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Financial Effects of Sustainable Practices

An Empirical Study of the Norwegian Manufacturing Industry.

Master's thesis in Strategy, Innovation and Industrial Business Development

Supervisor: Arild Aspelund

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Faculty of Economics and Management
Dept. of Industrial Economics and Technology Management



Thesis statement

Corporations are facing increased pressure to engage in sustainable practices and provide transparency for society. The objective of this study is to explore the influence of sustainable strategies onto sustainable initiatives, and the financial effects of implementing environmental and social initiatives in a corporation. In order to obtain more robust findings, financial performance is in this thesis measured in two ways, both through perceived and objective financial performance.

Preface

This study is the diploma thesis for the authors at the department for Industrial Economics and Technology Management, at the Norwegian University of Science and Technology. The diploma thesis is conducted and written during the spring of 2020.

The thesis is based on a structural equation modeling analysis conducted in SPSS Amos, with data gathered from the SISVI (Sustainable Innovation and Shared Value Creation) survey from 2015, supervised by the Norwegian University of Science and Technology. The survey data is further supplemented with financial data from the years 2015 to 2018, collected from Proff Forvalt .

We would like to express our deepest gratitude to all who have assisted us with the diploma thesis. We would especially like to thank our academic supervisor Arild Aspelund for interesting conversations and reflective inputs, and for guiding us on our way through our last year at NTNU. Furthermore, we would like to thank our academic co-supervisor, Fanny Hermundsdottir, for always answering our questions and her insightful feedbacks. Finally, we would like to extend our gratitude to Ann Elida Eide, Dag Håkon Haneberg, and Erik Andreas Sæther for advice on the use of statistical software programs and collecting the financial data from Proff Forvalt.

Trondheim, 05.06.20

Synnøve Arntzen and Ann-Magrit Mysen Kulbotten

Abstract

The rising pressure towards corporations to take responsibility for their actions, has resulted in an increased implementation of sustainable practices, as a means to limit firms' negative impact on society. Presenting the financial benefits of implementing sustainable practices, can be a motivational factor for corporations to manage the environmental and social challenges in society.

As the implementation of sustainable practices can have major impact on companies' financial performance, it is important to research the influence of sustainable strategies on sustainable initiatives, as well as the financial effects of the environmental and social initiatives.

The thesis is based on a structural equation modeling (SEM) analysis conducted in SPSS Amos. The SEM analysis is based on quantitative data collected through the cross-sectional self-reported SISVI (Sustainable Innovation and Shared Value Creation) survey distributed by NTNU. The survey was distributed within the Norwegian manufacturing industry, and the data applied in the model is based on responses from 464 corporations. In addition, the data applied in the SEM model, is complemented with objective financial data from Proff Forvalt. The model thereby explores the effects of environmental and social initiatives on both perceived and objective financial performance. The perceived and objective financial performance are measured in terms of three financial parameters; value creation, cost reduction and risk reduction.

The results provided through the SEM analysis show that there is a positive influence of sustainable strategies on both environmental and social initiatives, meaning that the corporation's sustainable activities are aligned with their sustainable strategies. The results also revealed that there exists positive financial effects of environmental initiatives, but only when measuring perceived financial performance. Furthermore, the results are statistically insignificant when measuring the effects of social initiatives on both perceived and objective financial performance.

The results show that Norwegian companies implement sustainable initiatives according to their sustainable strategies, and that the financial effects of sustainable initiatives vary depending on how financial performance is measured. The varying results call for further research and development of a framework, on how to measure financial effects of sustainable practices. Conclusively, sustainable practices can be a source to improved financial performance, hence the results have implications for corporations, as well as for market participants.

Sammendrag

Det økende fokuset på at selskaper må ta ansvar for sine handlinger, har resultert i økt implementering av bærekraftige løsninger hos selskapene, som et middel til å begrense deres negative påvirkning på samfunnet. Ved å presentere de finansielle fordelene av å implementere bærekraftige løsninger, kan selskaper motiveres til å håndtere de miljømessige og sosiale utfordringene i samfunnet.

Ettersom implementering av bærekraftige løsninger kan ha stor innvirkning på selskaperens økonomiske resultater, er det viktig å undersøke om bærekraftige strategier har innvirkning på miljømessige og sosiale tiltak, og de økonomiske effektene av å implementere disse miljømessige og sosiale tiltak.

Studiet er basert på en SEM (structural equation modeling) analyse utført i SPSS Amos. SEM analysen er basert på kvantitative data samlet gjennom et tverrsnitt- og selvrapportert spørreskjema kalt SISVI (Sustainable Innovation and Shared Value Creation), distribuert av NTNU. Undersøkelsen ble utdelt til selskaper som arbeider innen norsk industri, og dataen brukt i analysen er basert på besvarelser fra 464 selskaper. I tillegg komplementeres dataen som brukes i SEM-modellen med objektive økonomiske data fra Proff Forvalt. Modellen utforsker de økonomiske effektene av miljømessige og sosiale tiltak, hvor både de subjektive og objektive økonomiske resultatene måles gjennom tre økonomiske parametere; verdiskapning, kostnadsreduksjon og risikoreduksjon.

Resultatene som ble funnet gjennom SEM-analysen, viser at bærekraftige strategier har en positiv assosiasjon med miljømessige og sosiale tiltak, noe som betyr at selskapers bærekraftige aktiviteter er i samsvar med deres bærekraftige strategier. Resultatene avdekket videre at det er positive økonomiske effekter av miljøtiltak, men bare i tilfellet hvor de økonomiske effektene måles subjektivt. Resultatene viser videre at det ikke er statistisk signifikante finansielle effekter av sosiale tiltak.

