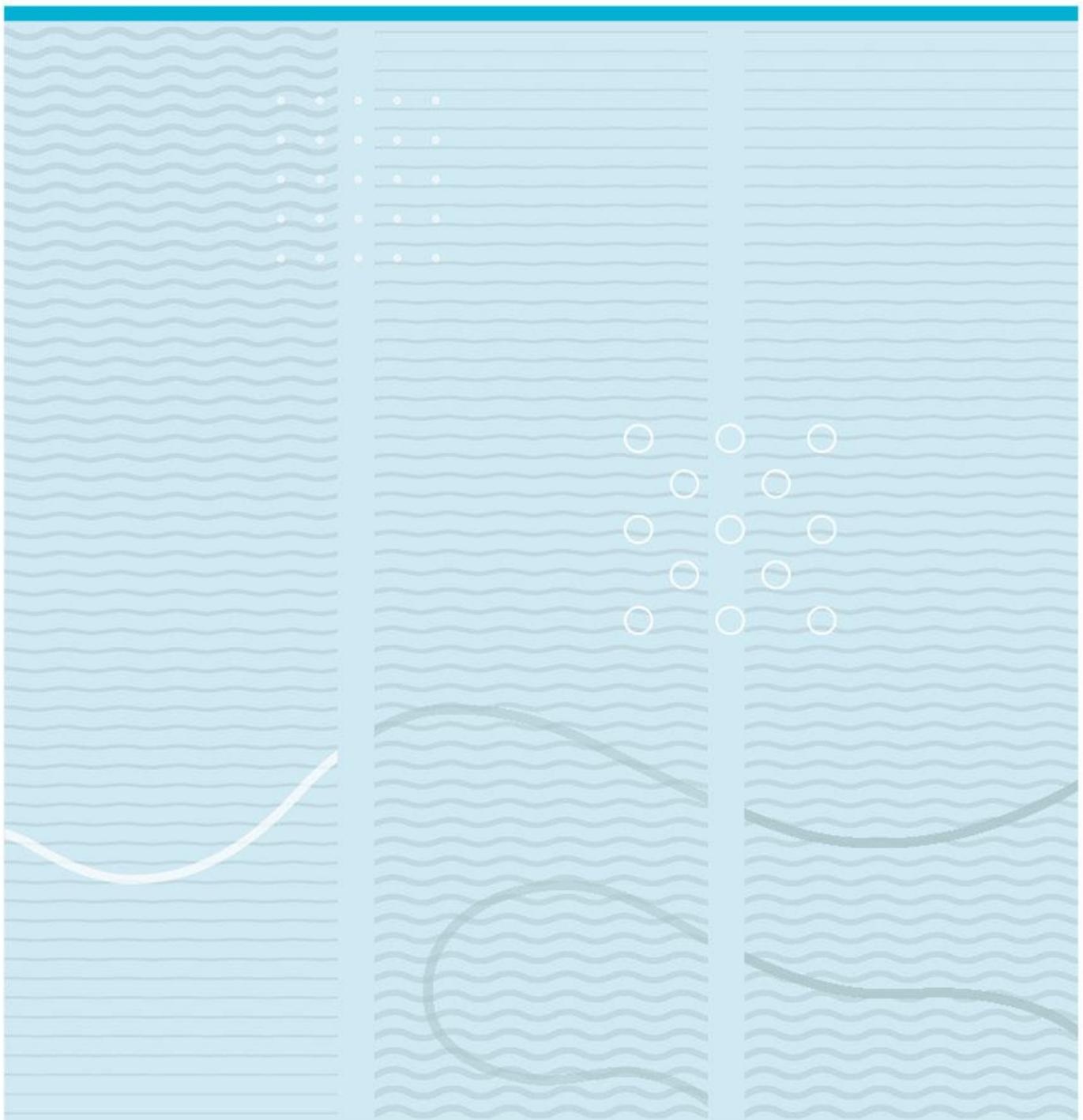


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# A case study on Business model innovation to empower sustainable development in the oil and gas supplier industry



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This thesis is worth 30 study points.

# Contents

<i>Acknowledgment</i> .....	6
<i>Abstract</i> .....	7
<b>1 Introduction</b> .....	<b>8</b>
1.1 <i>The structure of the thesis</i> .....	10
<b>2 Theoretical framework</b> .....	<b>11</b>
2.1 <i>Defining innovation</i> .....	11
2.2 <i>Defining Business Model</i> .....	16
2.3 <i>Business model innovation</i> .....	20
2.4 <i>Defining Sustainability</i> .....	23
2.5 <i>Sustainability in the oil and gas industry</i> .....	28
2.6 <i>Sustainable business model innovation</i> .....	31
2.6.1 <i>The Triple-layered business model canvas</i> .....	33
<b>3 Methodology</b> .....	<b>35</b>
3.1 <i>Contextual Background</i> .....	35
3.2 <i>Research design and sampling</i> .....	37
3.3 <i>Data collection</i> .....	38
3.4 <i>Data analysis techniques</i> .....	40
3.5 <i>Data quality</i> .....	41
3.6 <i>Ethical considerations</i> .....	42
<b>4 Main findings</b> .....	<b>44</b>
4.1 <i>Sustainability in perspective of the ESG framework</i> .....	44
4.2 <i>Three Layers of Sustainability with Business Model Canvas</i> .....	46
4.3 <i>Sustainable Business Model Innovation</i> .....	48
<b>5 Discussion</b> .....	<b>51</b>
5.1 <i>Association with the ESG framework</i> .....	51

5.2 *The focus area of innovation in the business model innovation* ..... 54

5.3 *The corporate`s business model innovation approach* ..... 57

**6 Conclusion** ..... **61**

**References/Bibliography** ..... **63**

**Appendix list** ..... **80**

## List of Tables

<i>Table 1: Types of Innovation</i> .....	12
<i>Table 2: Innovation format (Ahmed &amp; Shepherd, 2010; Dogan, 2017)</i> .....	14
<i>Table 3: Dimensions of Innovation (Dogan, 2017, p. 291)</i> .....	15
<i>Table 4: Business Model definitions</i> .....	17
<i>Table 5: Definitions of Business Model Innovation</i> .....	21
<i>Table 6: Paradigm innovation (Tidd &amp; Bessant, 2014, p. 26)</i> .....	23
<i>Table 7: Sustainable Development Goals (Crist &amp; Burritt, 2019, p. 572)</i> .....	27
<i>Table 8: Sustainable Business Model Innovation definitions</i> .....	33
<i>Table 9: List of Informants</i> .....	40
<i>Table 10: Main findings</i> .....	44

## List of Figures

<i>Figure 1: Innovation formats (Dogan, 2017, p. 293)</i> .....	13
<i>Figure 2: Business Model Canvas (Osterwalder &amp; Pigneur, 2010, p. 4)</i> .....	18
<i>Figure 3: Business Model Canvas divided into four categories (Guldmann, 2018, p. 7)</i> .....	19
<i>Figure 4: "Triple bottom line" (Purvis et al., 2018, p. 682)</i> .....	24
<i>Figure 5: ESG (Ross &amp; Beckett, 2021, p. 13)</i> .....	25
<i>Figure 6: The impact of sustainability on the oil and gas industry (Capobianco et al., 2021, p. 5)</i> .30	
<i>Figure 7: The Triple Layered Business Model Canvas: Environmental and Social layers (Book, 2021)</i> .....	34
<i>Figure 8: Oil &amp; Gas production towards 2050 Norway (Stordal, 2023)</i> .....	37

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## Abstract

This dissertation's overarching objective is to investigate the in-depth sustainable growth of the oil and gas supplier industry by analyzing business model innovation from a perspective of empowerment. The research contains a theoretical model that comprises Business Model Frameworks, Sustainable Business Models, Corporate Social Responsibility, and The Triple-layered Business Model Canvas.

The Norwegian oil and gas industry is expected to progressively adopt a more sustainable approach and minimize its carbon footprint. The ability and effectively adopt new business models is an essential factor, that provides organizations with a sustainable competitive advantage. Business models serves as a vital tool for improving the sustainability performance of these organizations. Therefore, we investigate a Norwegian firm whose primary business areas include subsea, surface, new energy ventures, technology and innovation, and digital transformation.

We conducted a qualitative single-case study based on in-depth interviews to answer the research question. In addition, seven open-ended interviews were conducted with various middle-and high-level managers and a focus group. Triangulation and trustworthiness were employed to enhance the data's credibility and confirmability.

An inductive data investigation performed the analysis of the data was performed with a two-cycle coding. Our findings indicate that the company prioritizes integrating sustainability into its core operations to enhance its competitiveness and the ESG framework. In their honest view, they can always do better and develop. The organization constantly considers how to use business model innovation to create, capture, and deliver value to the industry. Significant factors include cost structure, value proposition, essential partners, and key activities. Sustainable business model innovation is achieved alone and in collaboration with partners. The employed business model innovation used is servitization and offline to online.

Keywords: Innovation, Sustainability, Business Model Innovation, ESG, Oil and gas industry, Qualitative research study, Norway, Supplier

# 1 Introduction

Albert Einstein once stated that in the face of significant natural catastrophes, a paradigm shift is necessary, moving away from the mindset of unchecked consumption and toward deep respect for the world (Basile, 2021). Today's CEO often ask themselves, "*Why aren't we better at innovation?*" (Hansen & Birkinshaw, 2007). Innovation is characterized by deviation from the norm (Afuah, 2014). Due to rapid technological advancement and the need to be agile, according to Bocken and Short (2021), the technological paradigm shift has significantly impacted the development of new business models (Bocken & Short, 2021). Through business models, companies commercialize new concepts and technologies (Chesbrough, 2010).

While traditional business models focus on creating and capturing value at the firm level, business model innovation introduces new considerations. Furthermore, this pertains to the distinctiveness of customer value propositions, necessitates logical reframing and structural reconfigurations (Spieth et al., 2014). This firmly established that business model innovation is a framework for generating and capturing value through unconventional means (Ramdani et al., 2019). This can be accomplished by modifying the governing principle of the game (Afuah, 2014).

Increasing pressure is being placed on businesses to address sustainability concerns (Joyce & Paquin, 2016). Simultaneously, the environment expects businesses to reduce their carbon footprints (Bocken & Short, 2021). As part of their undertaking, organizations must address financial crises, economic and social inequalities, environmental events, material resource scarcity, energy demand, and technological development (Joyce & Paquin, 2016). This can be accomplished by analyzing the organization's ESG; environmental, social, and governance impacts. ESG refers to criteria used to evaluate a company's performance in these three areas, considered crucial factors for responsible and sustainable business practices (Peterdy, 2023). To be successful, organizations must respond to such challenges by creatively integrating eco-efficient and eco-effective innovations that conserve and enhance natural, social, and financial resources into their primary businesses (Joyce & Paquin, 2016).

The oil and gas industry is expected to be among the most sensitive to environmental, social, and governance issues (Cardoni et al., 2019). The sector is responsible for nine percent of all human-caused greenhouse gas emissions and thirty-two percent of the petroleum used by different sectors (Beck et al., 2020; IEA, 2021). On the other hand, the significance of oil and gas energy to human

activities, in addition to their substantial impact on the economics of both oil-producing and oil-importing nations, cannot be underestimated (Hassan, 2013).

The world's oil and gas industry views future oil and gas demand uncertainly (Ahmadi et al., 2019). Different viewpoints about engagement in the energy transition emerged as a result of this uncertainty. Furthermore, some believe oil and gas companies should shift away from hydrocarbons and invest in alternative energy; others consider it more expedient for these companies to return their free cash flow to investors (Wong et al., 2022).

The oil and gas industry's future has changed (Mitchell et al., 2012). The petroleum industry's traditional innovation approach has led to a long-standing R&D department. Furthermore, this drives innovation advancement in the oil and gas industry (Ibrahimov, 2018). The driving force behind the long-term efficacy of the oil and gas industry lies in the pursuit of innovation, which serves as a crucial factor in mitigating substantial short-term costs (Wang et al., 2021).

As per Ibrahimov (2018), implementing information and communication technologies forces businesses to rethink their global strategies in terms of technological innovations (Ibrahimov, 2018). While other industries have already implemented innovative technologies, the oil and gas industry is behind (Nechully et al., 2018). This leads to an analysis of the emerging macro-and micro markets that impact the global industry, commencing with upstream and midstream infrastructure, petrochemical facilities, and refinery operations.

Given sufficing time, we want to look deeper into how a firm in the oil and gas supplier sector may empower sustainability. Considering the current market's preoccupation with innovation and the resulting research gap, we want to address the following research question:

*How can business model innovation empower sustainable development of corporations in the oil and gas supplier sector?*

The rapid development of technology necessitated a reorganization of the entire energy industry based on competencies, work processes, and business models (Joyce & Paquin, 2016). Using business model innovation to produce a knowledge-based contribution to the company may contribute to the company's future sustainability (Spieth et al., 2014). For the EU to achieve its

climate goals, it is also essential that energy services be produced without emitting greenhouse gases as part of the EU's "green transformation" (Regjeringen, 2021b).

The research topic was investigated in the Norwegian oil and gas industry context. Today's research concentrates on how the oil and gas industry and supply chain can become more competitive and cost-effective through technology (Kvalheim, 2021). Following this, the scholar requires additional research and findings on the future aspects of the industry, and the majority of the desired solutions are still several years away from becoming a reality. This context is significant because Norway's oil and gas industry has the highest turnover, compared to other industries in Norway (Norwegian Petroleum, 2022). In comparison, the supply industry ranks second in turnover (Bang & Lahn, 2019). The chosen company is interested in reorganizing with a greater emphasis on growth. It distinguishes the significance of transitioning to a greener environment as the future of sustainable business.

## **1.1 The structure of the thesis**

The thesis consists of six chapters. Chapter One is the introduction, which includes the thesis's motivation and research objectives. Chapter Two will present theory and literature pertinent to innovation and complex problem exploration. The methodology method will be described in Chapter Three. In addition to outlining and analyzing our methodological choices, we will introduce the chosen company and the industry, discuss our assessment, and discuss our ethical considerations regarding the execution of our research. The main findings of our case study will be presented in Chapter Four. To address the research question, in Chapter Five, we will discuss our findings in relation to the theory presented in Chapter Two. Finally, Chapter Six presents the thesis summary, conclusion, and suggestions for further research.

## 2 Theoretical framework

This chapter will give the essential theory related to our problem statement. The theoretical framework chapter comprehends defining innovation, business model frameworks, and oil and gas sector sustainability from a Norwegian perspective. The last section of the chapter examines how business model innovation connects to sustainability.

### 2.1 Defining innovation

“Innovation” comes from the Latin verb “innovare”, which means “to modify”. Hence, innovation, which creates value from ideas, is a better descriptor of what must be managed (Tidd & Bessant, 2014). The value of ideas manifests itself in the form of differentiated new or improved products, processes, or services (Lawson & Samson, 2001). Schumpeter, the founder of innovation theory (Kogabayev & Maziliauskas, 2017), defined innovation in 1934 as the formulation of new products or services, processes, raw materials, markets, and new organizations (Lazzarotti et al., 2011). According to his theory, the majority of innovations are novel combinations of existing elements (Dodgson et al., 2014). In regards to O’Sullivan and Dooley (2009), an example of a later definition that is more specific and illustrates several innovation fundamentals; “*Applying innovation is the application of practical tools and techniques that make changes, large and small, to products, processes, and services that results in the introduction of something new for the organization that adds value to customers and contributes to the knowledge store of the organization*” (O’Sullivan & Dooley, 2009, p. 5).

O’Sullivan and Dooley's definition emphasizes the significance of new concepts and methodologies in transforming business (O’Sullivan & Dooley, 2009), which aligns with innovation to introduce new and enhanced ways of doing business (Coudert, 2022). New concepts and methodologies for business transformative have led to various approaches (see Table 1). This framework explains different innovation approaches and their impact on extant business models (Frankenberger et al., 2013).

<b>Types of innovation</b>	<b>Definition</b>	<b>Examples</b>
<b>Incremental</b>	A method of incremental innovation focuses on enhancing products or services that are already on the market. The enhancements are minor and produced swiftly in response to the evolving requirements of consumers (Coudert, 2022)	The technology company Apple (iPhones, iPad, etc) holds multiple events each year to showcase the enhancements to their product line to meet new consumer demands.  Companies in the technology sector are renowned for their adjacent innovation strategies, which expand the business into new markets (Dieffenbacher, 2023)
<b>Disruptive</b>	Any new technology or startup seeks to disrupt an industry and alter its competitive patterns (Christensen et al., 2018)	Netflix and Spotify have revolutionized the way viewing movies and listing to music with a simple application (Dieffenbacher, 2023)
<b>Radical</b>	The founder of radical innovation is the creation of a new product or service that develops with the consumer (OECD, 2018)	Smartphones enable consumer to interact with one another on a deeper level than traditional mobile phones (Dieffenbacher, 2023)
<b>Architectural</b>	It modified how the components of a product are connected while leaving the core design concepts and consequently, the fundamental knowledge underlying the details unchanged (Han, 2017)	Zara`s rapid fashion supply chain incorporates design, production, and distribution processes to create a highly responsive and efficiently supply chain that can swiftly respond to changing fashion trends (Dieffenbacher, 2023)

*Table 1: Types of Innovation*

Innovation is essential for businesses' continued existence and success (Dodgson et al., 2014). All organizations must change to maintain current operations and foster expansion (O'Sullivan & Dooley, 2009). Innovation is one of the organization's most critical and complex issues today

(Tohidi & Jabbari, 2012). According to Kogabayev and Maziliauskas (2017), the primary purpose of innovation is to accelerate processes and incorporate innovation into production circles, as well as to achieve the goals of maximizing profit, social project efficiency, sustainable economic development, etc. (Kogabayev & Maziliauskas, 2017).

