively redefine it. Managers should strive to develop DCs within their firm, while still retaining a focus on the resultant value proposition of the resource bundle.

The nascent DCs literature present some limitations as it is still lacking a quantitative framework; this makes it difficult to measure the exact implications of its application. More work should be done to unify the concept through both quantitative and qualitative research. Moreover, BWO's promising rebound is still not fully realised, a later review could prove beneficial in elucidating the firm evolution.

6. Conclusion

The modern business environment is characterised by its constant change and uncertainty. The firms that survive and thrive in this new paradigm will be the ones that can capitalise on change itself. As the title of the thesis suggests; it is not enough to weather the storm, firms must strive to ride it to new heights. The focus of this dissertation has been to explore the theories that will best equip the modern company to consistently find opportunity in crisis.

The literary heart of this dissertation has been SC and DCs. SC theory aims to explain the factors that influence a change in a company's goals and activeties to achieve them. DCs, as a bourgeoning framework, is an attempt at a general theory of competitive advantage.

To explicate these two concepts within the modern business environment, this dissertation employed a teaching case, following the story of BWO from December 2015 to May 2019. The case focuses on the external and internal factors that led to an existential crisis of the firm; the companies SC towards vertical diversification, and finally, how DCs were used to establish a unique competitive advantage.

The main conclusion of the thesis is that a company, in the midst of a crisis, can create unexpected and novel forms of value. The evolutionary path of a company is shaped by its history and market, but in equal measure, directed by the positive interpretations of its management and an active reconfiguration of distinctive capabilities and resources.

7. Appendix

7.1 General Bibliography

Astley, W. G. (1983). Central Perspectives and Debates in Organization Theory. *Administrative Science Quarterly*, *28*(2), 245–273.

Audia, P. G., Locke, E. A., & Smith, K. G. (2000). The paradox of success: An archival and a laboratory study of strategic persistence following radical environmental change. *Academy of Management Journal*, *43*(5), 837–853. https://doi.org/10.2307/1556413

Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, *17*(2), 99–120.

Barreto, I. (2010). Dynamic Capabilities: A review of past research and an agenda for the future. *Journal of Management*, *36*(1), 256–280. https://doi.org/10.1177/0149206309350776

Boeker, W. (1997). Executive Migration and Strategic Change : The Effect of Top Manager Movement on Product-Market Entry. *Administrative Science Quarterly*, *42*(2), 213–236.

Bohman, H., & Lindfors, M.-B. J. (1988). Management For Change: On Strategic Change during Recession. *Journal of Business Research*, *41*(1), 57–70.

Chandler, A. D. (1962). *Strategy and Structure*. *The M.I.T. Press*. Retrieved from http://www.google.com/patents/US1642653

Corey, R. (1998). Writing Cases and Teaching Notes. *Harvard Business School Publishing*, 1–11.

DiMaggio, P. J., & Powell, W. W. (1983). *The Iron Cage Revisited: Instiutional Isomorphism and Collective Rationality in Organizatinal Fields*. *American Sociological Review* (Vol. 48). https://doi.org/10.2307/3094810

Eisenhard, K. M., & Martin, J. A. (2000). Dynamic Capabilities: What Are They? *Strategic Management Journal*, *21*(10), 1-1105–1121. https://doi.org/10.1057/978-1-349-94848-2_565-1

Gioia, D. A., & Chittipeddi, K. (1991). Sensemaking and Sensegiving in Strategic Change Initiation. *Strategic Management Journal*, *12*(6), 433–448. Retrieved from http://www.jstor.org/stable/2486479 Accessed:

Hambrick, D. C., & Snow, C. C. (1977). A Contextual Model of Strategic Decision Making in Organizations. *Academy of Management Proceedings*, (1), 109–112. https://doi.org/10.5465/ambpp.1977.4977040

Hannan, M. T., & Freeman, J. (1984). Structural Inertia and Organizational Change.

American Sociological Review, *49*(2), 149–164.

Müller, J., & Kunisch, S. (2018). Central Perspectives and Debates in Strategic Change Research. *International Journal of Management Reviews*, *20*(2), 457–482. https://doi.org/10.1111/ijmr.12141

Pfeffer, J., & Salancik, G. (2003). The External Control of Organizations: A Resource Dependence Perspective. Stanford Business Books.

Rajagopalan, N., & Spreitzer, G. M. (1997). Toward a Theory of Strategic Change : A Multi-lens Perspective and Integrative Framework. *The Academy of Management Review*, *22*(1), 48–79.

Reeves, M., & Deimler, M. (2011). Adaptability: The New Competitive Advantage. Retrieved May 31, 2019, from https://hbr.org/2011/07/adaptability-the-new-competitive-advantage

Roberts, M. J. (2012). Developing a Teaching Case (Abridged). *Harvard Business Review*, 1–21.