Funnene viser at norske industri selskaper implementerer bærekraftige tiltak i tråd med sine strategier, samt at de økonomiske effektene av å implementere bærekraftig tiltak kan variere avhengig av hvordan de økonomiske resultatene blir målt. De varierende resultatene oppfordrer til videre forskning og utvikling av et rammeverk for hvordan finansielle effekter av bærekraftige løsninger skal måles. Resultatene viser at bærekraft kan være en kilde til økt økonomisk resultat, og har følgelig konsekvenser for selskaper så vel som markedsaktører.

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1 Introduction

The need for sustainability has been highly provoked through the UN sustainability goals, as a global call for action, to solve the challenges related to social inequality, climate changes, poverty and environmental degradation (UN, n.d.). The environmental and social challenges in society are enforced by corporations (M. Porter & Kramer, 2011), however, corporations can also be the remedy for these challenges through implementing sustainable practices and taking responsibility for their actions. The increased attention towards environmental and social challenges, has prompted sustainability to be labeled a mega-trend (Lubin & Esty, 2010) and has put more pressure on corporations to adopt sustainable practices (Chen, Nginiatedema, & Li, 2018).

Companies have viewed the imposed obligation to participate in sustainable development as a governmental burden, rather than an economic opportunity (Stefan & Paul, 2008), which has resulted in strained corporate engagement in sustainability. Corporations can not be expected to manage the challenges in society voluntarily, as they would never adopt sustainable practices if there were no economic benefits to accumulate (Malesios et al., 2018). However, several corporations have noticed that adopting sustainable practices can represent a source of competitive advantage and profitability (Baumgartner, 2014), in accordance with the general perception of the financial effects of sustainability, which is that corporations managing social and environmental performance generate positive financial performance (Epstein, Buho- vac, & Yuthas, 2015). Promoting the financial benefits of sustainable practices may pose as a motivational factor for corporations to manage the environmental and social challenges in society.

There has been an increase in the number of companies that have implemented sustainable practices. This thesis explores whether firms that have sustainable strategies actually implement these strategies in their practice, through environmental and social initiatives. Furthermore, this thesis investigates the financial effects of implementing these sustainable initiatives. Extensive research have been conducted on the financial effects of sustainable practices in corporations, however, the results of these studies are inconclusive. Hence, it is evident that this has to be researched further. This thesis challenges the general perception by further investigating both the firms' perceived and objective financial performance related to sustainability. As the global attention towards corporations to engage in sustainable practices is increasing, it is important to provide continuous research on established truths, as it can lead to improvement of present sustainable practices and theories. Refined and pertinent knowledge is key for corporations to keep up with trends and address the challenges in society, while creating value.

1.1 Research Objective

This thesis addresses the following research question:

Do sustainable strategies influence sustainable initiatives, and what are the financial effects of implementing sustainable initiatives?

The objective of this thesis is to explore the influence of sustainable strategies onto sustainable initiatives, and moreover the financial effects of implementing environmental and social initiatives in a corporation. In order to obtain more robust findings, financial performance is in this thesis measured in two ways, both through perceived and objective financial performance. Sustainable practices are in this thesis defined as sustainable strategies and initiatives, whereas initiatives incorporate both environmental and social initiatives. The research objective is constructed by 14 hypotheses as presented in Chapter 2. The hypotheses are analysed through structural equation modeling (SEM) in SPSS Amos. The data applied in the model is collected from two sources, respectively the SISVI survey and Proff Forvalt. SISVI is a survey concerning Sustainable Innovation and Shared Value Creation, answered by companies within the Norwegian manufacturing industry. The survey was distributed by the Institute for Industrial Economics and Technology Management at NTNU.

1.2 Structure of the Thesis

The thesis is structured as follows; Chapter 2 provides a theoretical and conceptual background, followed by the introduction of the hypotheses constituting the research model of this thesis. Chapter 3 gives an overview of the methodology, presenting a detailed explanation of the statistical analyses and approaches applied. Chapter 4 provides the empirical results of the analysis. Chapter 5 gives a thorough discussion of the findings and their managerial implications, together with the limitations of this thesis, and suggestions for further research. Lastly, Chapter 6 provides the conclusion of this thesis.

2 Conceptual Background

The following chapter presents the relevant theory and conceptual background, providing the base of the hypotheses constituting the research objective in this thesis. Firstly, a comprehensive guide on the conceptualization of sustainability is described. Next, the influence of sustainable strategies on sustainable initiatives are presented, before a review of the financial consequences of engaging in sustainable practices is given. Further, the hypotheses concerning the financial effects of environmental initiatives are presented, followed by the development of the hypotheses concerning the financial effects of social initiatives. Lastly, the research model constituted by the presented hypotheses is described.

2.1 The Conceptualization of Sustainability

The literature has attempted to define and conceptualize sustainability through several approaches (Stubbs & Cocklin, 2008; Hutchins, Gierke, & Sutherland, 2009). The challenges arise as the concept and definitions of sustainability is ever-evolving in accordance with the development in society (Carroll, 1999). There exists a wide variety of sources of information, which results in several different terms, definitions and conceptualizations of sustainability within the literature, which is further employed by research institutions, corporations and other participants in the society (Glavič & Lukman, 2007). As several new definitions of the term emerged or got expanded, the term sustainability lost both credibility and momentum. A consequence of lacking credibility, further lead to the need for new terms to redirect the attention to the core concept of sustainability. This resulted in many different definitions related to the term, such as the triple bottom line (Elkington, 1998), corporate social responsibility (CSR) (Jones, 1980), and so on. However, the content of sustainability remains the same, focusing simultaneously on sustaining the environmental, social and economic development. The definition of sustainability which will be applied throughout this thesis, is provided from the United Nation World Commission and the Brundtland report (1987), where sustainability is defined as “*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs*» (WCED, n.d.).