As per Ahmed and Shepherd (2010), innovation appears in various formats due to its diverse definitions. They classify the formats into two groups; inventions that are under the firm`s control (strategic, process, and product innovations) and those that are beyond the firm`s influence (social, political, and philosophical innovations) (Ahmed & Shepherd, 2010). See Figure 1 and Table 2.

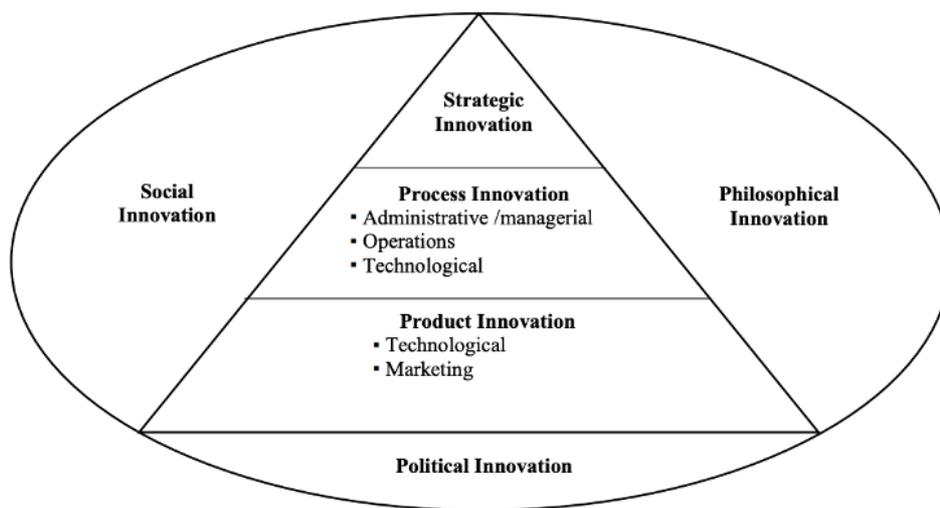


Figure 1: Innovation formats (Dogan, 2017, p. 293)

Formats	Definition
<b>Product innovation</b>	It is the visible traces of an innovation process or action. The innovation process yields new products and can be focused on technology or marketing. Technological forces seek to improve its performance.
<b>Process innovation</b>	It aims to enhance the effectiveness of a company`s organizational activities. The desire for process innovation may have origins in technological advances in manufacturing, adopting a new operation

	structure, and developing new administration techniques.
<b>Strategic innovation</b>	It entails a substantial adaptive change in the company's business model or the adoption of a new business model. This is a result of external innovations and difficulties.
<b>Social innovation</b>	It results from multiple factors that continuously push society in a new direction.
<b>Political innovation</b>	Legislation, institutional reform, social orientation, and governance reflect this value. Changes in the political arena frequently profoundly affect the direction and growth of society and organizations.
<b>Philosophical innovation</b>	New philosophical thought profoundly impacts society, promotes cultural awareness, and enables the community to define right and wrong.

*Table 2: Innovation format (Ahmed & Shepherd, 2010; Dogan, 2017)*

Corporations always search for the next upgrade in their services or products through innovation (Kuncoro & Suriani, 2018). Since developing wholly new products, processes, and services is costly and uncertain, leading innovators typically focus on enhancing existing offerings (Dodgson et al., 2014). Several factors motivate businesses to innovate (O'Sullivan & Dooley, 2009). Pressures on firms to create innovation can come from trajectories (technological processes and changes in the economy) or actors (shareholders, suppliers, consumers, and competitors) (Dogan, 2017). The majority of changes in knowledge and technology follow an evolutionary path, although the rate of innovation varies across sectors and evolves (Dodgson et al., 2014). Businesses' capacity to innovate is not restricted to product creation. It may target four dimensions that can be regarded through the lens of various strategic innovation concepts (Dogan, 2017).

<b>Dimensions</b>	<b>Type of change</b>
<b>Product</b>	Changes in the things (product/services) which an organization offers
<b>Process</b>	Changes in the ways in which these offerings are created and delivered
<b>Position</b>	Changes in the context into which the products/services are introduced
<b>Paradigm</b>	Changes in the underlying mental models which frame what the organization does

*Table 3: Dimensions of Innovation (Dogan, 2017, p. 291)*

As for the oil and gas companies are well-known for implementing incremental innovation (Andersen & Gulbrandsen, 2020). According to Mejia (2020), over many decades, the oil and gas sector has been at the forefront of incremental innovation (Mejia, 2020). Since the industry's inception, companies have redefined maintenance and service operations to make incremental improvements. As a result, oilfield service providers prioritize incremental change over radical information, leading them to be at the forefront of innovation (Chaoji & Martinsuo, 2019). The incremental improvements have, over time, adapted digital technologies to make enhancements less expensive to remain competitive and increase the output of functionality (Sjödín et al., 2021). On the other hand, the industry has favored incremental change due to the hazards that profound changes pose to operations. Consequently, incrementally improvement assures safety; more substantial improvements typically take years (Swart & Otremba, 2016).

An example on the industry's emphasis on incremental change, there have been instances of disruptive and revolutionary innovation (Mejia, 2020). One innovation transferred to space exploration from the oil and gas industry is atmospheric diving suits (Maxey, 2014). Before remotely operated vehicles were invented, diving suits were utilized for subsea labor (Petillot et al., 2019). The pressurized diving suits served as a learning paradigm for NASA, which incorporated critical elements into the design of the spacesuit (Mapp, 2019).

## 2.2 Defining Business Model

In the last two decades, the theory of Business Models (BM) has evolved fast, and there is a significant amount of interest in the topic (see Table 4). Specifically, the phrase has become a more critical idea within technology, innovation management, strategy, and environmental sustainability (Fielt, 2013). Business models are crucial for both new and existing firms (Teece, 2010), it aids businesses in attracting financing, recruiting talent, and motivating management and employees (Magretta, 2014). Existing firms must continuously change their models, or they will fail to predict future trends and issues (Kopp, 2022).

<b>Author (s)</b>	<b>Definition</b>	<b>Papers citing the definition</b>
Timmers, 1998	The business model is an architecture of the product, service, and information flow, including a description of the various business actors and their roles; a description of the potential benefits of the various business actors: a description of the sources of revenues	Timmers, 1998, p. 4; Hedman and Kalling, 2003, p. 49; Zott et al., 2011
Chesbrough and Rosenbloom, 2002	The business model provides a coherent framework that takes technological characteristics and potential as input and converts them through customers and markets into economic output. The business model is thus conceived as a focusing device that mediates between technology development and economic value creation.	Chesbrough and Rosenbloom, 2002, p. 532; Bohnsacks et al., 2014; Lima and Baudier, 2017, p. 3; Zott et al., 2011
Shafer et al., 2005	A business model is “a representation of the underlining core logic and strategic choices for	Shafer et al., 2005, p. 202; Zott et al., 2011

	creating and capture value within a value network”	
Osterwalder and Pigneur, 2010	A business model describes the rational of how an organization creates, delivers, and captures value.	Osterwalder and Pigneur, 2010, p. 14
Teece, 2010	A business model articulates the logic, the data, and other evidence that support a value proposition for the customer, and a viable structure of revenues and costs for the enterprise delivering the value	Teece, 2010, p. 179; Lima and Baudier, 2017, p. 3; Zott et al., 2011
Euchner and Ganguly, 2014	The means by which a firm creates and sustain margins of growth	Euchner and Ganguly, 2014, p. 33; Lima and Baudier, 2017, p. 3
Geissdoerfer et al. 2016	We describe business models as simplified representations of the elements and interactions between these elements e that an organizational unit chooses in order to create, deliver, capture, and exchange value.	Geissdoerfer et al., 2018, p. 404

*Table 4: Business Model definitions*

A business model can take on various forms based on the nature of the business, the range of its activities, or the preferences of its management (Teece, 2018). However, specific business model “templates” are more popular and practical for most applications than others (Athanasopoulou & De Reuver, 2020). The Business Model Canvas (BMC) is an example of a typical strategic management template for visualizing and developing business models (Lima & Baudier, 2017). The BMC is lauded for its ease of use and the iterative process it promotes, which enables users to refine their business models as their strategic plans evolve (Sibalija et al., 2021).

Osterwalder and Pigneur (2010) contend that a BMC can be utilized to systematically invent, design, and implement new, robust business models. They argue that it helps transform a visionary concept into paradigm-shifting BMs challenging the status quo. Moreover, it can be utilized to

innovate existing business models to meet better the requirements of current users (Osterwalder & Pigneur, 2010). Each BMC's nine-building block represents an essential business model aspect (Pellegrini, 2021); see Figure 2.

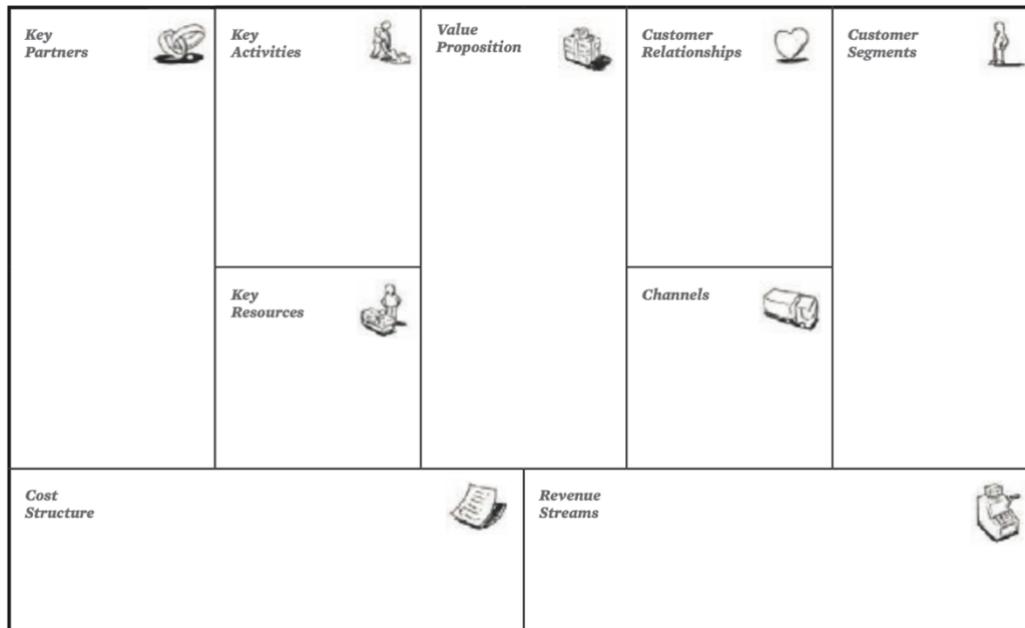


Figure 2: Business Model Canvas (Osterwalder & Pigneur, 2010, p. 4)

The value-driven business model may be created with the help of the BMC (Sibaliya et al., 2021). Figure 3 depicts the decomposition of the business model canvas (Figure 2) into four sections: value delivery, value creation, value capture, and value provision. The term “value” is often used to refer to the advantages and offerings (products or services) provided to clients (Sibaliya et al., 2021). Prior to making a purchase, the consumer is accountable for evaluating the benefits and drawbacks of a product or service (Zhao et al., 2021). “Value” does not always imply receiving a decreased price on the item or service (Gallo, 2014).

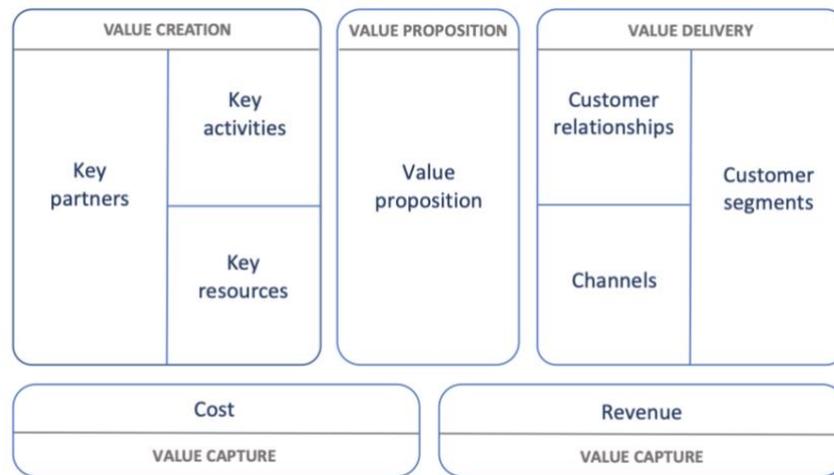


Figure 3: Business Model Canvas divided into four categories (Guldmann, 2018, p. 7)

### Value delivery

To provide value to clients, a business must have the resources and skills necessary to create, distribute, advertise, and sell its product and services (Sibaliya et al., 2021). The concept of value delivery focuses primarily on the process of a value network's floating. Furthermore, it refers to the architecture of income, cost, and profits in relation to the value it provides to customers (Daeyoung & Jaeyoung, 2015).

### Value proposition

Osterwalder and Pigneur (2010) stress the need to create compelling value propositions to inform consumers of the benefits of interacting with a company (Osterwalder & Pigneur, 2010).

Developing a value proposition requires understanding how to create value. Furthermore, it clearly explains the product/service's value to the target audience (Sibaliya et al., 2021). Businesses may benefit from value propositions that are executed well since they help retain consumers, boost earnings, and save expenses (Rayna & Striukova, 2016).

### Value creation

According to Rayna and Striukova (2016), "Value Creation" (VC) is the process through which a business adds worth to its clients' lives (Rayna & Striukova, 2016). A business model's strength is how well it represents the value customer place on various products and services (Sibaliya et al., 2021). Based on Sroufe (2018) recognized VC as a generalizable way to understand the significance of corporate management's strategic decision-making. Moreover, the capacity to make investments

and generate a return on invested money (Sroufe, 2018). VC is recognized as an essential factor for achieving the success of a business (Tantalo & Priem, 2016).

### **Value capture**

The capacity of a company to reap the rewards of value creation is known as “value capture”. Thus, it incorporates the revenue model and cost structure that produce cash flow (Chesbrough & Rosenbloom, 2002). Allocating profits at each value chain stage is also part of “capturing” value. Furthermore, profit allocation has become increasingly important as firms rely on co-innovation instead of producing value independently (Daeyoung & Jaeyoung, 2015). This expands their reach, access, complementary assets, and competencies (Rayna & Striukova, 2016).

## **2.3 Business model innovation**

The Business Model Innovation (BMI) literature has grown independently of the more comprehensive BM theory (García-Muiña et al., 2020). BMI is crucial for three reasons: (1) It is often an untapped source of future value; (2) it is difficult to duplicate or reproduce; (3) it is a competitive tool (Bocken et al., 2014). Saebi (2016) debates all discourse concerning how important it is to innovate the corporate`s business model, it is essential to remember that it is not just one way to do it (Saebi, 2016).

Although upgrading an organization`s BM has been demonstrated to enhance its performance significantly, only a minority of organizations do so. Moreover, this may contribute to the nascent yield innovation research stage (Saebi, 2016). However, according to a 2012 paper by Amit and Zott, many businesses are turning to BMI as an alternative to product or process innovation. Moreover, BMI is favored by corporations for its lower resource requirements and reduced risk in development and process innovation investments (Amit & Zott, 2012).

BMI is the biggest threat to a company's competitive position because companies must learn to give up their old models and use new ones (Tidd & Bessant, 2014). Through BMI, a product or service undergoes a redefinition, along with a corresponding transformation in its method of consumer delivery (Andreini et al., 2022). In this manner, businesses may attract new clients and encourage current ones to consume more. Saebi (2016) describes BMI's “*redefining a company`s core business logic*”, which involves maintaining how a corporate generates, lives, and captures value (Saebi, 2016). Another definition is that BMI delivers products produced by existing technologies to

existing markets (Girotra & Netessine, 2014). According to Geissdoerfer et al. (2018), BMI is viewed as a process including investigation, modification, enhancement, redesign, revision, creation, development, adoption, and transformation (Geissdoerfer et al., 2018)

Table 5 below provides an overview of multiple BMI definitions.

<b>Author(s)</b>	<b>Definition</b>	<b>Papers citing the definition</b>
Mitchell and Coles, 2004	By business model innovation, we mean business model replacements that provide product or service offerings to customers and end users that were not previously available. We also refer to the process of development these novel replacement as business model innovation.	Schaltegger et al., 2012; Trimi and Berbegal-Mirabent, 2012
Amit and Zott, 2010	... is a process of designing a new, or modifying the firm`s extant activity system	Amit & Zott, 2010, p. 2; Spieth et al., 2014
Bucherer et al., 2012	Business model innovation as a process that deliberately changes the core elements of a firms and its business logic	Bucherer et al., 2012, p. 184
Massa and Tucci, 2013	Refers to (1) the design of novel BMs for newly formed organizations, or (2) the reconfiguration of existing BMs	Massa & Tucci, 2013, p. 424; Antikainen & Valkokari, 2016
Geissdoerfer et al., 2016	Business model innovation describes either a process of transformation from one business model to another within incumbent companies or after mergers and acquisitions, or the creation of entirely new business model in start-up.	Geissdoerfer et al., 2018, p. 404

*Table 5: Definitions of Business Model Innovation*

Typically, the development of a BMI process is promoted by a change in the competitive environment, such as the strain induced by the introduction of a new disruptive technology (García-Muiña et al., 2020). Tidd and Bessant (2014) argue that a firm with an innovative business strategy might develop a new market or capitalize on new possibilities in current ones. They also add that businesses may be dramatic or gradual; even when they are cumulative and do not disrupt an industry, they can give the inventor vital advantages. In addition, the essential benefits lie in how they can change the playing field, and there are five different types of paradigm innovation (Tidd & Bessant, 2014); see Table 6.