Shuen, A., Feiler, P. F., & Teece, D. J. (2014). Dynamic capabilities in the upstream oil and gas sector: Managing next generation competition. *Energy Strategy Reviews*, *3*(C), 5–13. https://doi.org/10.1016/j.esr.2014.05.002

Snow, C. C., & Miles, R. E. (1984). Fit, Failure & The Hall of Fame. *California Management Review*, *3*(Spring), 10–28. Retrieved from http://books.google.com/books?hl=en&lr=&id=Xb9WAqE36DYC&oi=fnd&pg=PA1&dq=Fit+,+Failure+,+the+Hall+of+Fame&ots=0d8M0gxUgM&sig=qjLJwrdPzTj4DRLFHggHZeGN7J8

Teece, D. J. (2007). EXPLICATING DYNAMIC CAPABILITIES: THE NATURE AND MICROFOUNDATIONS OF (SUSTAINABLE) ENTERPRISE PERFORMANCE. *Strategic Management Journal*, *28*(August), 1319–1350. https://doi.org/10.1002/smj

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, *18*(March 1997), 509–533.

Weng, D. H., & Lin, Z. (John). (2012). Beyond CEO Tenure: The Effect of CEO Newness on Strategic Changes. *Journal of Management*, *40*(7), 2009–2032. https://doi.org/10.1177/0149206312449867

Wernerfelt, B. (1984). A Resource-Based View of the Firm. *Strategic Management Journal*, *5*(2), 171–180.

Winter, S. G. (2003). Understanding dynamic capabilities. *Strategic Management Journal*, *24*(10 SPEC ISS.), 991–995. https://doi.org/10.1002/smj.318

Zahra, S. A., Sapienza, H. J., & Davidsson, P. (2006). Entrepreneurship and Dynamic

Capabilities: A Review, Model and Research Agenda*. *Journal of Management Studies*, *43:3*(June), 0022–2380. https://doi.org/10.1111/j.1467-6486.2006.00616.x

Zajac, E. J., Kraatz, M. S., & Bresser, R. K. F. (2000). MODELING THE DYNAMICS OF STRATEGIC FIT: A NORMATIVE APPROACH TO STRATEGIC CHANGE. *Strategic Management Journal Strat. Mgmt. J*, *21*(August 1999), 429–453.

Zhang, Y., & Rajagoplan, N. (2010). ONCE AN OUTSIDER, ALWAYS AN OUTSIDER? CEO ORIGIN, STRATEGIC CHANGE, AND FIRM PERFORMANCE. *Strategic Management Journal*, *31*, 334–346. https://doi.org/10.1002/smj

Zott, C. (2003). Dynamic capabilities and the emergence of intraindustry differential firm performance: Insights from a simulation study. *Strategic Management Journal*, *24*(2), 97–125. https://doi.org/10.1002/smj.288

7.2 Methodology and Data Collection

This section will briefly cover the research methods and data collection used in the overall thesis. The main emphasis will be on the teaching case, as it was developed in collaboration with BWO over the entire span of the dissertation, and thus qualifies as a company field case (Roberts, 2012).

The research for the teaching case occurred over several in-person and virtual interviews from January 5th to June 1st, 2019. The interview participants were BWO's CEO, CFO, and the head of Commercial Analysis. The interviews followed a nondirective approach, were the subjects were asked initial broad questions, but were otherwise free to direct the conversation (Corey, 1998).

The dissertation employed both primary and secondary data collection. The interviews served as the primary data collection. For secondary collection, both internal and external sources were employed. The company provided 18 internal strategic presentations covering the case timeline. In addition, BWO provided six external industry reports. Metrics were sourced from various secondary platforms. Finally, qualitative data not captured through interviews or from documentation provided, was sourced from online articles.

7.3 Teaching Case Bibliography

1] "Thomson Reuters Eikon." 2019.

[2] D. Yergin, *The Prize: The Epic Quest for Oil, Money & Power*. New York: Free Press, 1990.

[3] Eni, "World Oil and Gas Review 2016," 2016.

[4] World Energy Council, "World Energy Resources 2016," *World Energy Counc. 2016*, pp. 6–46, 2016.

[5] BW Offshore, "BWO Document #2," 2018.

[6] Energy Maritime Associates, "EMA 2016 Database," 2016.

[7] BW Offshore, "BWO Document #1," 2016.

[8] BW Group, "History of the BW Group," 2018. [Online]. Available: http://www.bw-group.com/about-us/history. [Accessed: 19-Mar-2019].

[9] BW Offshore, "History: 80 years of maritime energy history," 2018. [Online]. Available: https://www.bwoffshore.com/company/history/. [Accessed: 19-Mar-2019].