As sustainability is a broad concept, the focus of this thesis is on sustainability within corporations. The sustainable practices integrated into the corporations through sustainable strategies and initiatives, can be measured through corporate sustainability performance. Corporate sustainability performance represents the measure of to what extent a corporation engage in social, environmental and economic governance factors into practices, and ultimately how it reflects on financial performance and

society (Artiach, Lee, Nelson, & Walker, 2010). As the attention towards corporate sustainability performance is increasing, several companies are adopting sustainable strategies and initiatives as a way to achieve long term financial benefit, economic growth and competitive advantage (Goyal, Rahman, & Kazmi, 2013).

2.2 The Influence of Sustainable Strategies on Sustainable Initiatives

Corporations are discovering how sustainable strategies can result in sustained competitive advantage related to improved quality, reduced costs, improved sustainable image and new market entries (Maxwell, Rothenberg, Briscoe, & Marcus, 1997), by focusing on exploiting external strengths and responding to environmental opportunities (Barney, 1991). However, the concept of business strategy and how to manage and adapt a business strategy, is not always as easy to understand. Business strategies have been studied by several researchers, which have resulted in varying findings, and the contribution within the field of strategy is constantly growing (Håkansson & Snehota, 2006). Porter (2008) defines strategy as *“the creation of a unique and valuable position, involving a different set of activities”*, and states that the corporate strategy is what makes the corporate whole add up to more than the sum of its business units (M. Porter, 1987). Strategies describe how corporations intend to create and generate value for their shareholders, where strategy represents the transition from corporate mission and statement, to front-line employees (Kaplan & Norton, 2004). Regardless of the varying strategic approaches presented through the years, Elkington (1994) accentuates that companies have no choice but to commit to environmental and sustainable strategies, as the transition of sustainable development within daily operations represent the future practice within corporations.

A company’s business level strategy consists of several individual functional level strategies, which are assembled together as an internally consistent strategy (De Wit, 2017). The functional level strategies refer to its functional areas, such as business value and objective strategy, communication strategy, and manufacturing and production strategy. For a successful company, the strategy can provide the maximization of competitive advantage (Miltenburg, 2005).

An important part of the corporation’s strategy is the business value and objective strategy, which works as the moral guideline for a company. A corporation’s strategic values can be defined as the principle standards, ethics and ideals that a company and its employees work towards (Edvardsson & Enquist, 2008). In terms of creating a sustainable corporation, it is essential that the company’s core values are

in line with, and represents the corporation's strategies (Edvardsson & Enquist, 2008).

When corporations engage in sustainable strategies, development, and initiatives, certain challenges may arise concerning the legitimacy of the corporation. When it comes to integrating sustainability into a corporation's business values and objectives, there have been critiques, where sustainability has been seen as an image brushing and public relation initiative, rather than a fundamental engagement in business transformation (Mirvis, Googins, & Kinnicutt, 2010). This can lead to greenwashing, which is defined as the case when corporations that have poor sustainable performance communicate positive sustainable performance (Delmas & Burbano, 2011). Communication can work as a strategic tool for corporations to manage perceptions of their legitimacy (Allen, 2016). Strategic communication is defined as a purposeful application of communication to achieve a corporation's mission (Hallahan, Holtzhausen, Van Ruler, Verčič, & Sriramesh, 2007). Furthermore, communication can be seen as a tool to advocate sustainable development, by using communication as a research tool, planning tool, and a process to involve stakeholders and shareholders in decision making concerning sustainable development (Mefalopulos & Grenna, 2004).

Manufacturing and production strategies are said to enhance value creation, improve the production process and increase customer-related performance (Agus, 2011). Production and manufacturing strategies are defined as sustainable when the industrial production results in products that meet the needs of society without compromising for future generations needs, and the production has to consider the whole life-cycle of the product and production (De Ron, 1998). Sustainable production involves long-term viability for the environment and society, reducing pollution, conserving energy and resources, and promoting employee health and safety, while enhancing the economic life of the corporation (Quinn, Kriebel, Geiser, & Moure-Eraso, 1998; Veleva & Ellenbecker, 2001).

Sustainable development requires that corporations contemplate their social, environmental and economic repercussions in terms of their activities (Hutchins et al., 2009). As corporations are increasingly developing sustainable strategies to reduce social and environmental impact, the more important it is to provide a seamless process for the transition of strategic values and goals, to actual implementation of sustainable initiatives (Maxwell et al., 1997). However, as the implementation of corporate sustainable initiatives has received an increased commitment, the implementation of these initiatives has seemed to be executed more coincidentally, without a clear sustainable strategy as a foundation (Baumgartner & Ebner, 2010). Sustainable initiatives are often launched without a clear and overarching plan, because most corporations believe the implementation of sustainability into their practice represents

an unprecedented journey without a road-map (Lubin & Esty, 2010).

Several initiatives are launched to achieve the strategic goals and objectives for the corporations. The sustainable initiatives can be divided into environmental and social initiatives, addressing the different challenges within each category. Sustainable initiatives are taking on aspects more commonly associated with long term corporate strategy, where the corporate sustainable initiatives reflect the core values of the firm (Hess, Rogovsky, & Dunfee, 2002). Based on the reviewed theory, the following hypotheses are presented:

H1a: The corporation's sustainable strategies positively influence the environmental initiatives.

H1b: The corporation's sustainable strategies positively influence the social initiatives.