<b>Types of business model innovation</b>	<b>How it changes the rules of the game</b>
“Servitization”	The habit of manufacturing was about producing and selling the product, but as time has passed the producers have started to rely on service and support related to the products. Technology and innovation in the world today have opened the possibility of offering more services and support than before. For example, the corporation can sell manufactured production systems to oil companies for extracting the oil. Since they have manufactured the system, they are also able to provide service for maintenance and upgrades. Because of the service part they can secure more workflow.
Ownership to rental	The ownership of rental innovation is a phenomenon caused by new technology development. It allows individuals to rent or subscribe to a service instead of purchasing single services. An example is Netflix, which revolutionized the movie industry by providing a huge library of movies and series for a monthly subscription fee instead of buying each movie or series. It also changed the traditional method of watching content, by replacing the DVD player with an app available on every device in the world.
Offline to online	Many businesses have utilized the possibility to go online with enabling technology, either if they adapted it or have been established with it. It allows companies to be more efficient and have fewer physical meetings. The innovation also makes individuals more present all the time from remote locations other than the workplace.

Mass customization and cocreation	Mass customization and cocreation have their origin in the emerging trend of the desire to customize personal products, and technology has made it possible to do so through platforms where individuals can engage.
Experience innovation	The type of business model innovation is all about changing the value for the customer. It is based on creating an experience around the product by offering a service rather than the core product. For example, coffee consists of coffee beans, which is a physical product before it is turned into a drinking product. The drinking product becomes a service that creates an experience through flavors.

Table 6: Paradigm innovation (Tidd & Bessant, 2014, p. 26)

## 2.4 Defining Sustainability

Since the mid-1980s, when it entered the academic lexicon for the first time, sustainability has undergone tremendous growth (Portney, 2015). The essence of the term “sustainability” is “*something that can be maintained over time*” (Heinberg, 2010). Today, “sustainability” frequently refers to conformance with sustainable development (Caradonna, 2014).

In 1987, the report “Our Common Future” was published by the United Nations World Commission on Environment and Development, assembled under Norwegian prime minister Gro Harlem Brundtland (Dresner, 2008). The report defines sustainable development as “*meeting the needs of the present without compromising the ability of future generations to meet their own needs*” (Brundtland et al., 1987, p. 41). In addition, it entails the creation of a “green”, “low carbon,” and “resilient” economy that operates on renewable energy. Operations do not support development that would compromise the ability of humans and other organisms to exist on the planet indefinitely (Caradonna, 2014).

In 2002, Dyllick and Hockerts redefined Brundtland’s sustainability definition to a business perspective, which is as follows: “*meeting the needs of a firm’s direct and indirect stakeholders (such as shareholders, employees, clients, pressure groups, communities, etc.), without compromising its ability to meet the needs of future stakeholders as well*” (Dyllick & Hockerts, 2002, p. 131). This aligns nicely with the definition of corporate social responsibilities (CRS). According to the European Union Commission, CRS is “*a concept whereby companies integrate*

social and environmental concerns in their business operations and in their interaction with their stakeholder on a voluntary basis” (Mullerat, 2010, p. 15). As suggested by definition, CRS has three dimensions: economic, environmental, and social. Sustainability has garnered growing attention from business academicians as companies have begun to assume greater responsibility for their environmental, social, and economic impacts (Kourula et al., 2017). According to Dyllick and Hockerts (2002), these three pillars of sustainable development must be conceptualized as a Triple Bottom Line (TBL); See Figure 4 below.

Hourneaux Jr et al. (2018) assert that in 1998 John Elkington argued that the TBL approach could simultaneously guide an organization to economic prosperity, environmental integrity, and social justice (Hourneaux Jr et al., 2018). Alhaddi (2015) defines the financial, social, and ecological line as follows; The financial line of the TBL framework refers to the impact of the organization`s business practices on the financial system. The social line of the TBL framework pertains to the implementation of ethical and equitable business practices that prioritize the well-being of labor, human capital, and the broad community. Finally, the environmental cue of the TBL framework refers to engaging in practices that do not comprise the environmental resources for future generations (Alhaddi, 2015). However, Hansmann et al. (2012) indicate that integrating the three sustainability dimensions and ensuring coherence within a business can be challenging (Hansmann et al., 2012).

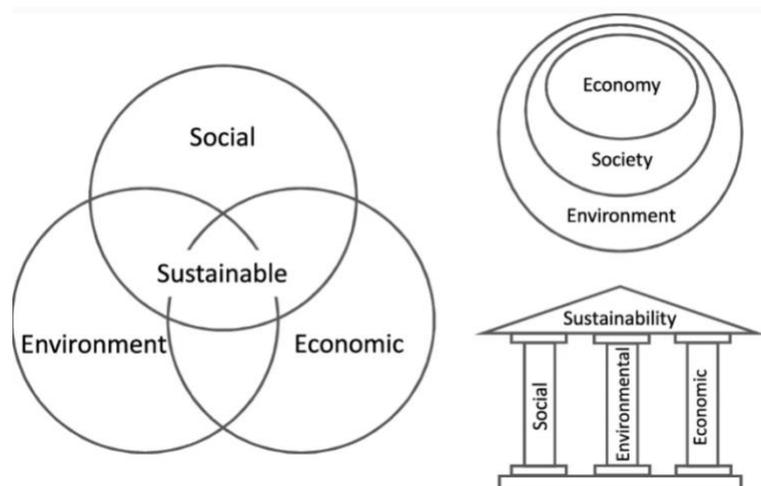


Figure 4: "Triple bottom line" (Purvis et al., 2018, p. 682)

The environment, social, and governance (ESG) Framework is similar to the TBL. However, Park et al. (2022) state that the ESG framework expands corporate social responsibility and

sustainability. Lee and Suh (2022) explain every letter of the ESG Framework: the environmental component (**E**) assesses how businesses safeguard and minimize ecological damage. This section addresses climate change, natural resources, pollution, debris, and environmental opportunities. The social component (**S**) assesses how companies treat their employees and the communities they serve. Key focus elements include employee relations, working conditions, organizational diversity, human rights, employee equity and justice, inclusion, product responsibility, and community health and safety. The governance component (**G**) evaluates the firm's management's leadership and oversight of organizational authority. This component examines board functions, structure, firm policies, compensation, lobbying, corruption, donations, and their vision and strategy (Lee & Suh, 2022). Krishnamoorthy (2021) argue that the ESG is not a static framework. Instead, it is a dynamic discovery process (Krishnamoorthy, 2021). It holds organizations accountable for meeting evolving expectations of ethical, moral, and sustainable excellence, furthermore, ESG goes beyond merely financial considerations (Pérez et al., 2022).



Figure 5: ESG (Ross & Beckett, 2021, p. 13)

The 2030 Agenda, a global initiative of the United Nations, incorporates the triple bottom line concept and the ESG framework, which can guide nations and businesses toward sustainable development (Rendtorff, 2019). The Sustainable Development Goals (SDGs) represent a greater convergence of the development agenda than the Millennium Development Goals (Kumar et al., 2016). The Millennium Development Goals were established in 2000 (Jong & Vijge, 2021). It addressed extreme poverty in its multiple dimensions: income poverty, starvation, disease, lack of

adequate shelter, and exclusion, while promoting education, gender equality, and environmental sustainability, with quantitative objectives established for 2015 (Sachs & McArthur, 2005). These goals still need to be met, but extraordinary progress has been made since 1990 (Stuart et al., 2016). According to a 2015 report from United Nations, the programs contributed to reducing extreme poverty and global hunger (United Nations, 2017).

The shift from Millennium Development Goals (2000-2015) to the Sustainable Development Goals (2015-2030) reflects the most recent evolution of the discourse on sustainable development (Jong & Vijge, 2021). As part of the 2030 Agenda for sustainable development, the SDGs were launched in 2015 (Bárcena et al., 2018). Table 7 below depicts the 17 SDGs, representing the global community's responses to climate change and social inequality challenges.

<b>Goal Number</b>	<b>Description</b>
<b>1</b> No poverty	End poverty in all its forms everywhere.
<b>2</b> Zero hunger	End hunger, achieve food security and improve nutrition and promote sustainable agriculture.
<b>3</b> Good health and well-being	Ensure healthy lives and promote well-being for all at ages.
<b>4</b> Quality education	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.
<b>5</b> Gender equality	Achieve gender equality and empower all women and girls.
<b>6</b> Clean water and sanitation	Ensure availability and sustainable management of water and sanitation for all.
<b>7</b> Affordable and clean energy	Ensure access to affordable, reliable, sustainable, and modern energy for all.
<b>8</b> Decent work and economic growth	Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all.
<b>9</b> Industry, innovation, and innovation,	Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation.

	and infrastructure	
<b>10</b>	Reduced inequalities	Reduce income inequality within and among countries.
<b>11</b>	Sustainable cities and communities	Make cities and human settlements inclusive, safe, resilient, and sustainable.
<b>12</b>	Responsible consumption and production	Ensure sustainable consumption and production patterns.
<b>13</b>	Climate action	Take urgent action to combat climate change and its impacts by regulating emissions and promoting the development in renewable energy.
<b>14</b>	Life below water	Conserve and sustainability use the oceans, seas, and marine resources for sustainable development.
<b>15</b>	Life on land	Protect, restore, and promote sustainable use of terrestrial ecosystem, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.
<b>16</b>	Peace, justice, and strong institutions	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable, inclusive institutions at all levels.
<b>17</b>	Partnerships for the goals	Strengthen the means for implementation and revitalize the global partnerships for sustainable development.

*Table 7: Sustainable Development Goals (Crist & Burritt, 2019, p. 572)*

The sustainability objectives necessitate collaboration from all nations, governments, civil society, the private sector, and academic institutions (Regjeringen, 2021b). In recent years, the SDGs have garnered increased attention among private-sector companies (Crist & Burritt, 2019). Many argue that the private sector has assets that can be applied to achieving the SDGs, including innovation, responsiveness, efficiency, and the provision of specific skills and resources (Scheyvens et al., 2016). This interest is crucial because the success of the sustainable development agenda depends on the participation of the private sector (Ike et al., 2019). However, achieving SDGs in the private sector faces obstacles, including a lack of influential leadership, harmonious partnerships, sufficient

investment, and robust monitoring and evaluation methods to track implementation progress (Rashed & Shah, 2020).

Like other UN member states, Norway is committed to attaining the SDGs (Regjeringen, 2021a). According to Young et al. (2021), nearly three-quarters of Norway's hundreds of largest companies now prioritize one or more of the United Nation's sustainability goals. In addition, many of Norway's most prestigious corporations communicate quantified results and have quantitative sustainability objectives (Young et al., 2021). Norway ranked fourth on the SDG Index in 2022 (Sachs et al., 2022). Unsustainable consumption patterns, greenhouse gas emissions, and biodiversity represent the most significant obstacles to attaining the SDGs in Norway (Regjeringen, 2021a). In addition, gender-based violence and labor market disparities persist, demonstrating the need to address persistent or escalating inequalities between social groups (Regjeringen, 2021a).

Norway's hydrocarbon policy aims to facilitate profitable long-term oil and gas production (IEA, 2022). In addition, the Government's climate policy ensures that developing and deploying technologies and solutions that reduce greenhouse gas emission is profitable (Norsk Industri, 2022; Regjeringen, 2021b). Furthermore, the Norwegian parliament has requested that the government and the oil and gas industry present a plan for reducing emissions by 50 percent by 2030 (Lo, 2021; Regjeringen, 2021b). Increased electrification of existing oil and gas fields, utilization of low-and zero-emission technologies in new fields, and their implications for the onshore power supply system should be included in the plan (Regjeringen, 2021b).

## **2.5 Sustainability in the oil and gas industry**

In recent years, sustainability has emerged as a critical factor for oil and gas companies seeking to substantially alter their competitive strategies and business models (Okeke, 2021; Stead & Stead, 2000). The petroleum industry, recognized as one of the world's largest sectors (Hassan, 2013), encompasses the global operations involved in the exploration, extraction, refining, transportation, and marketing of petroleum products (Amponsah & Opei, 2017). These activities are indispensable to numerous industries and the sustainability of industrial civilization, rendering the industry of paramount significance to many nations (Capobianco et al., 2021).

Oil pollution or petroleum hydrocarbons can potentially infiltrate the marine environment through diverse origins (Sattar, 2022). Types of sources are transport (tanker operations, accidents, bilge,

and fuel oil, non-tanker accidents, and atmospheric emissions), fixed installations (coastal refineries, offshore production, marine terminals), and other sources (municipal or industrial waste, urban or river run-off, in addition to natural inputs (Carpenter, 2018). Exploration done by Andrews et al. (2021), the emission may impact the general health and reproduction of numerous fish and other marine organisms in the surrounding water (Andrews et al., 2021). Recent research has linked the proximity of oil and gas wells to adverse cardiovascular, physiological, perinatal, and other health outcomes (Gonzalez et al., 2021). Gas turbines generate most greenhouse gas emissions (Thomson et al., 2017). According to Noor (2020), the oil and gas industry also emits chemicals known as NO<sub>x</sub> gases, which contribute to air pollution (Noor, 2020).

Due to the significant impact and complex operating environment generated by the oil and gas supply chain participants, it will be necessary to adopt a sustainable business strategy (Regjeringen, 2021b). Shell, situated in the Netherlands, has encountered social pressure to adopt a proactive posture regarding climate change (Skjærseth & Skodvin, 2003). Even though the oil and gas industry is transitioning to a more sustainable business model, the challenge for companies is that their business environments are changing (Ihlen, 2009).

To accomplish overall sustainability, companies must make decisions using the TBL concept by considering environmental and social factors alongside economic gain (Correia, 2019). In a business sector that is ecologically, economically, and socially delicate, oil and gas corporations must operate responsibly concerning regulators and other stakeholders (Capobianco et al., 2021).

A few decades ago, nobody inquired about the environmental impact of manufactured items (Jørgensen & Pedersen, 2021). Environmental and social issues have become a concern for businesses, particularly in developing nations whose industries are based on the oil and gas industry (Heim et al., 2022). In addition, Capobianco et al. (2021) stress the importance of an innovative and sustainable model that can facilitate the energy transition, paving the way for the transformation of the global energy industry from fossil-based to zero-carbon by the middle of this century (Capobianco et al., 2021).

To reduce emissions, subsea equipment suppliers must consider sustainability, procedures, and quality very seriously (Regjeringen, 2021b). Considering the capacity to address direct and indirect emissions is essential for determining the most effective strategy to decrease greenhouse gas (GHG) emissions (Hertwich & Wood, 2018). There are 3 scopes the business industry needs to look into to

categorize their emissions. The 3 Scopes are addressed as follows, according to Teske and Nagrath (2022):

- **Scope 1:** the direct emissions from owned or controlled sources
- **Scope 2:** Indirect emissions from the generation of purchased energy.
- **Scope 3:** Indirect emission (not included in Scope 2) that occurs in the reporting company's value chain, including upstream and downstream emissions.

Figure 6 below illustrates the interconnected social, economic, and environmental aspects of developing the oil and gas industry. Ecological and social factors must be considered in the oil industry's decision-making process (Correia, 2019). The value chain of oil and gas companies can significantly impact economic growth, social progress, and environmental stewardship, either positively or negatively (Capobianco et al., 2021). Nonetheless, most of the world's oil and gas companies incorporate environmental values into their protocols and policies, and environmental management is increasingly becoming a strategic concern (Okeke, 2021). Nemes et al. (2022) have criticized petroleum companies that typically publicize their sustainable practices, as the reason for employing greenwashing strategies to enhance their business reputations (Nemes et al., 2022). Ihlen (2009) argues that oil and gas may also be used in an environmentally responsible manner. He believes using the available information makes oil and gas extraction ecologically friendly and feasible (Ihlen, 2009).