[10] Offshore Energy Today, "BW Offshore Ltd. to Purchase Remaining Prosafe Production.s Shares," 2010. [Online]. Available: https://www.offshoreenergytoday.com/norway-bw-offshore-ltd-to-purchase-remaining-prosafe-production-s-shares/. [Accessed: 23-May-2019].

[11] gCaptain, "BW Pioneer Starts Production in the Gulf of Mexico for Petrobras – gCaptain," 2012. [Online]. Available: https://gcaptain.com/pioneer-starts-production-gulf/. [Accessed: 23-May-2019].

[12] BW Offshore, "BWO Document #4," 2018.

[13] BW Offshore, "BWO Document #3," 2016.

[14] K. Rogoff, "What's behind the drop in oil prices? | World Economic Forum," 2016. [Online]. Available: https://www.weforum.org/agenda/2016/03/what-s-behind-the-drop-in-oil-prices/. [Accessed: 24-May-2019].

[15] Rystad Energy, "Oil Price Collapse: Reasons and Consequences for Global Supply," 2015.

[16] International Energy Agency, "Oil Market Report: 12 December 2014," 2014. [Online]. Available: https://www.iea.org/oilmarketreport/reports/2014/1214/#Demand. [Accessed: 24-May-2019].

[17] J. Watts, "Operation Car Wash: The biggest corruption scandal ever? | World news | The Guardian," 2017. [Online]. Available:

https://www.theguardian.com/world/2017/jun/01/brazil-operation-car-wash-is-this-the-biggest-corruption-scandal-in-history. [Accessed: 31-Mar-2019].

[18] Reuters, “Brazil prosecutors charge 12 in SBM Offshore graft scheme | Reuters,” 2015. [Online]. Available: https://www.reuters.com/article/us-brazil-corruption-petrobras-sbm-idUSKBN0U017D20151218. [Accessed: 31-Mar-2019].

[19] C. Morais, T. Pires, B. Silva, N. Ferreira, and A. Garcia, “Explaining the explosion onboard FPSO Cidade de São Mateus from regulatory point of view,” *Risk, Reliab. Saf. Innov. Theory Pract.*, no. June 2018, pp. 173–180, 2017.

[20] K. Stone, “Cause of FPSO Explosion that Killed 9 Revealed,” 2015. [Online]. Available: https://www.maritime-executive.com/article/cause-of-fpso-explosion-that-killed-9-revealed. [Accessed: 24-May-2019].

[21] BW Offshore, “BWO Q1 2016,” 2016.

[22] D. Sheppard and A. Raval, “Oil producers face their ‘life or death’ question,” *The Financial Times*, 2018. [Online]. Available: https://www.ft.com/content/a41df112-7080-11e8-92d3-6c13e5c92914.

[23] Offshore Energy Today, “BW Offshore teams up with Chinese leasing firm to pursue FPSO projects,” 2017. [Online]. Available: https://www.offshoreenergytoday.com/bw-offshore-teams-up-with-chinese-leasing-firm-to-pursue-fpso-projects/. [Accessed: 26-May-2019].

[24] International Energy Agency, “Oil Market Report: 13 December 2016,” 2016. [Online]. Available: https://www.iea.org/oilmarketreport/reports/2016/1216/. [Accessed: 24-May-2019].

[25] International Energy Agency, “Oil Market Report: 14 December 2017,” 2017. [Online]. Available: https://www.iea.org/oilmarketreport/reports/2017/1217/#Prices. [Accessed: 26-May-2019].

[26] BW offshore, “First Oil achieved on BW Adolo,” 2018. [Online]. Available: https://www.bwoffshore.com/frontpage-news/first-oil-achieved-on-bw-adolo/. [Accessed: 26-May-2019].

[27] Oslo Børs, “OBX Total Return Index,” 2019. [Online]. Available: https://www.oslobors.no/ob_eng/markedsaktivitet/#/details/OBX.OSE/overview. [Accessed: 26-May-2019].

[28] BW Offshore, “BW Offshore: Acquisition of Maromba field offshore Brazil,” 2019. [Online]. Available: https://www.bwoffshore.com/ir/corporate-news/imported-press-releases3/2019/bw-offshore-acquisition-of-maromba-field-offshore-brazil-/. [Accessed:

26-May-2019].

[29] BW Offshore, “BW Offshore Q4 and full year 2018 Presentation,” 2019.

[30] Eurostat, “Oil Statistics 2016 Data,” 2016.

[31] BW Energy, “BW Energy: Corporate presentation,” 2019.

[32] BW Offshore, “2018 Annual Report,” 2018.

[33] IHS Markit, “CERA IHS Indexes,” 2019. [Online]. Available: https://ihsmarkit.com/info/cera/ihsindexes/index.html. [Accessed: 05-Jun-2019].

[34] “Morningstar | Independent Investment Research,” 2019. [Online]. Available: https://www.morningstar.com/. [Accessed: 05-Jun-2019].