2.3 Linking Sustainable Practices and Financial Performance

The corporations' desire for economic growth, together with ruthless capitalistic rules, have resulted in the current environmental and social challenges the world is facing (M. Porter & Kramer, 2011). This view is supported by Speth and Zinn (2008), which argue that capitalism and the pursuit for economic growth has resulted in today's sustainable challenges. Even though corporations are pointed out as the blameworthy, they also represent a solution through shared value creation (M. Porter & Kramer, 2011). Shared value creation seeks to align the social and environmental challenges with economic growth, and seek competitive advantage and profitability by addressing the society's needs. It is critical to explore new ways to achieve economic growth, while taking the society's challenges into consideration.

As the concerns for the environmental and social challenges have increased, so has the attention towards implementation of sustainability into corporations. A way to effectively motivate firms to commit to the implementation of sustainable practices, is to present the possibility for financial payoffs and increased economic growth. It is not only corporations that engage in sustainable actions, but also other market participants are favoring sustainable development. Customers are being more aware and conscious about their choices (Sheth, Sethia, & Srinivas, 2011), which can lead to shifts in market demand, thus the traditional market interactions are changing. Investors are also preferring to invest in corporations which are adapting sustainable practices, and socially responsible investing is an increasing trend in the finance sector (Dalal & Thaker, 2019; Eccles, Ioannou, & Serafeim, 2014). Moreover, policymakers and regulators are encouraging sustainable development and transparency within cor-

porations (Anderson, Allen, & Browne, 2005), as sustainable incentives and policies favouring sustainability can improve firms' financial performance (Pham, 2018). The focus on market participants, and especially consumers, represent a source of economic growth, which is aligned with the shared value creation principle (M. Porter & Kramer, 2011), as consumers represent the key driver to sustainable production (Tan, Johnstone, & Yang, 2016).

The market situation today is highly dominated by businesses which are constantly seeking financial growth through providing products and services to their customers, and sustainability can represent a source of value creation for both shareholders and stakeholders (Freeman, Harrison, Wicks, Parmar, & De Colle, 2010). The perspective emphasizing stakeholder value, which advocate corporations to manage their organizational strategies and activities on behalf of both stakeholders and shareholders, is called the stakeholder perspective (De Wit, 2017). However, integration of sustainability into business practices has received criticism, as some scholars argue that it is impossible to maximize both shareholders' and stakeholders' interests in terms of financial performance and value creation (Jensen, 2001). This view is supported by Milton Friedman (2007), and represents the shareholder perspective. Friedman (2007) argues that only people can have responsibility, while firms represent an artificial unit. This imply that responsibility can be acted out by shareholders of a company, privately and separately from the firm's activities, and how the one social responsibility of a business is to use its resources and engage in profit increase, given that the corporation stays within the rules of the game.

The trade off hypothesis presented by Friedman (2007), which displays the view of value creation, states that engaging in sustainable activities create a negative trade-off, whereas firms incur unnecessary costs for engaging in sustainability (Kurucz, Colbert, & Wheeler, 2008). Moreover, an inverted U-shape relationship has been suggested to explain the association from sustainable engagement on financial performance, where firms can reach an optimal level of sustainable performance, before incurring unnecessary costs (Kurucz et al., 2008). However, studies also show that engaging in sustainability by enhancing stakeholders' perspective can result in cost reduction and risk reduction, as it benefits stakeholders' concerns within the corporation's decision making, and align stakeholders' objectives with the corporations'. Risk can be lowered while engaging in sustainable practices, as stakeholders represent a potential threat to the volatility of the firm, and by mitigating these threats, corporations can achieve higher economic growth (Kurucz et al., 2008).

2.4 The Financial Effects of Sustainable Initiatives

The financial effects of sustainability have been researched extensively, yet the results are inconclusive and thus it is evident that this has to be researched further. In order to obtain more robust findings, this thesis measures the financial effects through both perceived and objective financial performance. The perceived and objective financial performance are each measured through three economic parameters; value creation, cost reduction and risk reduction. Several studies which have investigated the financial effects of sustainable practices, have used objective financial sources to collect data (Delmas, Nairn-Birch, & Lim, 2015; Chen et al., 2018). However, there exist few studies that have combined the financial data from both a perceived and objective source, when investigating the financial effects of sustainability. This thesis measures the structural paths from sustainable initiatives to both perceived and objective financial performance.

2.4.1 The Financial Effects of Environmental Initiatives

The environmental dimension of sustainability is defined to be that “*natural capital must be maintained*” (Goodland, 1995). Morelli (2011), further expands the environmental dimension of sustainability as a way to balance the human populations’ need for equality, in regard of future generations, without exceeding the environmental capacity of the ecosystem and eradicate biological diversity. Delmas et al. (2015) issue that implementing sustainability entails either satisfying the established regulations or go beyond compliance, in an effort to address the unregulated environmental challenges. As the pressure for implementing environmental sustainability into business strategies have increased over the years, several environmental initiatives have been introduced (Raar, 2002), and environmental initiatives may result in improved financial performance (Delmas et al., 2015; Gilley, Worrell, Davidson III, & El-Jelly, 2000).

Several companies have viewed the imposed requirement for environmental initiatives as a governmental burden, rather than an economic opportunity (Stefan & Paul, 2008). However, studies suggest that implementing sustainable practices can improve firms’ financial performance (M. Porter & Kramer, 2011). Considering that the environmental aspect may be seen as a competitive opportunity, the environmental initiatives and performance can lead to profit opportunities and value creation (M. E. Porter & Van der Linde, 1995). In line with the stakeholder perspective, corporations are able to create value for both shareholders and stakeholders by taking responsibility for the firm’s actions (Freeman et al., 2010).