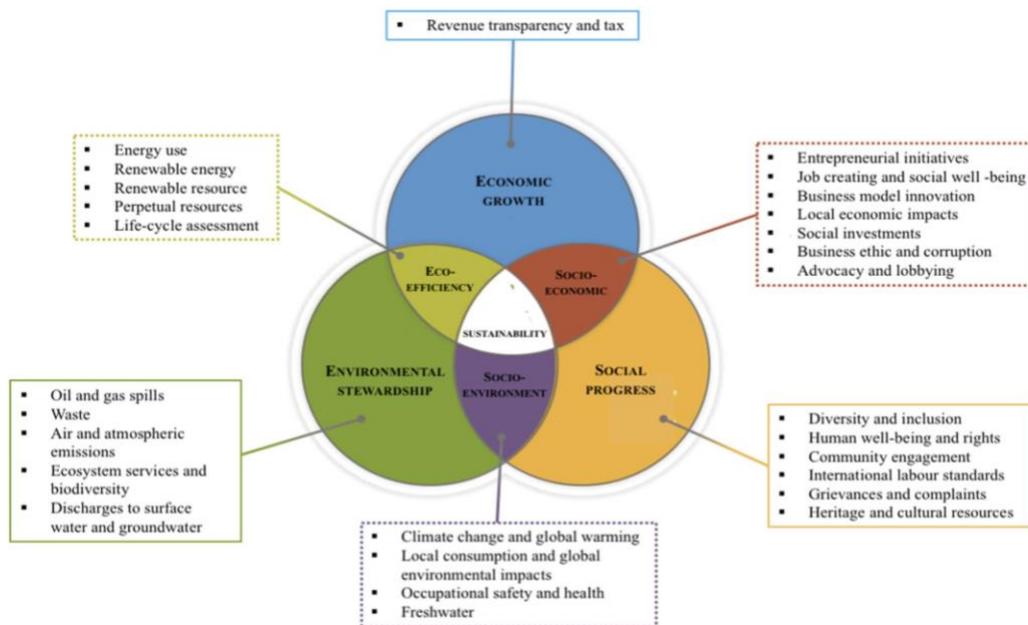


Figure 6: The impact of sustainability on the oil and gas industry (Capobianco et al., 2021, p. 5)

Although oil is unsustainable (Yadua et al., 2020), despite its significance to Norway's economy (Olsen, 2015), communities are hearing a great deal about oil and its future (Yadua et al., 2020). In addition, in 1991, an instrument for regulating emissions from the petroleum industry was founded, meaning carbon dioxide emissions in Norway are subject to a statutory tax. It requires businesses to pay taxes on natural gas and hydrocarbon combustion and production (International Trade Administration, 2022). Ihlen's (2009) research demonstrates that some Norwegian petroleum companies perceive minimizing emissions, long-term petroleum management, and greener production as sustainable, sector-enhancing practices (Ihlen, 2009).

Norway is far advanced in several fields, including innovation, development, and the application of technology (Robeco, 2019). During the transition to sustainability, these experiences will aid in developing green energy sources such as offshore wind, turbines, hydroelectric, and other forms of pure energy (Norsk Industri, 2022; The Explorer, 2021). To achieve the United Nation's sustainability goals, the Norwegian business community must participate in a reorganization effort to produce sustainable development. This also encompasses the service and logistic industries associated with the oil and gas industry, as they are primary contributors to its commodity production (OECD, 2022).

## 2.6 Sustainable business model innovation

The study of Sustainable Business Model Innovation (SBMI), a subfield of the Sustainable Business Model (SMB), is still in its infancy (Geissdoerfer et al., 2018). SBMI is an approach for businesses to re-conceptualize their mission and value-creation to enhance their environmental and social sustainability (Basile, 2021).

According to Geissdoerfer et al. (2018), SBMI is defined as “*Sustainable business model innovation as the conceptualization and implementation of sustainable business models. This can comprise the development of entirely new business models, the diversification into additional business models, the acquisition of new business models, or the transformation from one business model to another*” (Geissdoerfer et al., 2018, p. 407).

Some researchers have attempted to define the concept of SBMI, see Table 8.

<b>Author(s)</b>	<b>Definition</b>	<b>Papers citing the definition</b>
Zollo et al., 2013	Processes through which firms actually navigate the multiple change requirements, to identify, experiment with and eventually realize more sustainable models of the enterprise	Zollo et al., (2013, p. 242)
Björkdahl and Holmen, 2013	A new integrated logic of how the firm creates value for its customer or users and how it captures value and is the implementation of a business model that is new to the firm	Björkdahl and Holmen, 2013, p. 215; Yang et al., 2016, p. 1795
Bocken et al., 2014	Innovation that create significant positive and/or significantly reduced negative impacts for the environment and/or society, through changes in the way the organization and its value-network create, deliver value and capture value (i.e. create economic value) or change their value proposition	Bocken et al., 2014, p. 44; Hermundsdottir and Aspelund, 2021
Geissdoerfer et al., 2016	Sustainable business innovation processes specifically aim at incorporating sustainable value and proactive management of a broad range of stakeholders into the business model.	Geissdoerfer et al., 2016, p. 1220
Roome and Louche, 2016	“Processes through which (...) new business models are developed by businesses and their managers (...) how companies revise and transform their business model in order to contribute to sustainable development”.	Roome and Louche, 2016, p. 12
Yang et al., 2016	“Sustainable business model innovation can be more easily achieved by identifying the value uncaptured in	Yang et al., 2016, p. 1796

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current business models, and then turning this new understanding of the current business into value opportunities that can lead to new business models with higher sustainable value”.

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*Table 8: Sustainable Business Model Innovation definitions*

Despite disparities, the common focus in the presented SBMI definitions is on the transformative process towards a more sustainable BM. In addition, it incorporates specific sustainability principles characteristics, such as sustainable value or stakeholder integration. Sustainability reshapes the competitive environment and forces businesses to alter their product, technology, process, and business model conceptions (Fielt, 2013). Jørgensen et al. (2019) mentioned that SBMI offers a competitive advantage via better customer value while contributing to the firm’s and society’s sustainable growth. In addition, creating and using SBMI makes a company's finances more stable and helps the environment (Jørgensen et al., 2019).

### 2.6.1 The Triple-layered business model canvas

Teece (2018) describes the traditional BMC as an instrument for analyzing VC from an economic perspective (Teece, 2018). However, the view of the conventional BMC needs to enable one to discern the sustainability path of a company more intuitively (García-Muiña et al., 2020). Therefore, a tool with a TBL perspective is required to analyze all three pillars of sustainability. The Triple-Layered Business Model Canvas (TLBMC) extends and complements Osterwarder and Pigneur’s (2010) original economically oriented BMC concept with new canvas layers investigating environmental and social value creation (Pigneur et al., 2015) (See Figure 7). In this regard, the TLBMC described by Joyce and Paquin is a more comprehensive option for representing environmental and social perspectives (García-Muiña et al., 2020). As per Lozano (2008), the TLBMC establishes “horizontal” coherence within each layer of the canvas, thereby allowing for a comprehensive exploration of economic, environmental, and social value in isolation. Concurrently, it affords a “vertical” coherence that fosters the integration of value creation across the three layers, thus encompassing a holistic perspective (Lozano, 2008). This facilitates the development of a more comprehensive understanding of an organization's value creation (García-Muiña et al., 2020).

The environmental layer is similar to the original BMC used to determine whether revenue outweighs expenses (Cardeal et al., 2020). The environmental layer of the TLBMC aims to assess if the organization creates a net positive ecological impact compared to environmental impact (Pigneur et al., 2015). This enables users to comprehend the business model's most significant environmental impact (Pappas et al., 2023). In addition, it provides insight into where the organization should concentrate its efforts when developing environmentally friendly innovations (Joyce & Paquin, 2016).

An essential aspect of utilizing the social layer of the TLBMC is through a stakeholder approach. Moreover, the stakeholder approach aims to capture the mutual influence between stakeholders and the organization (Pappas et al., 2023). In addition, this layer aims to identify the organization's most significant social impacts resulting from these relationships (Pigneur et al., 2015). This enhances understanding of an organization's social implications and explores ways to innovate (Cardeal et al., 2020).

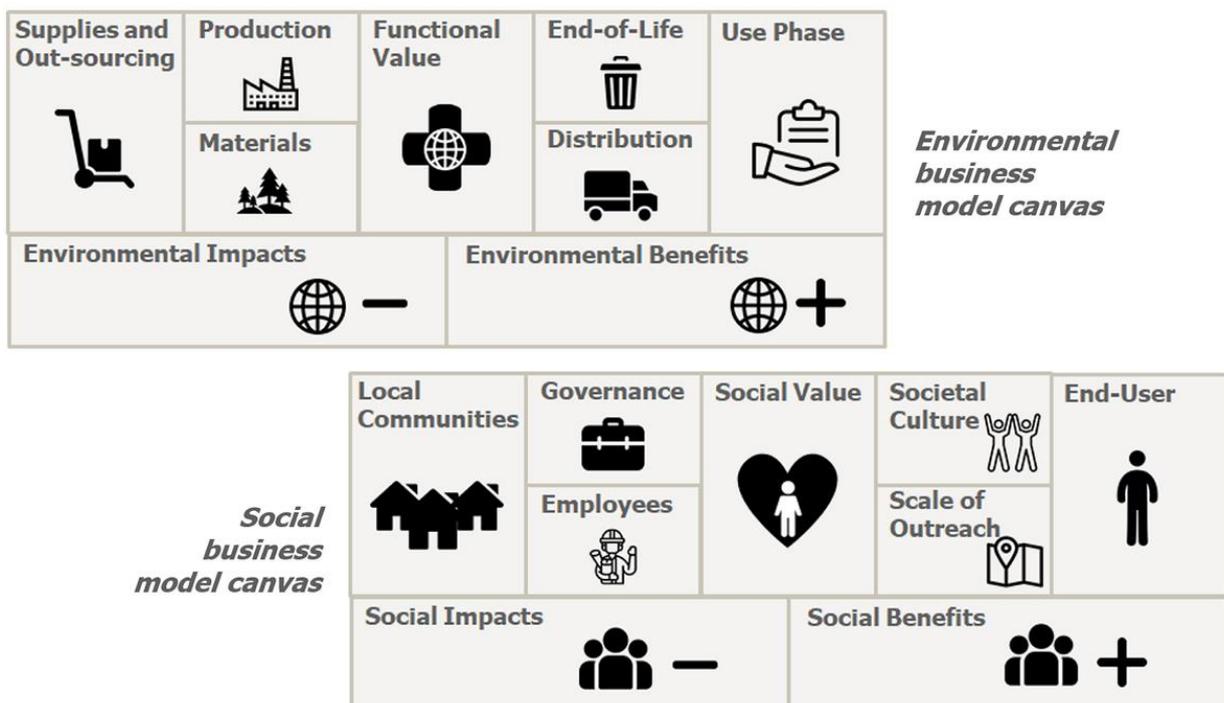


Figure 7: The Triple Layered Business Model Canvas: Environmental and Social layers (Book, 2021)

## 3 Methodology

A qualitative research method attempts to understand the complexities and nuances of a particular case. Additionally, this understanding is achieved by analyzing multiple data sources (Austin & Sutton, 2014). These sources include interviews, observations, documents, and artifacts (Cornell, 2023). This master`s thesis utilized a qualitative case study methodology. The objective is comprehending the case, including context, processes, and results. A case study is a research methodology that involves an in-depth investigation and analysis of a specific person, organization, or phenomenon (Rashid et al., 2019). The philosophical stance of this research endeavor is critical realism. Due to its extensive use of positivist and constructivist methodologies to account for ontology and epistemology, critical realism is an all-inclusive scientific philosophy (Fletcher, 2016). This approach quantifies the underlying causal link between events to understand our problem statement better and provide solutions (Lawani, 2020). Resolving in the philosophical characteristic renders a suitable approach for this thesis.

### 3.1 Contextual Background

The oil and gas industry in Norway started in 1962, by Philips Petroleum applied to the Norwegian government to explore the Norwegian continental shelf (Norwegian Petroleum, 2023). Before the application, only some people believed there were resources such as oil and gas on the Norwegian seabed. Still, the gas findings at Groningen in the Netherlands made people think, especially the government (Norwegian Petroleum, 2023). Therefore, after the application, the Norwegian government decided and regulated that any resource on the Norwegian continental shelf belonged to the state. As a result, companies such as Philips Petroleum could apply for licenses that included exploration but not the production of oil and gas (Regjeringen, 2021c).

The industry started in 1969 with the discovery of the Ekofisk field. After the exploration, production began in 1971, with restricted blocks awarded at each round to foreign companies (Norwegian Petroleum, 2023). During this period, the Norwegian government established Statoil, which intended to have fifty percent participation in each production license. Statoil was created to ensure control. This has contributed significantly to Norway's economic growth and infrastructure (Regjeringen, 2021c). Over more than fifty years, Norway's oil and gas industry has evolved to become the foremost sector in terms of turnover. It is responsible for making the service and supply industry the second largest in turnover. According to the analysis done by Rystad Energy, the

industry had a turnover of 397 billion NOK in 2019 (Rystad Energy, 2020). This has created new workplaces and attracted foreign companies to establish operations in Norway.

The company in focus is a result of two previous companies that decided to merge to become a leader in the industry. One of the companies entered the oil equipment industry in 1955 to become the leading manufacturer of wellhead flow control assemblies. In 1958, the other company was established. During the 1990s, both companies focused on growth and acquiring companies to strengthen their expertise. Both companies grew as the years passed by, and in 2015 an alliance was created between the two companies to reshape the design and how subsea fields were operated. Two years later, the two companies merged to become a global leader in the industry (internal source). Today's merged corporation provides solutions and systems to energy projects by utilizing technologies and innovative services. Offering high expertise in subsea and surface projects. They believe in driving change through innovation and more innovative designs (internal source). Their core business areas are subsea, surface, new energy ventures, technology and innovation, and digital transformation. Focusing on optimizing the fields from concept to physical projects and maintaining them in the subsea and surface area. This is done by delivering a wide range of services onshore and subsea. For example, in Norway, they provide subsea parts and solutions (Christmas trees) to oil companies for extracting the oil from the seabed. They also offer new energy ventures and wants to focus on three areas: Hydrogen, greenhouse gas removal, and offshore floating renewables (internal source).

The war between Russia and Ukraine has led to a downfall in supply from Russia. This gave the opportunity of increasing the production of gas and oil on the Norwegian seabed, which led to Norway becoming the most significant single supplier of gas to Europe. One of the reasons for the increased volume was that the government allowed it due to stability in the production, and the increasing need for supply to neighboring countries (Stordal, 2023). Figure (6) below shows the three scenarios created by the Oljedirektoratet towards 2050, and the one assumption the scenarios have in common is that production will start to decrease.

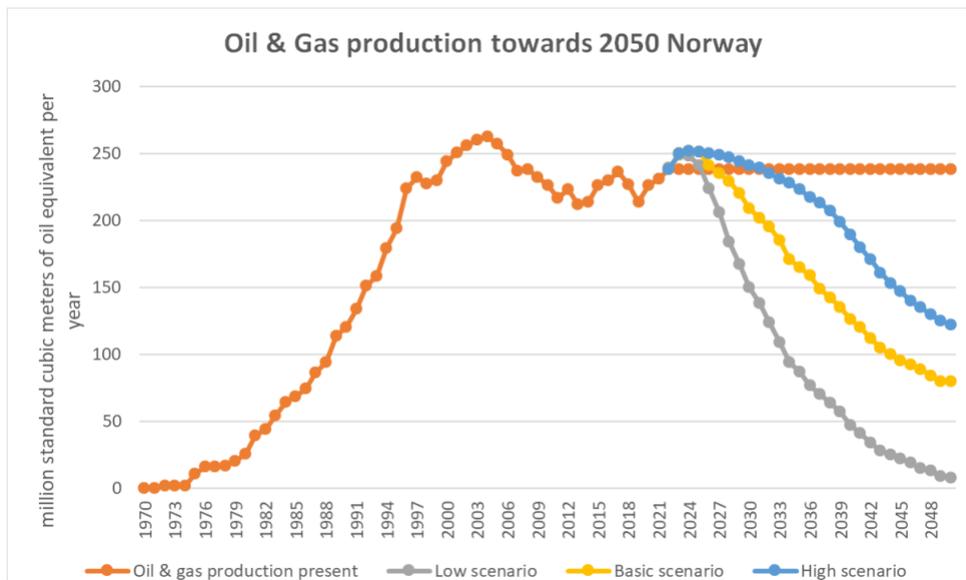


Figure 8: Oil & Gas production towards 2050 Norway (Stordal, 2023)

During 2022, it was also made a series of new decisions to invest in developing resources in the business. This has given further development plans for maintaining oil and gas production in new and existing fields. It has been assigned 53 new permissions to explore new areas. Increasing the interest in carbon capture and storage in several occupations, because of the focus from the government (Stordal, 2023).

### 3.2 Research design and sampling

A singular inductive case study addressed the research question and examined the potential of business model innovation in the oil and gas supplier industry. The company in the case study is a Norwegian Oil and gas equipment supplier that agreed to have its business model analyzed. Due to the examination of solidarity, the value of a single-case design lies in the ability to generate helpful information. Moreover, this information pertains specifically to the research question addressed in this paper (Lobo et al., 2017). Furthermore, selecting a particular case study was motivated by the desire to acquire an “in-depth” comprehension of the topic, facilitating a better grasp of the context (Burg et al., 2021). The inductive method reflects qualitative data analysis patterns; implementing this will allow the researchers to collect data, search for solutions, and develop a theory (Liu, 2016). This approach was deemed appropriate for this research thesis as it facilitated the attainment of conclusive findings in repose to the research question.

### 3.3 Data collection

This master thesis utilized data triangulation, which involves multiple sources or methodologies, such as primary and secondary sources, to collect and analyze data (Carter et al., 2014). The concept behind data triangulation is that using multiple sources or methods can assist researchers in overcoming the limitations of a single approach and enhancing the validity and reliability of their findings (Golafshani, 2003). We have collected the data through document analysis and interviews aligned with the research approach.

#### **Document analysis**

Various document categories were analyzed during data collection. Project documentation was accessed throughout the process, such as PowerPoint presentations and reports from the company. Additionally, a thorough review of reports and websites pertaining to the competition associated with the company was conducted. These documents were reviewed to understand the case context better and increase knowledge.

#### **Interviews**

We have an interview-based qualitative research approach, including purposive sampling with an expert purposive method. The authors of this master`s thesis recruited informants through their business networks. A network of enthusiastic participants was established after working for the company last summer. The participant was asked open-ended questions (the interview guide can be found under Appendix 1).

Interview-based qualitative research is beneficial for exploring complex and nuanced topics with multiple perspectives or subjective experiences (Aspers & Corte, 2019). The method allows the master`s thesis to gain insights into the participants' lived experiences and investigate their in-depth views.