Value creation is achieved through increasing the efficiency of a corporations’ produc-

tion, which means generating more revenue per production unit. A way to achieve value creation is through implementing environmental initiatives (Stefan & Paul, 2008), as reducing greenhouse gases and impacts on local ecosystems have over long-term measures resulted in increased financial value for corporations (Delmas et al., 2015). Studies show that environmental initiatives concerning recycling, reduced use of energy in transportation and operational processes within the industry sector, can lead to reduced CO_2 emission (Venancio, Souza, Macedo, Quaresma, & Paiva, 2010), which can lower costs and thereby create value. The following hypotheses are developed based on the reviewed theory:

H2a: Environmental initiatives positively influence perceived value creation.

H2b: Environmental initiatives positively influence objective value creation.

Scholars have argued that corporations that invest and implement environmental initiatives will incur unnecessary costs (Kurucz et al., 2008; Friedman, 2007). However, studies show that there exist several opportunities for reducing firms' costs through implementing environmental initiatives, as it leads to reduced cost of materials, energy and services, reduced cost of capital and reduced cost of labour (Stefan & Paul, 2008). Cost reduction can be achieved through more sustainable production, as the focus on achieving efficiency and improvement within the operations can result in resource and process efficiency. This is in accordance with Eltayeb, Zailani, and Ramayah (2011), which argue that firms can achieve cost reduction by creating environmentally friendly products, as the corporation reduces their waste and improve resource utilization.

Cost reduction can be achieved through pollution prevention and reducing emission of greenhouse gases, as this environmental initiative intend to reduce costs of production, by increasing efficiency of the process and reduce input and waste disposal costs (Christmann, 2000). Environmental initiatives related to reducing or eliminating greenhouse gases and impact on local ecosystems, entail more efficient use of resources, as the amount of resources deployed is closely related to final waste and emission (Bringezu et al., 2017). As mentioned, studies show that environmental initiatives related to recycling within the industry sector, can lead to reduced CO_2 emission, and reduced use of energy in transportation and industry processes (Venancio et al., 2010), which can result in reduced costs. Environmental initiatives concerning reduced use of harmful materials entails cut in costs related to disposal of hazardous materials, less risk for employees working closely with the substance, and avoiding necessary steps in the process related to the use of dangerous materials (Gilley et al., 2000). The pollution asserted from fossil fuel and energy production, usually found in

resource intensive industries, causes environmental challenges (Delmas et al., 2015), and companies can reduce their costs by managing these challenges. Based on the reviewed theory, the following hypotheses are presented:

H2c: Environmental initiatives positively influence perceived cost reduction.

H2d: Environmental initiatives positively influence objective cost reduction.

Some of the opportunities that emerge through implementing environmental initiatives are better risk management and relations with external stakeholders (Stefan & Paul, 2008). Sharfman and Fernando (2008) argue that environmental risk management results in lower costs of capital, and according to Jo and Na (2012) reduced costs of capital may be the outcome of risk reduction. Risk reduction can be achieved through addressing and managing the environmental challenges through environmental initiatives, as being proactive towards environmental practices can lower risk and cost of compliance of present and future regulatory requirements (Carroll & Shabana, 2010). Risk reduction is an important outcome of successfully implementing sustainable practices (both environmental and social aspects) into a corporation (Clark, Feiner, & Viehs, 2015). The following hypotheses are developed based on the reviewed theory:

H2e: Environmental initiatives positively influence perceived risk reduction.

H2f: Environmental initiatives positively influence objective risk reduction.

2.4.2 The Financial Effects of Social Initiatives

Sustainable development has frequently been divided into three dimensions, the environmental, social and economic perspective, where the social dimension has received less attention, compared to the environmental dimension (Staniškienė & Stankevičiūtė, 2018). The social dimension has not been well defined (Hutchins & Sutherland, 2008), as the social part of sustainability is ever evolving in accordance to the changing dynamics in society. Hence, the term will be adjusted over time (Dempsey, Bramley, Power, & Brown, 2011). The difficulties of defining social sustainability stem from the unclear differences between the analytical, normative and political aspects (Littig & Griessler, 2005). McKenzie (2004) defines social sustainability as “*a life-enhancing condition within communities, and a process within communities that can achieve that condition*”, and provides several indicators in measuring social sustainability. Social sustainability performance indicators developed with regards to the process industries, are labor practice indicators which measure salaries and working

conditions, and employee indicators which measure work safety and employee health service (Husgafvel et al., 2015).

Promoting employee health, working conditions and salaries are some of the most essential parts of the social dimension in sustainability (McKenzie, 2004; Husgafvel et al., 2015; Staniškienė & Stankevičiūtė, 2018), and are the social initiatives applied in this thesis. Corporations are encouraged to incorporate employee's perspective to the evaluation and measurements of a corporation's social sustainability (Staniškienė & Stankevičiūtė, 2018), as corporations facilitating for employees' conditions can achieve increased employee engagement, which can result in improved financial performance and value creation (Gruman & Saks, 2011). Moreover, social initiatives may enhance employees' motivation at work, which can lead to increased effectiveness in production, thus improving the performance of the corporation and creating value. Based on the reviewed theory, the following hypotheses are presented:

H3a: Social initiatives positively influence perceived value creation.

H3b: Social initiatives positively influence objective value creation.

Cost reduction is highly related to value creation, as cost reduction and internal efficiency are linked to value creation (Pralhad & Ramaswamy, 2002). Several studies have explored corporations' social practices' association with cost reduction, by implementing social initiatives concerning employees' safety and working conditions, as fewer industrial accidents can lead to reduced manufacturing costs (Gimenez, Sierra, & Rodon, 2012). Thus, implementing social initiatives such as safe and fair working conditions may reduce costs related to work accidents and work-induced absence. Social initiatives concerning good social behaviour and business practices can enhance long-term shareholder value by reducing costs, as neglecting equal employment opportunity (EEO) through inclusive policies may diminish employees' productivity and moral (T. Smith, 2005). The following hypotheses are developed based on the reviewed theory:

H3c: Social initiatives positively influence perceived cost reduction.

H3d: Social initiatives positively influence objective cost reduction.

A firm implementing social initiatives may lower transaction costs and thus reduce uncertainty and risk in its financial performance (Orlitzky & Benjamin, 2001). As mentioned for environmental initiatives, risk reduction is an important outcome of successfully implementing sustainable practices, including both the environmental

and social aspects, into a corporation (Clark et al., 2015). Risk reduction is associated to social initiatives, as a corporation improving their social initiatives through for example fair working conditions, will surely improve their reputation (T. Smith, 2005), and thus decrease the risk of reputation failure, as well as risk of decline in sales. Jo and Na (2012) found that firms implementing socially responsible activities reduce firm risk, even for firms in controversial industries. Moreover, Orlitzky and Benjamin (2001) found that the financial risk decreases the higher corporate social performance is. Based on the reviewed theory, the following hypotheses are presented:

H3e: Social initiatives positively influence perceived risk reduction.

H3f: Social initiatives positively influence objective risk reduction.

2.5 Research Model

The hypotheses presented, constitute the research model which is displayed in Figure 1. The model presents the hypotheses exploring the influence of sustainable strategies on the environmental and social initiatives. Further, the model presents the hypotheses investigating the financial effects of implementing environmental and social initiatives, where the financial effects are measured through both perceived and objective financial performance. Perceived and objective financial performance are each measured in terms of the financial parameters; value creation, cost reduction and risk reduction. The model is also controlled for the demographic variables firm size and firm age.

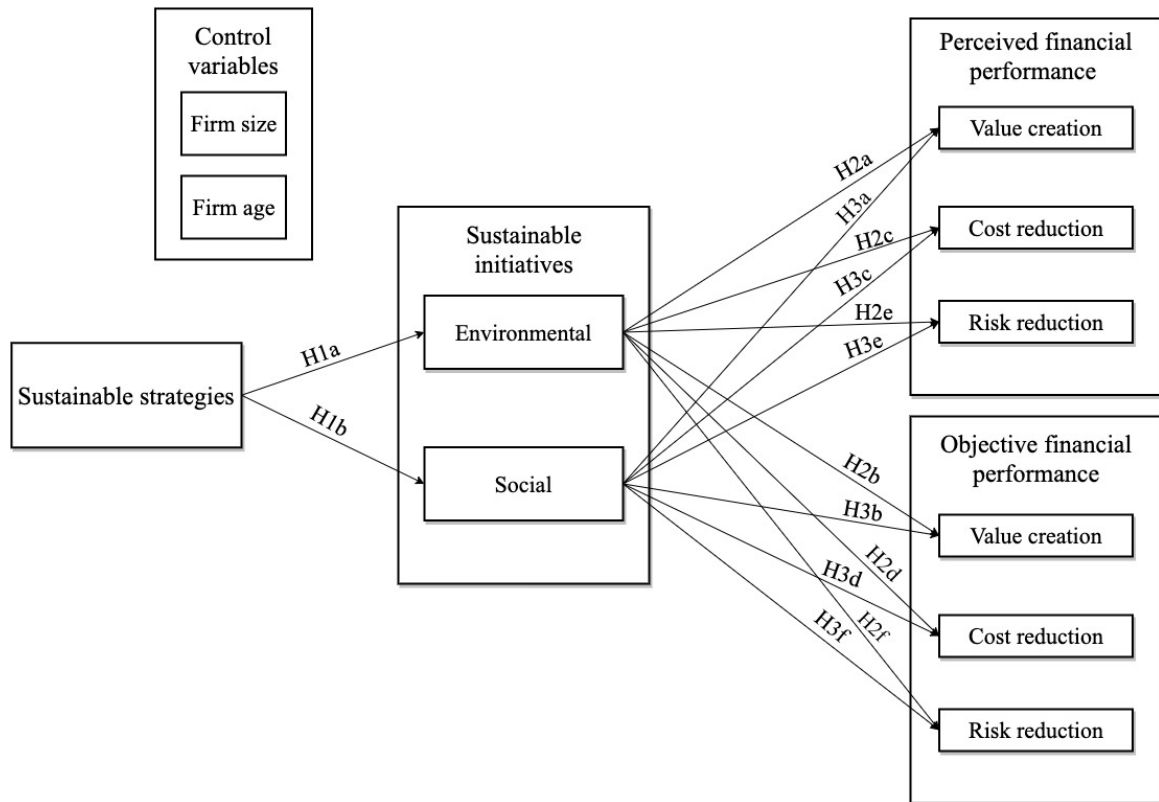


Figure 1: The research model.

3 Methodology

The following chapter describes the methods applied in this thesis. Firstly, an overview of the research design and data collection is presented, followed by the key variables under study, before the process of assessing the data is explained. A thorough description of the main analysis using structural equation modeling is then presented. Lastly, the research quality is elaborated.

3.1 Research Design

The method used to examine this thesis' research objective, is a quantitative research method. The quantitative research method entails testing hypotheses, as this is a scientific tool following a logical sequence of interpretations in order to assess the research objective (Martin & Bridgmon, 2012). The hypotheses represent a tentative explanation which accounts for a set of facts and can be tested further (Muijs, 2010). The research objective for this thesis is to explore the influence of sustainable strategies on sustainable initiatives, as well as perceived and objective financial effects of sustainable initiatives, within the Norwegian manufacturing industry.