Purposive sampling, a non-probability sampling method in which the researcher selects participants based on a specific purpose or criterion, enables the participants to respond to the interview-based qualitative research questions (Etikan et al., 2016). In purposive sampling, participants are selected based on their unique characteristics, expertise, and experience relevant to the research question (Andrade, 2021). Enable this research paper to accumulate qualitative data with information to illuminate. The most prevalent technique used for purposive sampling was expert sampling.

According to Etikan and Bala (2017), expert sampling is when research participants are selected based on their expertise or knowledge of the research question or objective (Etikan & Bala, 2017).

According to Trotter (2012), this method is frequently employed in qualitative research. Moreover, it is utilized when the researcher seeks the perspective of experts in a particular field or topic (Trotter, 2012). Expert sampling is when the informants are selected predominantly based on their position and knowledge of the company's BM (Shaheen et al., 2019). The reason for choosing expert sampling for this master's thesis, was because the researchers could get specialists in the area. Additionally, it would likely provide rich and detailed insight into the research question.

According to Weller et al. (2018), qualitative interviews may have open-ended questions that permit participants to provide detailed and descriptive responses (Weller et al., 2018). In addition, open-ended questions elicit detailed information about the participant's perspective and experiences (DiCicco-Bloom & Crabtree, 2006). It argues that the semi-structured interview, despite the supplied topical trajectories before an interview, allows a researcher to delve deeply into a topic (Ruslin et al., 2022). In addition, semi-structured interviews encourage interviewees to express their opinions in a reasonably open-ended setting, as opposed to a standard conversation (Ruslin et al., 2022). To acquire knowledge, a semi-structured interview is therefore appropriate.

The collection of data began with in-depth, semi-structured interviews with elite informants. According to Solarino and Aguinis (2020), elite informants are key decision-makers with extensive and exclusive information and the ability to influence crucial firm outcomes alone or with others (Solarino & Aguinis, 2020). It was a combination of informants from the two companies that subsequently merged. This resulted in restrictions on the use of informants. NSD authorized the project description before the interviews. In the regulation regulating managing personal information, the participants had to sign a consent letter before starting the discussion, allowing the use of an audio recording. Recording interviews is a viable option for capturing the interview data more effectively (Jamshed, 2014). Therefore, all the interviews were recorded. Table 9 shows the participant's position in the company.

<b>Informant</b>	<b>Position in the company</b>
<b>A</b>	Middle level Manager
<b>B</b>	High level Manager
<b>C</b>	Middle level Manager
<b>D</b>	Focus Group
<b>E</b>	Middle level Manager
<b>F</b>	Middle level Manager
<b>G</b>	High level Manager

*Abbreviations: Middle level manager (Manager, Director) High level manager (Vice president)*

*Table 9: List of Informants.*

There was a total of eight elite informants. It was a range of middle- and high-level managers and one focus group. All interviews were conducted in person and lasted between 30 and 70 minutes and in person at the company's headquarters during the first three weeks of March. These interviews aimed to elucidate and expand upon the findings from a theoretical standpoint. Solarino and Aguinis (2020) claimed that elite informants typically attempt to control the interview process and expect a knowledgeable and articulate interlocutor (Solarino & Aguinis, 2020). The informants were devoted and reliable, and they spoke candidly. With the aid of high-level managers, additional knowledge and expertise were accumulated. However, only a few informants can access privileged and confidential information and accurately articulate an organization's situation (Solarino & Aguinis, 2020).

### **3.4 Data analysis techniques**

We used inductive coding to extract findings. Inductive coding allows us to write the code based on what we see from the gathered data (Saldana, 2021). According to Boyatzis (2021), with inductive coding, researchers start from scratch and derive codes from the data, and in this approach, there are no suggestions as to what the codes should be in advance (Boyatzis, 1998). Instead, it allows the raw data to guide the narrative (Chandra & Shang, 2019).

The inductive data investigation was performed in line with the theory for two-cycle coding presented by Miles et al. (2019). The three different code sets are presented in Appendix 5 and give an understanding of the categories and themes that appeared. In the first coding cycle, the data input consists of summarized and designated answers from the participants. For code set two, we

introduced the BMC to the interviewees to establish similarities between the answers. For the second cycle, step two, themes that had emerged from the first coding cycle were categorized. In the last step of the coding, we evaluate the findings regards to the problem statement.

### 3.5 Data quality

The postulation or assertion of a connection between human experience, a representational medium, and a target audience is posited in various approaches within qualitative research. Moreover, these approaches are utilized, practiced, promoted, and advocated for (Lumsden, 2022). Obtaining high-quality data is now crucial (Tayi & Ballou, 1998). In 1997, Strong, Lee, and Wang defined data quality as data that are suitable for use by data consumers (Strong et al., 1997). Fitness for use necessitates looking beyond traditional concerns with the data's precision (Tayi & Ballou, 1998). Data quality is commonly described as a collection of "characteristic" data, such as its credibility, confidentiality, correctness, and efficiency (Jorge et al., 2016).

Following the established criteria for qualitative studies (Lincoln & Guba, 1985), this study will discuss triangulation and trustworthiness to establish the reliability and confirmability of the research. Triangulation is "*a qualitative research strategy to test validity through the convergence of information from different sources*" (Lemon & Hayes, 2020, p. 605). Connelly (2016) defines the trustworthiness of a study as the degree of confidence in the data, interpretation, and methodologies used to ensure the quality of a study (Connelly, 2016). Several enhancements were made to the data's credibility and confirmability following qualitative research standards.

#### **Credibility**

Triangulation of qualitative data sources (Farquhar et al., 2020; Naeem, 2019; Patton, 1999) was achieved by doing interviews and comparing them with secondary data. In addition, data credibility is enhanced by comparing and contrasting the perspective of multiple informants with different positions within the organization and extensive work histories.

According to Wood et al. (2020), some informants may supply the information they believe the investigator is interested in receiving instead of delivering accurate data. Addressing these obstacles, we conducted semi-structured interviews with open-ended questions and did them individually. Undertaking the interviews, we did not indicate whether or not we agreed with the informants' responses. During interviews, the informants were asked to provide examples, which

resulted in a more significant comprehension of what the informants were saying and increased credibility. To ensure there was no misunderstanding during the interviews, we sent the transcripts to the informants to acquire their final comments on what was stated. This is consistent with the recommendation that researchers include informants in checking interpretations after the fact (Stahl & King, 2020).

### **Confirmability**

The use of multiple analysts achieved investigator triangulation (Denzin, 2009). There were two authors conducting data collection and analysis. The researchers separately transcribed the transcripts before discussing and analyzing them. This facilitated dialogue developed complementary and divergent understandings of a study situation, subsequently reflected upon jointly. This led to high confirmability as the transcripts were discussed and analyzed as a team. Having two researchers reduced the possibility of bias and misunderstanding.

Using each author's perspective from the interviews, the coding was initially performed by one of the researchers. In addition, the coding was presented to and analyzed with all coauthors until a consensus was reached regarding the most pertinent findings. By doing our studies independently, reuniting to compare and debate emerging themes, settling on names for our topics, and writing a final report, we strengthen the credibility and confirmation of our results.

To complement and contextualize the interview data, the publicly accessible information, websites, and online documentation regarding sustainable initiatives and the company was also examined.

## **3.6 Ethical considerations**

Throughout all phases of the study process, ethical considerations must be considered (Bhandari, 2021). The informants must be assured of their confidentiality and have no fear of being identified. This signifies that we have modified some information to keep the informant's identity anonymous. Before the interviews, a letter of explanation and permission form was drafted so the participants understood their participation. This implies that the research must adhere to the privacy scheme's principles, which have been considered throughout the process. The goal of the research, what participation suggests, and how the collected data will be handled have been explained in full to the informants.

As the interviewers, we must be trustworthy to acquire access to informants' opinions and points of view, which we will analyze and discuss in a proper manner. During the interviews, we were conscious of being attentive and demonstrating through our body language that what they said was interesting and valuable. We designed a setting in which the informant could freely share their opinions.

The Personal Data Processing Act of June 15, 2018, No.38, incorporates the EU's data protection rules into Norwegian Law. Chapter II, Article 5 of the legislation stipulates that gathered personal data shall be "treated in a legal, fair, and transparent way concerning the data subject." (Lovdata, 2023). As researchers, we must safeguard the safety of our interviewers. Before collecting personal data, we thus registered our research with the Norwegian Center for Data Research and had it authorized before the project's launches (see Appendix 3).

We requested that informants review the prepared information letter before each interview. The informational letter explains that participation is optional and confidential and that participants may request access to the gathered data at any point. In addition, they were informed that they could remove their responses from the study at any time and that their answers would be anonymous. As researchers, we have an ethical obligation not to misquote or abuse data to post raw data publicly. We used an iPhone that is password protected to decrease the possibility of information being lost. Article 5, letter e, of the EU's data protection legislation stipulations that information must be maintained for no longer than necessary. All the informants were informed that recordings and written notes would be discarded after the deadline of this master's thesis.

## 4 Main findings

This chapter presents our primary findings in response to our research question: *How can business model innovation empower sustainable development of corporations in the oil and gas supplier sector?* Our findings reveal how the company emphasizes the three pillars of the ESG framework. We also discovered that the company primarily innovates in value delivery and creation part of their business model and that “servitization” and offline to online are types of BMI achieved alone and with different partners. Table 10 briefly illustrates the findings.

Primary findings	Description
High emphasis on environmental, social and governance aspect. Reducing scope 3 emissions, incorporate respect and following laws.	The three pillars of the ESG framework.
Regarding BMC, the company's primary area of innovation based on sustainability is value creation, delivery, and capture.	Three layers of innovation with BMC regarding sustainability.
The corporation utilizes “servitization” and offline to online as types of BMI alone and in collaboration with partners.	Achieving SBMI alone or in collaboration.

*Table 10: Main findings*

A detailed elaboration of the findings follows. Additional quotes can be found in appendix 4.

### 4.1 Sustainability in perspective of the ESG framework.

In this section, we will present our findings related to the standpoint of the ESG framework. The organization emphasizes the three pillars of the ESG framework: environmental, social, and governance. Regarding the environment, the firm concentrates on reducing its carbon footprint, building a sustainable enterprise for the future, and utilizing lean programs. Climate accounts are present, and according to the focus group, they are trying to reduce scope 3 emissions to be more attractive to customers: *“We have climate accounts, so we report on everything we use on scope 1 & 2 and then on water and waste on scope 3. What we are working on more and more is getting scope 3 down in terms of carbon or the footprint of the products and our projects. We are not quite*

*there yet, but we are well on our way. Green team established to reach the goal of the carbon footprint internally*". In terms of reducing scope 3 emissions, the corporation is also exploring how they can establish a sustainable business for the future: *"I think it will be a central part because we see that it is part of what the customers want. It's part of society in general, and it's part of the mentality of the younger guard that's going to take over the firm. That's the way it goes. Standardization and simplification are a part of it as well"* – informant E. Thirdly, the importance of lean programs to optimize waste management and production is in focus. *"Cost structure is something we work on continuously. We are running lean programs to reduce waste in what we do and always looking for the best option for production"* – informant G. The focus on carbon footprint and running lean programs to optimize production is initiatives that can bring competitiveness to the company.

In the social pillar of the framework, the company encourages employees to participate in solution-focused debates and discussions. Although it doesn't directly increase the corporation's competitiveness, it can indirectly affect it. Because it can strengthen the bonds between staff and management and cultivate a sense of community, motivating people to work harder and influencing a company's competitiveness. *"You discuss, you adapt the social, the cultural and regulation. You must adapt, for example I have not tackle the same problems with covid as my college in America and Asia. As a team here we did not adapt the same way on the flexi-walk, we had monthly talks, we discussed what we can do, we can do/offer more freedom, go to the office or not etc."* - informant B.

Along with employee inclusion, the business strongly emphasizes respect as a fundamental value because it fosters a sense of community among employees and may indirectly increase competitiveness. *"I think we can contribute as we are in the societal group. But as we have a kind of a social group in our group, a small team, so we can say that we are a small society. So, we represent a little bit of society. So, you can have some problem in this small society with ethic and gender diversity. So, yes, we can contribute. We can help each other and respect each other, so we have one of the central values which is respect. And I think that is primary what I ask people, to respect each other when you come to the office"* – informant B.

As part of the governance component of the framework, the corporation prioritizes compliance with laws and regulations in numerous nations, but they also play a role in establishing industry standards. *"We must follow legislative changes and specifications all the way. We must stick to many different ones because we operate in many different countries. (...) each country often has its*

*own laws and regulations that must be followed. In the Norwegian sector there is a lot and we set a good number of standards on how things should be” – informant A. The importance of adhering to laws stems from the fact that, without them, a business cannot conduct its operations, which can harm its competitiveness. On the other hand, setting innovative industry standards marks a competitive advantage and an interest in being ahead of the competition. In terms of governmental regulation, the regulation can positively or negatively affect the company. Positive regulation facilitates competitiveness, whereas negative regulation can have the opposite effect. “So, regulation same can be new regulation that can bring you some help, like two years ago we offer lower taxes to companies so that they can benefit, so what oil companies has done is to that we have tax benefits, so we invest so that the corporation will benefit from that. So, it is also a good cascade. But you can also have regulation, I am working on one now increasing taxes for certain level of salary. I am working on this with finance, we must anticipate that this is negative because it brings me additional costs, that I need to incorporate in a cost when we tender a project, and then we can say we are less competitive” – informant B.*

The corporation also strongly emphasizes maintaining objectivity and ethical behavior. Objectivity and ethical behavior are essential because being on the right side and being impartial will bring positivity to what customers things of the company and its operations. *“We have a code of business conduct that everyone must follow. And there is a lot there, and especially a lot in relation to the USA, there is a lot of corruption and how to deal with being on the right side and being impartial. We also have a part in relation to how we should behave and yes pulse and impact quality which are our cultural programs which are also all taken through. Yes, it has a lot to do with how we want the culture to be, and the culture has a lot to do with ethical behavior” – Focus Group.*

## **4.2 Three Layers of Sustainability with Business Model Canvas**

In this section, we will present how the corporation innovates regarding sustainability in the BMC. We will elaborate if the corporation focuses on value creation, delivery, or capture. Our findings indicates that the corporation focuses on the three areas, and that they are all important.

Firstly, a solid value proposition and good customer connections are essential to the company's value creation in terms of sustainability and competitiveness. The website highlights sustainability and ESG goals as part of its global value proposition. *“Yes, if you go to our websites, for example, you will see that sustainability is listed there quite clearly and ESG is very involved” – Focus*

Group. The corporation is also looking at sustainable investments for the future. *“We are making upgrades to products and looking at sustainable investments for the future with a lifespan of 20 years”* – informant G. By visualizing to the world that the company is emphasizing sustainability, they will attract more customers and create a stronger foothold in the industry. Establishing long-term partnerships with suppliers and clients also contributes to the organization's value generation. where they consistently develop relationships and don't alter much. *“In general, I would say that we enter long-term collaborations with our suppliers, and we do not change very often, and we often keep developing them. And partners, it depends a little on what we need”* – informant G. The development of relationships may help them achieve sustainability goals which affect the corporation. *“To establish customer relations is key and help them achieve sustainability goals”* – informant F.

In relation to sustainability and the BMC, the corporation focuses on empowering value delivery to the industry by establishing joint ventures with key partners, emphasizing sustainability, and acquiring the right expertise. Collaboration partners are important when the corporation tries to enter new industries, and for future investments, they need to facilitate joint ventures to acquire competence and knowledge in terms of competitiveness. *“Key partners, if it is in relation to the fact that we have collaboration partners, then we associate ourselves with other different companies that deal with, for example, offshore wind, and there are many different ones that become such joint ventures, so we try to build ourselves up by including other who have that competence and expertise”* – Focus Group. Emphasizing sustainability is something the corporation focuses on, and it is a goal to become the key activity for the future. *“It is included as a focus. We are looking at the future and how we are running our factories”* – informant G. The company also needs to have the essential resources available, which include technology, human resources, and experience, to facilitate sustainability for future perspectives. *“Human resources and the expertise we have are important to being able to deliver what the customer wants. The qualities are openness, the competence of the people who work on the projects and good communication”* – Informant A.

Capturing value is a topic the corporation always looks at. The cost structure is affected by sustainability by trying to reduce waste and optimizing production. Lean programs help the corporation to use fewer materials. By optimizing production, the corporation creates a more decisive competitive edge as it can lower the cost when tendering for projects. *«We work with cost structure all the time. It is something we challenge and see what we can do? After all, we run such lean programs to try and take out the waist”* – informant G. Sustainability has a negligible impact

on the corporation's revenue stream in terms of new energy. But in the future, it can have a more substantial impact as the focus becomes more critical on new energy. *“It is not like 50% of the turnover, or it is a small part. It is an important part, but it is a small part if you look at the sustainability of what we offer in terms of new energy, so it can have a much greater effect now over time”* – informant G.

### 4.3 Sustainable Business Model Innovation

In this section, we will present our findings about the ways companies accomplish SBMI. Two main ways emerged: achieving sustainable business model innovation alone and in collaboration with other partners. The findings revealed different types of partners and specific types of business model innovation present.