The statistical approaches conducted on the quantitative data of this thesis are both descriptive and inferential analyses. The main analysis applied is structural equation modeling (SEM), a second-generation multivariate analysis technique that determines the degree of which the theoretical model is supporting the sample data (Crockett, 2012). SEM is a statistical methodology that applies confirmatory factor analysis, that is a hypothesis-testing approach to a structural theory (Byrne, 2010). The procedure consists of two important aspects, firstly that the causal relations under study are expressed in a series of regression equations, and secondly that these equations can be modeled visually for a clearer conceptualization of the theory under study (Byrne, 2010). The data is kept in a file in the statistical software program IBM SPSS, version 25, and it is also where the descriptive analyses and some other statistics were performed. The main analysis performed in this thesis, which is the SEM analysis, was conducted in the structural equation modeling software IBM SPSS Amos Graphics, version 25.

3.2 Data Collection

The data applied in the analysis stems from two different sources. The subjective data is collected through the SISVI survey, while the objective financial data is gathered from Proff Forvalt. The two independent sources of data to measure financial performance are a means to accurately measure financial performance, and provide a

more correct embodiment. Financial performance measures reflect the firms' strategic and financial objective, and the implementation and execution generate value and contribute to a bottom line improvement (Kaplan & Norton, 2004). The following section will explain the different methods applied, concerning collection processes and types of data sources.

3.2.1 The SISVI Survey

This empirical study is based on the SISVI (Sustainable Innovation and Shared Value Creation) survey from 2015, and the survey is mainly answered by CEOs or other members of the top-management team of the firms. The survey was distributed by the Institute for Industrial Economics and Technology Management at The Norwegian University of Science and Technology. The survey is referring to sustainability in the form of environmental and social responsibility, as the firms' initiative to take responsibility of the consequences of their operations onto the environment and the society. The survey data is characterized as a cross-sectional self-report data collection, where the data represents a single source at a single time. The survey provides all the data concerning sustainable strategies and initiatives, as well as the subjective, and thus perceived, source of financial data for the analysis.

The questions in the survey are organized in subjects concerning topics related to internationalization, growth strategies, overview and compliance, sustainable strategies, environmental and social initiatives, financial performance and motivational factors concerning sustainability. The survey consists of 86 questions, whereas most are scaled questions and some questions are represented with a dummy variable, or insert answer. The questions capture the perceived reality of the CEO or other top management members of the firms. The SISVI survey also provides general firm information regarding year of firm establishment and number of employees in 2015.

The scaled questions in the SISVI survey are Likert-type scales. The scaled survey questions regarding sustainable strategies range from 1 to 7, where 1 represents "Not at all", to 7 which represents "to a great extent". This scale also applies to questions related to environmental and social initiatives, however, the questions related to both the environmental and social initiatives had an 8th alternative on their scale, representing a "not applicable" (N/A) answer. This issue is addressed later in section 3.4.3. The questions related to value creation were answered in scales ranging from 1 to 7, where 1 represents "very negative", with 4 being "no effect", and 7 representing "very positive". The questions related to cost reduction and risk reduction are also answered in a scale ranging from 1 to 7, where 1 represent "high increase in cost/risks", to 7 which represents "high reduction of cost/risk".

The collection period for the survey was two months, distributed through two “waves”, and the targeted firms was part of an industrial NACE code. The two waves combined resulted in 682 respondents out of a selection of 2638 companies, resulting in a total response rate of 25,9%.

The sample of 682 corporations are considered to be fairly representative for the total population, that is the industry at large, when compared in terms of firm size (number of employees). The industry contains 4298 firms, and we received a file containing the firm size for all the firms in the industry from our supervisor Arild Aspelund. The size distribution of the industry compared to the size distribution amongst the respondents (682 firms), is shown in Figure 2. Because of lack of further information regarding the total amount of firms in the industry, the firm size distribution represents the argument for our sample being representative for the whole industry. As the firms included in the survey represents a valid distribution of the total amount of firms within the industry, it is possible to generalize the research and its findings beyond the confinements of the particular context of which the survey was conducted (Bryman, 2008).

3.2.2 Data Retrieved from Proff Forvalt

To complement the perceived financial data provided from the SISVI survey, objective financial data was gathered, which represents the objective financial performance in this thesis. The collection of financial data from Proff Forvalt, was performed by Dag Håkon Haneberg, a PhD who had developed a script for a similar purpose in his thesis. Proff Forvalt is a financial service database which offers financial data and credit information of Norwegian registered companies. The financial data retrieved from Proff Forvalt expanded from 1998 to 2018, whereas the data applied in the analysis of this thesis covers the years subsequent to the distribution of the SISVI survey, that is the four year period from 2015 to 2018.

The objective financial data gathered was imported to the chosen statistical software program, SPSS, for further analyses in SPSS Amos. All data from the SISVI survey and Proff Forvalt were gathered in a joint SPSS file. Before the data screening process described in 3.4, the SPSS file contained the complete set of responses from the SISVI survey, namely 682 cases, complemented with the objective financial data gathered from Proff Forvalt.