The corporation achieves SBMI alone and utilizes two types of innovation, which is “servitization” and offline to online. The corporation has bought companies to acquire the knowledge needed, securing economic precedence, and strengthening its competitiveness in the upcoming industry. The BMI used was “servitization”. *“We were quite early into renewables, and then we bought a company in the UK. We got all the assets and bought the company they were running in cable laying for anchors at wind turbines. The expertise, some of the equipment and then we went in there to get a foot inside to understand this market. This market was not big enough for us but was interesting for us, but it was a way to learn”* - informant G. On the other side, the company is also using its goods to give clients servicing choices for purchased equipment. Because they are equipped and knowledgeable to handle it, they are doing this to provide an additional service. The service option provided makes the customer stay longer connected to the corporation and in that way, they can secure more income. The "servitization" business model innovation was applied. *“It has something to do with being able to utilize the resources we have, and then I think about manufacturing, and we must deliver new products, but we also think about the service part. How can we utilize the service on the products we have already delivered. To keep them more usable and keep them running. There we see an ascent because there was a slight downturn when COVID-19 started. Because then the customers stopped several projects, and the service proposal became important”* – informant A. Finally, the company used digital solutions during COVID-19 due to limitations placed on employees in the workplace by the government. Employee discipline has made it possible to implement flexi-walk and maintain the corporation's performance at the same level. The corporation needs to develop to be able to utilize digital solutions when they occur and

stay competitive in the industry. BMI used is offline to online. *“We have seen that covid accelerated the way we think digital. Typical example is the flexi-walk, you stay one day at home you consume less. The digital is of course consuming energy, so we have a balance. As a team we had monthly talks, we discussed what we can do, we can do/offer more freedom, go to the office or not etc. It is working here because Norway is very disciplined, they follow the rule so discuss and follow up on what you have discussed. One key access is to develop the company if you have new technology for the future. If you do not bring anything to the market or a new technology, it is going to be difficult”* – informant B.

The company achieves SBMI by collaborating and utilizing one type of innovation, which is “servitization”. In the collaboration aspect, the company has different types of partnerships to achieve SBMI. The corporation has collaborated with start-up companies to offer possible expertise in the present and new industries. The start-ups present an interesting idea that could work in the business of the company, and the corporation provide what the start-up is missing to kick off the project. *“We also bought in or entered collaboration with small start-ups that had good ideas. We saw that some of these are going to work, and some of them are not going to work, but we go in and do it, and then we basically offer either money or engineering or whatever it is, and then we offer our ability to and then take this from something small and smart through big if we're going to do it* – informant G. Another BMI the corporation has done is to merge with another actor in the industry. The merger took place to become a complete player in IECPI projects because both corporations felt that the market missed this kind of player. By becoming a complete player and changing the value proposition, the corporation has strengthened its competitive edge by being able to offer something the competitors are trying to copy with partnerships. *“The last big change was that we merged the companies, to be able to offer the whole range of full IECPI projects where both the SPS system and the surf part. So, it was because we thought that the market needed a player like that. And we have been at least partially right in that. We can offer something that other competitors are trying to emulate with various partnerships. Yes, it may be even more important in the future to have a properly integrated company.”* – informant E.

Collaboration for digital BMI is achieved in the following way. The corporation has elaborated a digital solution from an existing service by connecting people and acquiring the right expertise. The digital guard vessel has become an online service through satellite instead of a physical service. The physical guard vessels used a lot of fuel and by changing the service to satellite, the corporation can reduce carbon emissions and possibly offer the service in industries that they see as a potential. The firm can reduce costs thanks to digital innovation, increasing their ability to compete in tendering

and even creating a new source of income. *“Digital guard vessel. I can explain it briefly, to give a good illustration. When you operate on the field offshore, you need some time to have some small vessels to guard the environment you are operating to avoid other vessels to come to penetrate in the area for example. And so, we have looked at a way to change things, and those guard vessels are small, they consume a lot of fuel. So, we have tried to elaborate a digital solution where we have no more vessel. But here as it is simple, we have based a solution on satellite, and the proper communication. And surprisingly we have seen that we detect much more with a digital tool like this than the guard vessel. Not a big investment, but it was time. How did we put together engineering people knowing about the subsea and the It/coders people to develop and imagine the solution.”* – informant B. In the same area of collaboration, the corporation also uses the strategy of acquiring partners and expertise to offer a product. The partners will provide the missing pieces of a service or product that the corporation is not bringing to meet the customer's need. *“It depends also on your strategy if you want to stay only in pure oil and gas or if you want to progressively explore other things. All the sections in the business model canvas are important. One key thing is partners. Because very often when you develop new things, new components, technology, new product, you need someone else. When we developed a project for the hydrogen, we are assembling a lot of things, but basically, we need electrolyzes, we need the tank to store the hydrogen and we are not doing this so for that we need partners.”* – informant B.

## 5 Discussion

This chapter will compare our main findings to the existing literature. The following topics will be discussed: Association with the ESG framework, the focus area of innovation in the BMI, and the corporate's BMI approach.

### 5.1 Association with the ESG framework

E (environment), S (social), and G (governance) comprise the ESG framework. According to Sætra (2021), the ESG framework could contribute to a greater comprehension of the sustainability of the organization's activities (Sætra, 2021). However, Hansmann et al. (2012) argue that integrating all three aspects of the TBL and ensuring coherence within the business will be challenging (Hansmann et al., 2012). Kapsarc (2022) contends that ESG has been linked to "greenwashing" since the social and governance components have not received as much attention as the environmental dimension (Kapsarc, 2022).

#### **Environment**

The environmental component (E) assesses how businesses safeguard and minimize ecological damage (Lee & Suh, 2022). The evidence from our study suggests that the company has three primary environmental objectives: reducing the carbon footprint of its clients, reducing water consumption, and recycling and repurposing refuse. In terms of the environment, the corporation is also interested in ecological opportunities, as it recognizes that this is a societal demand and a part of the generation's mindset that will eventually take over the business. Compared to the competition, their value chain and solution promote recycling, reuse, and circular design to create a more sustainable future (external source).

Norway's hydrocarbon strategy aims to guarantee decades of sustainable oil and gas extraction (IEA, 2022). The environmental cue of the TBL framework (Alhaddi, 2015) refers to practices that do not deplete natural resources for future generations. The findings of this study suggest that the corporation has established a green team within. This is to reduce its carbon footprint, minimize environmental damage, and find new solutions for greener oil and gas extraction projects.

The environmental cue of the TBL framework (Alhaddi, 2015) refers to practices that do not deplete natural resources for future generations. Our research indicates that the company uses

electrolyzed seawater as an energy source. Furthermore, the company also develops new technology to contribute to the energy transition significantly. Lean programs have been utilized to reduce process waste. In addition, they are focused on waste management, aiming to recycle and reuse ten of our assets and projects` refuse by 2030 and committing to reduce their water consumption by ten percent by the same year. The rival fully understands supply chain emissions and utilizes them as selection, performance management, and ESG criteria (external source).

Simultaneously, the environment expects businesses to reduce their carbon footprints (Bocken & Short, 2021). The data reported here support the assumption that the company is considering different ways to reduce its carbon footprint. The organization strongly emphasizes sustainability, and one of its long-term goals is to take the lead in business conduct. The company has recently produced environmentally friendly goods to save costs and the carbon impact. The company maintains a climate account that details Scopes 1 and 2 consumptions. For scope 3, the company aims to reduce its water and waste by reducing its carbon footprint. The corporation focuses on its fleet of vessels due to their elevated emission levels and vital role in its operations. While they must strive to reduce their carbon footprint, they also want to assist their clients in reducing their emissions and enacting genuine industry-wide change. The competition is looking into Scope 1 and 2 emission reduction is the competitor's primary goal. Scope 3 involves lowering value chain emissions.

## **Social**

Social factors (S) evaluate how enterprises interact with their employees and the communities in which they operate (Dogan, 2017). Our finding indicates that the community within the company that they try to facilitate the employees in the best way possible. In this lies activities, gatherings, after-work initiatives, volunteer work, and life in the office. Being part of society means the company must also prioritize ethical behavior among employees. According to one of the competitors to the company, all employers have the responsibility and authority to halt work when conditions pose a hazard, or the position is substandard. They are committed to a policy of zero employee harm. Priority has been placed on the physical and mental health of their workforce.

Multiple forces always draw society in a different direction, necessitating social innovation (Dogan, 2017) to enhance the welfare and well-being of individuals and communities. To enhance the welfare and well-being of the company, our findings indicate that employee relations and working conditions are prioritized through initiatives like the flexi-walk program and involving employees

in conversations that impact the future for both. The flexi-walk allows the employees to work from home or be present in the office. They can also build up hours to take days off.

Key focus elements include employee relations, working conditions, organizational diversity, human rights, employee equity and justice, inclusion, product responsibility, and community health and safety (Lee & Suh, 2022). In that regard, our findings indicate that all employees must follow the code of conduct, which emphasizes human rights, respect, and company policies. HSE programs are established to keep community health and safety within the company at its highest and keep employees reminded. Regardless of gender, age, nationality, or other factors, the competitor is committed to non-discrimination and equal opportunity. The competition contemplates the Code of Conduct and People Policy and supports internal campaigns and foundations (external source).

## **Governance**

Changes in the political arena frequently profoundly affect the direction and growth of society and organizations (Patterson, 2017). The data reported here support the assumption that the corporation follows the industry's laws, regulations, and standards in all the countries they operate in. In terms of following industry laws, the corporation also sets many standards on how things should be.

Countries with a high level of democratic representation in their political system appear to have necessary regulation and social pressure to compel businesses to act responsibly (Daugaard & Ding, 2022). The Norwegian government and the oil and gas industry have been asked to develop a strategy to reduce oil and gas production emissions by 50 percent by 2030 (Regjeringen, 2021b). Our research indicates that the company aims to reduce Scope 1 and 2 emissions by 50 percent by 2030 by lowering CO2 equivalent emissions. Compare this to the competition that has pledged to reduce its emissions by 50 percent by 2030. By 2050, the conditions will be incorporated into the project's procurement contract.

A deeper understanding can lead to a more appropriate choice of regulation and other incentivizing policies, encouraging a more extensive pursuit of ESG success. In addition, understanding the cause of ESG performance will guide selecting policies and regulations that promote positive ESG outcomes (Daugaard & Ding, 2022). The findings of this study suggest that regulations and unions can bring positive or negative effects on the corporation. The positive impact can be tax relief for oil companies, and the negative can be increased tax on employees. Legislative and quality departments within the corporation are present to be in line with the new legislative changes. In addition, the corporation emphasizes the importance of being impartial and on the right side of the

law regarding corruption as they work in different countries. Moreover, in many cases, corruption is not apparent, so it can be challenging to be aware. The competition's structure for dealing with unwelcome occurrences is founded on a three-tiered approach. The primary objective was to analyze the operational impact of a significant cyber-attack and exercise the business continuity response.

Nemes et al. (2022) pointed out that some petroleum companies typically publicize their sustainable practices for greenwashing strategies to enhance their business reputations (Nemes et al., 2022). Our research suggests that the firm does not use greenwashing to boost its corporate reputation. The company is transparent that using the tactic is against the law and would harm the company's image. In some cases, corporations partner up with "green corporations" to trade carbon emissions quotes to reduce their footprint, but this is not the case. Our findings indicated that companies in the oil and gas industry want to show transparency and the actual picture of the ongoing activities in the renewables industry.

ESG objectives are derived from the aspirations of the corporation's core belief in sustainability. The business acts responsibly, taking into account its impact on the planet, people, and communities the company is established and operates. The three ESG pillars support the company's efforts to be responsible corporate citizens. Change is driven by sustainable and inclusive commitments made under each pillar. As a consequence of the analysis and the proposed CSR definition (Kourula et al., 2017), according to internal sources, the company's model is aligned with taking full responsibility for environmental, social, and governance implications. And they are progressively in line with meeting the goals. Assuming complete responsibility is an area that can be perpetually enhanced, and the company is always seeking to progress in this area. This is crucial because according to Ike et al. (2019), the sustainable development is dependent on private sectors (Ike et al., 2019). It is essential to keep in mind that the ESG is not a static framework. But a dynamic discovery process that holds organizations accountable for evolving expectations of ethical, moral, and sustainable excellence beyond purely financial ones (Krishnamoorthy, 2021).

## **5.2 The focus area of innovation in the business model innovation**

The BMC (Sibalija et al., 2021) is a tool for developing game-changing BM that challenge the status quo, as described in the theoretical framework. It may also improve tried-and-true business strategies to cater to today's consumers' needs (Osterwalder & Pigneur, 2010). Value delivery, value creation, value capture, and value proposition are the four pillars upon which the original BMC was

built by Osterwalder and Pigneur in 2010. According to recent research (Sjödin et al., 2019), BMI is more successful when the underlying BM is consistent in its value delivery, creation, and capture approach (Sjödin et al., 2019). Our research indicates the business` value through delivery, creation, and capture.

### **Value delivery**

Daeyoung and Jaeyoung (2015) argue that organizational dynamics rely heavily on delivering value (Daeyoung & Jaeyoung, 2015). It encompasses strategic actions through alliances, partnerships, and even among rivals (Todeva & Knoke, 2005). Providing value to an alliance`s members is crucial to building lasting, productive relationships (Frow & Payne, 2011). In line with this theory, our research shows that the company prioritizes building a solid value delivery to the sector by forming joint ventures with essential partners, innovating the business, and the importance of more sustainable practices. The company fosters joint ventures for future investments to build its competitiveness and competency. Collaboration partners are crucial when a company wants to enter a new industry. Comparing the corporation to a competitor, we can understand that they also emphasize joint ventures, innovating the current business, and sustainable practices. The joint venture by the competitor is established to improve their services and outcompete others (external source).

The innovation of value delivery is becoming more frequent, disruptive, and destructive in order to propose new methods of generating business value (Daeyoung & Jaeyoung, 2015). Our research indicates the company knows the significant implications of entering a new initiative because they need to be used to being in that industry and need someone else to innovate and develop with. The firm will often try to utilize its goods and services in other sectors. The competitor is looking into the areas that can increase their competitiveness and become better than the corporation when tendering for future projects (external source).

### **Value creation**

Value creation is creating a business value from the customer`s requirements derived from the desire to use the service/product (Daeyoung & Jaeyoung, 2015). Our research indicates that the corporation emphasize long-term connections with suppliers and clients, where they steadily build ties and don't change significantly. Transparency and communication are essential in collaboration. They could accomplish sustainability objectives that impact the organization with the support of relationships and communication. In the same area, the business frequently must adjust to the

demands of the consumer and provide knowledge on solutions to establish business value. The competitors focus on solid value propositions and strong customer relationships.

Tantalo and Priem (2016) argue that value creation is essential for achieving a successful business (Tantalo & Priem, 2016). Our research indicates that the company's potential to create value regarding sustainability depends on having a solid value proposition and customer relationships. The website's global value proposition includes goals related to sustainability and ESG. Internally, the top-down approach communicates the focus on sustainability as a part of the value proposition. Visualizing that the company emphasizes sustainability will attract more customers and create a stronger foothold in the industry. However, the company also works to standardize its products and practices to be more sustainable. Research shows that the competitor also focuses on transparency and having clear customer and strategy policies visible to their clients and suppliers (external source).

### **Value capture**

Value capture generates income from the sale of goods or services, is a crucial part of every viable business strategy (Rayna & Striukova, 2016). Our research shows that the corporation constantly considers value capture with sales and services. Creating and retaining value, according to Fraser (2018), involves more than just cutting costs (Fraser, 2018). In line with our findings, sustainability impacts the cost structure by attempting to cut waste and maximize productivity. This has a negligible effect on the corporation's new energy revenue stream. However, as new energy becomes more important, it might have a more substantial effect. The company can utilize fewer materials thanks to lean initiatives. This gains a more significant competitive edge through production optimization since it can reduce project costs when submitting tenders.

Daeyoup and Jaeyoung (2015) argue that capturing and appropriating value efficiently throughout the value chain is essential. Furthermore, the best way to capture value for a company varies from one to the next (Daeyoup & Jaeyoung, 2015). Our research indicates that the corporation will be evaluated regarding financial performance. They need to focus on the performance of the entire value chain. As financial performance goals are essential to any company, the competitor in the industry also constantly considers value capture in terms of cost structure and revenue stream (External source). Both corporations have understood the importance of reducing costs and emissions, but it is still a working progress. A downfall in the activity level in the business makes both companies reduce cost and capital spending, which makes cutting costs much harder because it

can result in layoffs. The industry moves in cycles, and when an upturn is around, the companies need to hire more individuals again (external source).

The company concentrates on every part of the BMC but places a lot of emphasis on value generation, value delivery, and cost structure regarding sustainability. Although they are all significant for business operations in different ways and at various stages of the enterprise, all the elements in the canvas are present. As the company puts high emphasis on the BMC, so do the competitors, and there are small margins between them.

### 5.3 The corporate`s business model innovation approach

Relation to the six types of BMI: “Servitization”, Ownership to rental, Offline to online, Mass customization and co-creation, and Experience innovation. We have identified that the company uses only “Servitization” and Offline to online. This is aligned with previous research and competitors in the oil and gas industry and research about SBMI (Wroldsen, 2017). Kopp (2022) argues that existing firms must continuously change their models; if not, the company will fail to predict future trends and issues (Kopp, 2022). The two main viewpoints presented are BMI alone or in collaboration.

Research accomplished by Chang et al. (2021) results that using “servitization” can help an organization improve sustainable value creation through four main paths; enhancing resource allocation capabilities, reducing carbon emissions through energy project service, technological outputs, and standards exportation (Chang et al., 2021).

#### **Alone**

When looking into the “alone” perspective, the company has acquired businesses to get the necessary expertise, secure economic dominance, and boost its competitiveness in the emerging industry of renewables. According to Ayala et al. (2017), corporations that utilize the strategy of servitization lack knowledge. Moreover, a possible way to tackle this problem is to acquire the needed knowledge (Ayala et al., 2017). Our findings indicate that the corporation has tried to utilize this BMI to acquire knowledge in a new industry due to a lack of knowledge. In the end, the industry was too small for the company. They gained experience and had the opportunity to access future value that had yet to be realized. In the same category of BMI, the corporation is also using its goods to give clients servicing choices for purchased equipment. In line with the theory

presented by Ayala et al. (2017), the company must facilitate service knowledge to face this type of BMI. And have either a service partner or facilitate for the service itself (Ayala et al., 2017). The corporation is doing this to offer an extra service and broaden its value proposition since they are qualified and prepared to manage it. The service option makes the customer stay connected to the corporation longer, so they can secure additional income. Comparing a competitor, we can see that they utilize the same type of BMI for acquiring businesses and providing service options on purchased equipment (external source).

Another BMI the corporation has used is offline to online. Digital solutions during COVID-19 due to limitations placed on employees in the workplace by the government enabled them to work from home. In line with the theory presented by Paiola and Gebauer (2020), technologies offer new opportunities to challenges and make corporations change from traditional to new BM (Paiola & Gebauer, 2020). The discipline of employees has made it possible to implement flexi-walk and maintain the corporation's performance at the same level. The corporation needs to develop to utilize digital solutions when they occur and stay competitive in the industry. Any threat to the competitive advantage must be taken seriously, and development and innovation can provide a solution. Innovating the strategy by using technology can give an advantage (Paiola & Gebauer, 2020). The corporation wasn't alone in receiving restrictions from the government, and competitors have also used digital solutions to keep their businesses running. The competitors are also aware that digitalization is an essential focus for fostering innovation and development (external source).

## **Collaboration**

The results of the interviews incorporate different scenarios and employ the "servitization" BMI from the standpoint of collaboration. The company has worked with startup businesses to provide potential expertise in both the old and new sectors. The start-ups offer a creative concept that could fit the company's operations, and the corporation fills in the gaps to get the endeavor off the ground. According to Ayala et al. (2017), knowledge from external parties can be a solution to fill the gaps that are missing (Ayala et al., 2017). Investing in various start-up businesses is crucial since some can be developed into sustainable firms, while others would not work out. Start-ups with more size have access to potential future value and can provide challenging solutions for rivals to imitate.

In the same area of providing potential and additional expertise, the corporation also uses the strategy of acquiring expertise to offer a product. In line with the theory presented by Ayala et al. (2017), partnerships must be appropriately managed to succeed, which includes substantial

information and knowledge sharing (Ayala et al., 2017). The partners will provide the missing pieces of a service or product the corporation is not bringing to meet customer needs, and it is essential to express precisely what is needed. Internal sources dictate that the corporation has partnerships in the renewables sector, focusing on offshore floating wind, wave energy, and wind energy. The corporation's merger with another player in the industry is another example of BMI. According to Xing et al. (2017), the "servitization" strategy of a merger can be used to renew BM, increase competitiveness, and acquire knowledge (Xing et al., 2017). Both businesses believed the market was missing a player of this caliber; thus, they decided to unite to participate fully in IECPI initiatives. As a result of being able to provide something that other companies are attempting to duplicate through partnerships, the firm has enhanced its competitive edge by evolving into a complete player. Offering a comprehensive package has the potential to lower costs and attract new clients. One of the company's competitors utilizes partnerships with other companies to compete with actors in the market. For competitors, this is the only way to stay competitive except by merging with another actor (external source).

From a different perspective, the company has transformed an existing service into a digital solution by bringing internal and external people together and obtaining the necessary knowledge. In line with theory presented by Piaola and Gebauer (2020), companies can enter specific external partnerships to develop a specific product and reach a desired service product (Paiola & Gebauer, 2020). The digital guard vessel is no longer a physical service but a satellite-based online one. The physical guard vessels used a lot of fuel. By changing the service to satellite, the corporation can reduce carbon emissions and offer the service in industries they see as potential. With the help of digital innovation, the company may cut expenses, improve its capacity to compete in tendering, and even generate new revenue. The technology-based innovation can give all these benefits (Piaola & Gebauer, 2020). The focus on digital solutions is also present at the competitors' table, where they emphasize and facilitate a digital culture with internal and external people (external source).

The company employs "servitization," a crucial innovation in BM from both perspectives and the online-offline transition from the alone perspective. However, they might investigate different BMI to incorporate sustainability better and take advantage of untapped potential and opportunities in other sectors. The capacity to cut costs is a persistent threat to a company's ability to compete; therefore, it is essential to explore untraditional methods.

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## 6 Conclusion

This thesis is based on a case study. It seeks to determine how business model innovation from a sustainability perspective can empower the sustainable development of corporations in the oil and gas supplier sector. This study is pertinent because it intends to contribute to the literature on BMI and sustainability, as the scholar requires additional research and findings on different aspects. Explicitly filling a void for BMI for oil and gas industry suppliers. Keeping up with the changes in a well-established and highly competitive market will be essential in a transforming oil and gas industry.

Applying the theoretical framework with the main findings, we believe that specific findings provided us with a deeper comprehension of the company's competitiveness within the oil and gas industry. First, as part of its business strategy, the organization is committed to accepting full responsibility for the impact on the environment, society, and government. They concentrate on lowering scope 3 emissions when it comes to the environment. The social component is focused on ethical behavior and having the ability to support society. The governance part aims to maintain the industry's emphasis on developing standards and adhering to rules and laws. Given that there is always room for improvement, the company strives to be better at including sustainability and enhancing responsibility. Second, while the organization focuses on each component of the business model canvas, value generation, value delivery, and cost structure in relation to sustainability are given a lot of attention. All the parts in the canvas are present and essential to the company's competitiveness, even though they are all critical for business operations in different ways and at different phases of the organization. Thirdly, the firm uses "servitization," an important innovation in business models from both views and the online-offline transition from the alone standpoint. Companies may instead investigate other business model innovations to embrace sustainability better and seize unrealized potential and chances in other areas. Considering unconventional strategies is crucial since a company's ability to decrease expenses constantly threatens its competitiveness.

We draw the conclusion that business model innovation will make a critical difference in reshaping Norway's oil and gas sector for suppliers to become more competitive and still obtain sustainability goals. The environmental aspect, focusing on emissions, is one of the key factors that must be focused on. To adapt to a new market or industry, the organizations affected by industrial restructuring must simultaneously make several adjustments to various aspects of their company. While suppliers of equipment to oil and gas may need to be better equipped to create ground-

breaking technologies, they likely need to become more familiar with the simultaneous innovation of multiple aspects of their business, which is essential to their success. The emphasis on sustainability must be more substantial in order to reduce costs and increase competitiveness. For this reason, the reorganization of the oil and gas equipment suppliers' business and the fulfillment of the country's climate aspirations may benefit from the complete framework provided by business model innovation. It is important to remember that the desired solutions are still several years away from becoming reality.

This master's thesis may serve as a springboard for further study in the expanding topic of sustainability from a business perspective. The following studies may focus on comparing firms operating in the same industry or sectors. Our findings indicate that the corporation uses the business model innovation "servitization" a handful of times. Therefore, in upcoming research on BMI for sustainability, a topic to be explored can be to investigate unconventional innovation methods for the potential of achieving better results than conventional methods.

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## Appendix list

### Appendix 1 – Interview guide

#### Part 1: About you

1. What is your name?
3. How long have you been working in the corporation?
4. What is your position?
5. What is your background?

#### Part 2: Background Information on the company

1. How long have you been working in the company?
2. Which industries do you operate in?
  - a. Which are you attempting to enter?
  - b. Why?
3. Does the firm engage in innovative and sustainable practices? If so, in what manner?
4. Which form of innovation do you value more, and why?
5. How extensive is your competition?
  - a. Direct/indirect
6. What does sustainability mean for the company?
  - a. How do you work with sustainability in the business?

#### Part 3: business model environment

7. How does the company respond to market forces? (Market categories, requirements and demand, market difficulties, switching costs, and attractiveness to revenue)
8. How does the company respond to industry forces? (technology, regulations, social and cultural trends, and socioeconomic trends)
9. How does the company respond to major trends? (technology, regulations, social and cultural trends, and socioeconomic trends)
10. What are your opinions on the company's ethical responsibilities and societal impact?
11. Do you believe the corporation helps to the resolution of any societal problems?

#### **Part 4: business model Innovation**

12. How is sustainability included in your business model?
13. What roles does sustainability play in the corporation's value proposition?
14. Do you alter your market offering (products/services)? If so, then when and how?
15. In what circumstances would you contemplate altering your most important partners, activities, and resources?
16. When do you modify your company's cost structure and income streams?
17. Has sustainability had an impact on how the company carries out primary activities in the business?
18. Are frame agreements with suppliers a vital part of the aspect of keeping the cost low and meeting budgets?

#### **Part 5: The Process of change**

19. What procedures does your company presently have in place for analyzing and enhancing its business model?
20. What are the primary motivations and prospects for modifying your business model?
21. What are the most significant obstacles oil and gas firms face when entering a new business, such as greenhouse gas removal, offshore, or hydrogen?
22. If you are contemplating a business model change, how significant is it that your rivals in the same sector have already implemented the same changes?
23. Are you pleased with your accomplishments to date? Which obstacles have you encountered, and what has worked well?

#### **Part 6: Final part**

24. Is there anything you would like to add?
25. Is there anything we have talked about along the way that is important to bring up?
26. Can we send you any follow-up questions?

**Participation in data collection for the master's project**  
*“Common problem understanding in how a business model innovation can contribute to a restructuring of a company towards sustainable goals”?*

This is a question for you about participating in a research project where the purpose is to study how a densification model innovation can contribute to a restructuring of a company towards future sustainability goals. In this document, we provide you with information about the aims of the project and what participation will mean for you.

**Purpose of the project**

We want to carry out a study on how to create a common understanding of how a business model innovation can contribute to carrying out a restructuring of a company towards future sustainability goals. We want to take the company as our starting point for the survey. The purpose is to link theory to collected data and identify the most important factors of change.

This master's thesis is part of the study ITM5000 Innovation and technology management at the University of Southeastern-Norway and will be completed in the period January 2023 – July 2023. The

**Which institution is responsible for the research project?**

The University of Southeastern-Norway is responsible for the project, and the supervisor is Sanja Smiljic.

**Why are you being asked to participate?**

You have been selected as a participant in the study because you have a central role in the company and the work you do to restructure the company towards sustainable goals. The selection of individuals included in the study has been chosen strategically to obtain as much information as possible from different points of view based on their role in the company.

## **What does participation involve for you?**

The data collection method to be used is interviews. The interviews will be SEMI-structured, which involves open questions. The answers from participants will be recorded through audio recording.

With interviews, the following applies:

- Agreed time and place.
- Timeframe: 60 minutes.
- Recordings will be made with an external device and deleted after the project is finished.
- Recordings will be converted into clean notes.
- Employees will be anonymized in the assignment and only the job description will be used in the recordings and then anonymized in the notes later.

## **Participation is voluntary**

Participation in the project is voluntary. If you chose to participate, you can withdraw your consent at any time without giving a reason. All information about you will then be made anonymous.

There will be no negative consequences for you if you chose not to participate or later decide to withdraw.

## **Your personal privacy – how we will store and use your personal data**

We will only use the information about you for the purposes we have described in this article. The information will be confidential and in accordance with the privacy regulations.

The two students who carry out the survey will have access to personal data. Personal data will be replaced with a code name (employee 1, 2, etc.) which is stored in a separate list and kept separate from other data until the project is finished and then deleted. The recordings will be stored on an external device to which only the students have access to. The supervisor on the project will only have access to anonymized data and notes from the survey.

## **What will happen to your personal data at the end of the research project?**

Information about employees who are participating in the interviews is anonymized when the project ends. Together with personal data, audio recording will be deleted when the project ends.

## **Your rights**

So long as you can be identified in the collected data, you have the right to:

- access the personal data that is being processed about you
- request that your personal data is deleted
- request that incorrect personal data about you is corrected/rectified
- receive a copy of your personal data (data portability), and
- send a complaint to the Norwegian Data Protection Authority regarding the processing of your personal data

### **What gives us the right to process your personal data?**

We will process your personal data based on your consent.

Based on an agreement with the University of Southeastern-norway the Data Protection Services of Sikt – Norwegian Agency for Shared Services in Education and Research has assessed that the processing of personal data in this project meets requirements in data protection legislation.

### **Where can I find out more?**

If you have questions to the study, or just want to know more about how to utilize your rights, contact:

- Universitet i Sørøst-Norge ved professor i Technology management Sanja Smiljic, [sanja.smiljic@usn.no](mailto:sanja.smiljic@usn.no)
- Julie Åkvik, [251159@usn.no](mailto:251159@usn.no)
- Simen Kaugerud Nesse, [251158@usn.no](mailto:251158@usn.no)
- Vårt personvernombud: Paal Are Solberg, [Paal.A.Solberg@usn.no](mailto:Paal.A.Solberg@usn.no), USN personvernombud.

If you have questions about how data protection has been assessed in this project by Sikt, contact:

- email: ([personverntjenester@sikt.no](mailto:personverntjenester@sikt.no)) or by telephone: +47 73 98 40 40.

Yours sincerely,

Julie Åkvik & Simen Kaugerud Nesse

### **Consent form**

I have received and understood information about the project *Common problem understanding in how a business model innovation can contribute to a restructuring of a company towards sustainable goals* and have been given the opportunity to ask questions. I give consent:

to participate in interview

I give consent for my personal data to be processed until the end of the project.

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(Signed by participant, date)



[Meldeskjema](#) / [A case study on Business model innovation for sustainable develop...](#) / Vurdering

## Vurdering av behandling av personopplysninger

**Referansenummer**  
800944

**Vurderingstype**  
Automatisk

**Dato**  
17.01.2023

### Prosjekttittel

A case study on Business model innovation for sustainable development in the oil industry.

### Behandlingsansvarlig institusjon

Universitetet i Sørøst-Norge / Handelshøyskolen / Institutt for industriell økonomi, strategi og statsvitenskap

### Prosjektansvarlig

Sanja Smiljic

### Student

Julie Åkvik

### Prosjektperiode

01.01.2023 - 01.07.2023

### Kategorier personopplysninger

Alminnelige

### Lovlig grunnlag

Samtykke (Personvernforordningen art. 6 nr. 1 bokstav a)

Behandlingen av personopplysningene er lovlig så fremt den gjennomføres som oppgitt i meldeskjemaet. Det lovlige grunnlaget gjelder til 01.07.2023.

[Meldeskjema](#)

### Grunnlag for automatisk vurdering

Meldeskjemaet har fått en automatisk vurdering. Det vil si at vurderingen er foretatt maskinelt, basert på informasjonen som er fylt inn i meldeskjemaet. Kun behandling av personopplysninger med lav personvernulempe og risiko får automatisk vurdering. Sentrale kriterier er:

- De registrerte er over 15 år
- Behandlingen omfatter ikke særlige kategorier personopplysninger;
  - Rasemessig eller etnisk opprinnelse
  - Politisk, religiøs eller filosofisk overbevisning
  - Fagforeningsmedlemskap
  - Genetiske data
  - Biometriske data for å entydig identifisere et individ
  - Helseopplysninger
  - Seksuelle forhold eller seksuell orientering
- Behandlingen omfatter ikke opplysninger om straffedommer og lovovertridelser
- Personopplysningene skal ikke behandles utenfor EU/EØS-området, og ingen som befinner seg utenfor EU/EØS skal ha tilgang til personopplysningene
- De registrerte mottar informasjon på forhånd om behandlingen av personopplysningene.

### Informasjon til de registrerte (utvalgene) om behandlingen må inneholde

- Den behandlingsansvarliges identitet og kontaktopplysninger
- Kontaktopplysninger til personvernombudet (hvis relevant)
- Formålet med behandlingen av personopplysningene
- Det vitenskapelige formålet (formålet med studien)
- Det lovlige grunnlaget for behandlingen av personopplysningene
- Hvilke personopplysninger som vil bli behandlet, og hvordan de samles inn, eller hvor de hentes fra
- Hvem som vil få tilgang til personopplysningene (kategorier mottakere)
- Hvor lenge personopplysningene vil bli behandlet

- Retten til å trekke samtykket tilbake og øvrige rettigheter

Vi anbefaler å bruke vår [mal til informasjonsskriv](#).

#### **Informasjonssikkerhet**

Du må behandle personopplysningene i tråd med retningslinjene for informasjonssikkerhet og lagringsguider ved behandlingsansvarlig institusjon. Institusjonen er ansvarlig for at vilkårene for personvernforordningen artikkel 5.1. d) riktighet, 5. 1. f) integritet og konfidensialitet, og 32 sikkerhet er oppfylt.

## Appendix 4 – Quotes to findings

Interview questions	Quotes	Themes
Does the firm engage in innovative and sustainable practices? If so, in what manner?	<p><i>“In sustainable practices, it is the way you do your business. We are a part of the society, and we need to do our part, but it is related to CO2. How do you handle garbage and energy consumption. Working on the 50 by 30 which is to cut the emissions by 50% by 2030. It is a working progress, but most of the emissions comes from the fleet of boats. (Inserted software to reduce the emissions and looking at hybrid boats/biofuel). Customers has started to request carbon footprint” – informant G.</i></p> <p><i>“We have climate accounts, so we report on everything we use on scope 1 &amp; 2 and then on water and waste on scope 3. What we are working on more and more is getting scope 3 down in terms of carbon or the footprint of the products and our projects. We are not quite there yet, but we are well on our way. Green team established to reach the goal of the carbon footprint internally” – Focus Group.</i></p>	Scope 1, 2 and 3 emissions, carbon footprint.
What does sustainability mean for the company?	<p><i>“We have set ourselves some goals. 50% reduction by 2030. This is the starting point for what is Scope 1 &amp; 2. When it comes to the purchasing part, we are still working with a clear overview of where we are on what is Scope 3. There is a clear focus, we can see what we have done in certain places, what Dunfermline plastmo has long had its own windmill” – informant C.</i></p> <p><i>“For me it is really in the business and how we can be there tomorrow, and tomorrow can be in 10 years. It is a very difficult question that we are facing every day” – informant B.</i></p>	Sustainable business for future perspectives.

<p>What role does sustainability play in the company's value proposition?</p>	<p><i>"I think it will be a central part because we see that it is part of what the customers want. It's part of society in general, and it's part of the mentality of the younger guard that's going to take over the firm. That's the way it goes. Standardization and simplification are a part of it as well"</i> – informant E.</p> <p><i>"A huge role. You have always environmental reporting, as always companies now a mandated all that will be mandated to report their missions"</i> – informant F.</p>	<p>Sustainability plays an essential role today and in the future.</p>
<p>When do you modify your company's cost structure and income streams?</p>	<p><i>"Cost structure is something we work on continuously. We are running lean programs to reduce waste in what we do and always looking for the best option for production"</i> – informant G.</p>	<p>Lean programs to optimize waste management.</p>
<p>Has sustainability had an impact on how the company carries out primary activities in the business?</p>	<p><i>"I would say that in recent years now that we have started to focus on it, I think that it helps us to think more about ethnic security and quality in engineering and that it has a certain influence there, I think. It is perhaps easier to get everyone in place or to follow the routines that you think are best. Precisely because we must answer it and more and more people are starting to think that we must supply environmentally friendly goods to survive"</i> – informant A.</p> <p><i>"Yes, in some context it has, there has been a lot more focus on how we should somehow be able to tell what the carbon footprint is for a system's relevance and so on, so that is probably much more due to part of the design and how you set up a field layout etc."</i> – informant C.</p>	<p>Escalated focus and reporting have led to higher priority in the operations.</p>

Interview questions	Quotes	Themes
<p>How does the company respond to market forces? (Technology, regulations, social</p>	<p><i>"We have the one that in relation to corporate social responsibilities, we have "Ivolunteer", that is we have volunteering so that we can do different things. We get paid 4 hours by the corporation to do charity. Saw a lot there and a lot in the US. There they set up a fund that we could pay into and here in Kongsberg we have now been</i></p>	<p>Volunteer work established by team internally.</p>

<p>and cultural trends, and socioeconomics trends)</p>	<p><i>helping the refugee reception, where the "Ivolunteer" team has gone" – Focus Group.</i></p> <p><i>"You discuss, you adapt the social, the cultural and regulation. You must adapt, for example I have not tackle the same problems with covid as my college in America and Asia. As a team here we did not adapt the same way on the flexi-walk, we had monthly talks, we discussed what we can do, we can do/offer more freedom, go to the office or not etc." - informant B</i></p>	<p>Internal discussions on future procedure due to restrictions.</p>
<p>Do you believe the corporation helps to the resolution of any societal problems?</p>	<p><i>"I think we can contribute as we are in the societal group. But as we have a kind of a social group in our group, a small team, so we can say that we are a small society. So, we represent a little bit of society. So, you can have some problem in this small society with ethic and gender diversity. So, yes, we can contribute. We can help each other and respect each other, so we have one of the central values which is respect. And I think that is primary what I ask people, to respect each other when you come to the office" – informant B.</i></p> <p><i>"Giving the chance of extracting oil and gas, we are supplying the social well-being with energy for example. Building up the economy and country, the countries you are operating and that helps" – informant F.</i></p>	<p>Represent a small bit of society, where respect is essential.</p> <p>Building the economy.</p>

Interview questions	Quotes	Themes
<p>How does the company respond to industry forces? (Technology, regulations, social and cultural trends, and socioeconomics trends)</p>	<p><i>"We must follow legislative changes and specifications all the way. We must stick to many different ones because we operate in many different countries. We have a lot of ISO and API standards that we follow, and which are constantly updated, and we have departments that work with that, including quality, but each country often has its own laws and regulations that must be followed. In the Norwegian sector there is a lot and we set a good number of standards on how things should be. And now we have a strong focus on human rights. So, it has been behind</i></p>	<p>Follow laws in several countries and setting standards.</p> <p>Human rights.</p>

	<p><i>there all along, but now our customers are very concerned about it. That means we work even harder on it” – informant A.</i></p> <p><i>“Tax relief for oil companies probably means that we invest more, which gives us more assignments. Yes, you see that quite clearly now. It is the government's misleading policy. They would have more recovery in the next 4-5 years” – informant E.</i></p>	
<p>How does the company respond to major trends (Technology, regulations, social and cultural trends, and socioeconomics trends)</p>	<p><i>“So, regulation same can be new regulation that can bring you some help, like two years ago we offer lower taxes to companies so that they can benefit, so what oil companies has done is to that we have tax benefits, so we invest so that the corporation will benefit from that. So, it is also a good cascade. But you can also have regulation, I am working on one now increasing taxes for certain level of salary. I am working on this with finance, we must anticipate that this is negative because it brings me additional costs, that I need to incorporate in a cost when we tender a project, and then we can say we are less competitive. Cultural and socioeconomic, Norway is very stable, so we have a lot of discussion with unions, this is part of the wall and the deal. It is very stable in generally. The unions try to understand where the company goes, and they want to do well. They want to achieve well for both the people and the company. They respect the economic part” – informant B</i></p>	<p>Governmental regulation and unions affect the company.</p>
<p>What are your opinions on the company`s ethical responsibilities and societal impact?</p>	<p><i>“We have a code of business conduct that everyone must follow. And there is a lot there, and especially a lot in relation to the USA, there is a lot of corruption and how to deal with being on the right side and being impartial. We also have a part in relation to how we should behave and yes pulse and impact quality which are our cultural programs which are also all taken through. Yes, it has a lot to do with how we want the culture to be, and the culture has a lot to do with ethical behavior” – Focus Group.</i></p>	<p>Cultural programs and ethical behavior.</p>

What role does sustainability play in the company's value proposition?	<i>"More regulations are coming in play, requirements, laws around sustainability and that in lines with the value proposition of the company. So yeah, and you can save costs with a sustainability approach"</i> – informant F.	Sustainability brings regulations and requirements.
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Business model canvas	Quotes	Themes
Key Partners	<p><i>"Key partners, if it is in relation to the fact that we have collaboration partners, then we associate ourselves with other different companies that deal with, for example, offshore wind, and there are many different ones that become such joint ventures, so we try to build ourselves up by including other who have that competence and expertise"</i> – Focus Group.</p> <p><i>"One key thing is partners. Because very often when you develop new things, new components, technology, new product, you need someone else"</i> – informant B.</p>	Key partners to acquire competence and expertise.
Key Activities	<p><i>"It is included as a focus. We are looking at the future and how we are running our factories"</i> – informant G.</p> <p><i>"As it is now, it is not the main product, so it will be a key activity that we want to offer."</i> – Focus Group.</p>	Sustainability is a focus.
Key Resources	<p><i>"Human resources and the expertise we have are important to being able to deliver what the customer wants. The qualities are openness, the competence of the people who work on the projects and good communication"</i> – Informant A.</p> <p><i>"On the business side is to keep a good level of research and development on some new technology and new product"</i> - informant B.</p> <p><i>"Not a big investment, but it was time. How did we put together engineering people knowing about the subsea and the It/coders people to develop and imagine the solution"</i> – Informant B.</p>	Key resources to facilitate sustainability.
Value Proposition	<i>"We are making upgrades to products and looking at sustainable investments for the future with a lifespan of 20 years"</i> – informant G.	A part of the value proposition.

	<p><i>“Yes, if you go to our websites, for example, you will see that sustainability is listed there quite clearly and ESG is very involved”</i></p> <p>– Focus Group.</p>	
Customer Relations	<p><i>“In general, I would say that we enter long-term collaborations with our suppliers, and we do not change very often, and we often keep developing them. And partners, it depends a little on what we need”</i></p> <p>– informant G.</p> <p><i>“To establish customer relations is key and help them achieve sustainability goals”</i> – informant F.</p> <p><i>“We often have to adapt to the customer's requirements, but try to reproduce the same thing for the same customer and offer expertise in the process”</i> – informant C.</p>	Long-term customer relations.
Cost structure	<p><i>“We work with cost structure all the time. It is something we challenge and see what we can do? After all, we run such lean programs to try and take out the waist”</i> – informant G.</p>	Cost structure is an important topic.
Revenue Stream	<p><i>“It is not like 50% of the turnover, or it is a small part. It is an important part, but it is a small part if you look at the sustainability of what we offer in terms of new energy, so it can have a much greater effect now over time”</i> – informant G.</p> <p><i>“We want to enter the markets that are hot, and in relation to ESG, which is the non-financial measurement method, we will be measured on that, the same as how we make money and finances. So, it is important”</i> – Focus Group.</p>	Sustainability can become financial revenue stream.

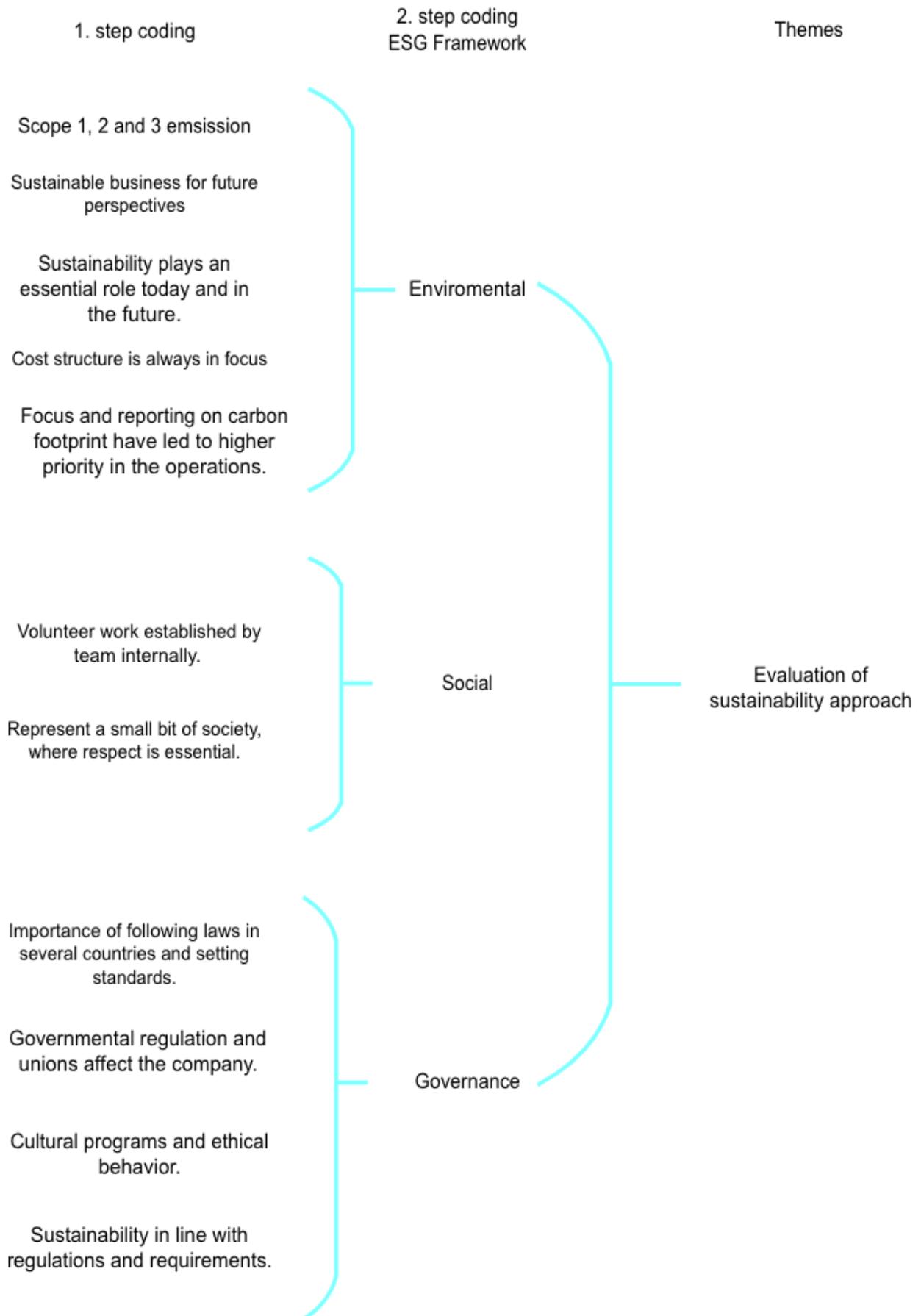
Alone (economical, environmental, social)	Themes
<p><i>“We were quite early into renewables, and then we bought a company in the UK. We got all the assets and bought the company they were running in cable laying for anchors at wind turbines. The expertise, some of the equipment and then we went in there to get a foot inside to understand this market. This market was not big enough for us but was interesting for us, but it was a way to learn”</i></p> <p>- informant G.</p>	<p>Alone for the environmental perspective to facilitate for future markets. Acquisition to buy knowledge needed and securing economical precedence. Business model innovation used is “servitization”.</p>

<p><i>“It has something to do with being able to utilize the resources we have, and then I think about manufacturing, and we must deliver new products, but we also think about the service part. How can we utilize the service on the products we have already delivered. To keep them more usable and keep them running. There we see an ascent because there was a slight downturn when COVID-19 started. Because then the customers stopped several projects, and the service proposal became important” – informant A.</i></p>	<p>Alone for the economic perspective. Taking use of already sold equipment to offer service options. Business model innovation used is “servitization”.</p>
<p><i>“We have seen that covid accelerated the way we think digital. Typical example is the flexi-walk, you stay one day at home you consume less. The digital is of course consuming energy, so we have a balance. As a team we had monthly talks, we discussed what we can do, we can do/offer more freedom, go to the office or not etc. It is working here because Norway is very disciplined, they follow the rule so discuss and follow up on what you have discussed. One key access is to develop the company if you have new technology for the future. If you do not bring anything to the market or a new technology, it is going to be difficult” – informant B.</i></p>	<p>Alone for the economic, environmental, and social aspect. Business model innovation used is offline to online.</p>

Collaboration (economical, environmental, social)	Themes
<p><i>“Partners, it depends a bit on what we need, what we see we need in terms of services, among other things, so we had an activity where we laid large pipes with s-laying. It was an acquisition we made several years ago, but because of Covid-19, that market went down completely, so we decided to go out. We had 2 boats where we sold them and shut down the whole business. But we saw that we had a certain need for it, so we made an alliance with a company, and we work together. We didnt see that it was a good financial one for us to enter. It would be too big a step for a small market and for an unstable market. So, it's one thing, when we see a need we don't want to go into it fully because we don't see that it's right for us to do, so we do a lot of things like that, and it's not just about whether it's profitable.” - informant G.</i></p>	<p>Collaboration in the environmental aspect and economical. Business model innovation present is “servitization”.</p>
<p><i>“We also bought in or entered collaboration with small start-ups that had good ideas. We saw that some of these are going to work, and some of them are not going to work, but we go in and do it, and then we basically offer either money or engineering or whatever it is, and then we offer our ability to and then take this from something small and smart through big if we're going to do it- “ – informant G.</i></p>	<p>Collaboration with start-ups for offering missing expertise and economical possibilities. Business model innovation used is “servitization”.</p>

<p><i>“The last big change was that we merged the companies, to be able to offer the whole range of full IECPI projects where both the SPS system and the surf part. So, it was because we thought that the market needed a player like that. And we have been at least partially right in that. We can offer something that other competitors are trying to emulate with various partnerships. Yes, it may be even more important in the future to have a properly integrated company.”</i></p> <p>– informant E.</p>	<p>Collaboration in the environmental aspect.</p> <p>Business model innovation present is “servitization”.</p>
<p><i>“Digital guard vessel. I can explain it briefly, to give a good illustration. When you operate on the field offshore, you need some time to have some small vessels to guard the environment you are operating to avoid other vessels to come to penetrate in the area for example. And so, we have looked at a way to change things, and those guard vessels are small, they consume a lot of fuel. So, we have tried to elaborate a digital solution where we have no more vessel. But here as it is simple, we have based a solution on satellite, and the proper communication. And surprisingly we have seen that we detect much more with a digital tool like this than the guard vessel. Not a big investment, but it was time. How did we put together engineering people knowing about the subsea and the It/coders people to develop and imagine the solution.”</i></p> <p>– informant B</p>	<p>Collaboration for the environmental and economical aspect.</p> <p>Utilizing technology to take advantage of offering more services.</p> <p>“Servitization”.</p>
<p><i>“It depends also on your strategy if you want to stay only in pure oil and gas or if you want to progressively explore other things. All the sections in the business model canvas are important. One key thing is partners. Because very often when you develop new things, new components, technology, new product, you need someone else. When we developed a project for the hydrogen, we are assembling a lot of things, but basically, we need electrolyzes, we need the tank to store the hydrogen and we are not doing this so for that we need partners.”</i></p> <p>– informant B</p>	<p>Collaboration in the environmental aspect.</p> <p>Business model innovation present is “servitization”.</p>

## Appendix 5 – Coding examples



1. step coding  
Business model Canvas

2. step coding  
Area of innovation

Themes