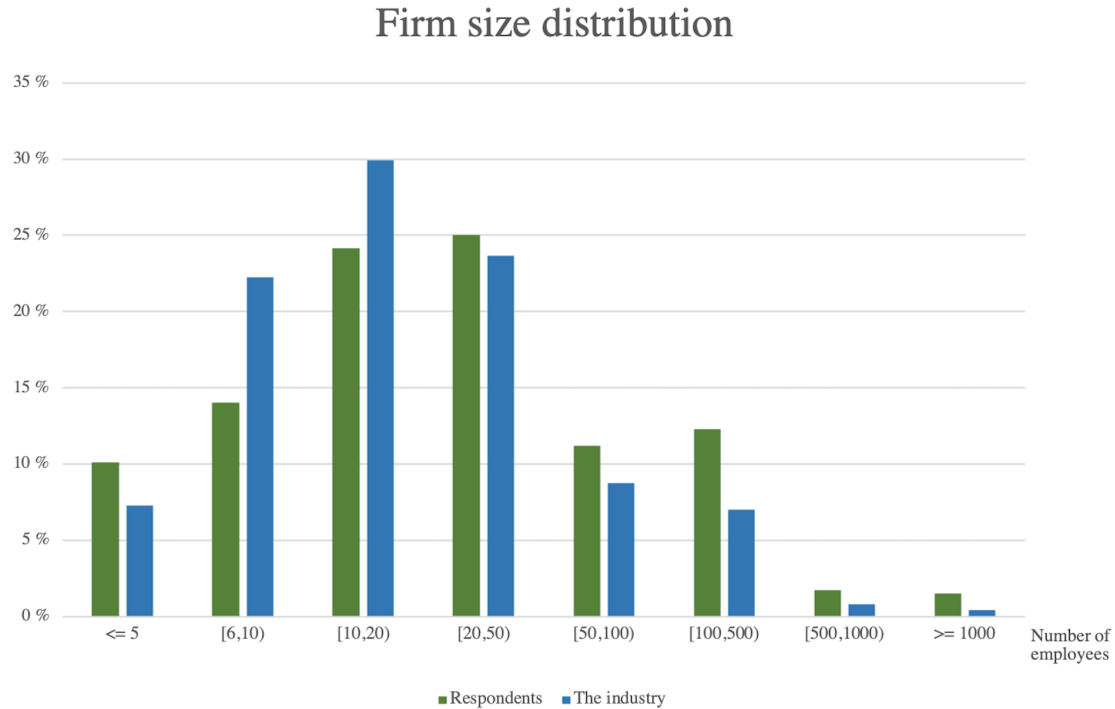


Figure 2: Comparison of the firm size distribution of all the firms in the industry and the respondents.

3.3 Key Variables

There are two types of variables in SEM analysis, namely endogenous and exogenous variables, which are the dependent and independent variables, respectively. The model in this thesis consists of both exogenous and endogenous latent (non-measurable) variables. The exogenous variable in the model is the factor named sustainable strategies. Sustainable strategies in this case include the degree of integration of sustainability into the companies' strategies, as well as facilitation of sustainable practice in daily operations. Thus, the factor sustainable strategies is measured through to what extent companies are inspired by sustainability when managing their strategies. The questions composing the latent factor sustainable strategies, are subjected to a factor analysis as described in section 3.5.

The endogenous variables, also commonly referred to as the dependent variables in the model, are the factors called environmental initiatives and social initiatives, together with the three factors for perceived and objective financial performance respectively; value creation, cost reduction and risk reduction. The sustainable initiatives (environ-

mental and social), as well as perceived value creation, perceived cost reduction and perceived risk reduction, are the result of factor analysis. The three objective financial variables are computed with financial data gathered from Proff Forvalt, and these variables objectively measure value creation, cost reduction and risk reduction. The following sections present the perceived measures value creation, cost reduction and risk reduction, and then show the respective calculations of the objective measures of these parameters.

3.3.1 Value Creation

Value creation represents one of the most common ways to measure firms' financial performance, and is defined as "*willingness to pay minus cost*" (Helfat et al., 2009). Corporations pursuing increased value creation can achieve this through high level of customer satisfaction (Aksoy, Cooil, Groening, Keiningham, & Yalçın, 2008), customer loyalty (Blocker, Cannon, Panagopoulos, & Sager, 2012), increased sales growth (Ramezani, Soenen, & Jung, 2002), avoid direct competition through price or product differentiation (M. Porter, 1996) and ability to introduce new products (J. B. Smith & Colgate, 2007). The listed measures are in accordance with five questions related to value creation from the SISVI survey, which are included in the factor for perceived value creation.

A measure commonly applied to evaluate firm's corporate value creation is return on assets (ROA), as observed in the study by Delmas et al. (2015). In this case, objective value creation is calculated as the change in ROA from 2015 to 2018, where ROA for a given year is calculated as:

$$ROA = \frac{\text{net income}}{\text{total assets}}$$

3.3.2 Cost Reduction

Different competitive strategies in the market is both price and product differentiation (M. Porter, 1985). The firms aiming for price differentiation are dependent on lowering their prices, and firms compete over time on expending resources with the purpose of reducing their operational costs (Spence, 1984). Long-term cost reduction should be a continuous strategic priority, as it can result in long-term competitive advantage. Strategic cost reduction integrate technological and human resource management and establishes a culture for improvement of quality, time and innovation, which foster competitive advantage (Shields & Young, 1992). Cost reduction can concern cost related to firms' operations, and these costs can be reduced by implementing sustainable initiatives (Cai, Chen, & Bose, 2013). The perceived cost reduction factor

includes one question from the SISVI survey, asking whether the company's commitment to sustainability affected the company's operational costs.

Objective cost reduction is measured as the average cost change for the four year period included in this analysis:

$$\frac{\text{operational costs (2018)} - \text{operational costs (2015)}}{\text{operational costs (2015)}}$$

3.3.3 Risk Reduction

Managing business risk is a crucial part of strategic management, and represents a source to competitive advantage (Bettis, 1983). There exists several motives for reducing business risk, related to the conflict between shareholders and managers, the uncertainty concerning the operations cash flow, and the effect of transaction costs (Amit & Wernerfelt, 1990). The corporations are exposed to risk, and engaging in sustainable practices can result in risk reduction, and reduce reputation failure, decline in sales, or failure in meeting future regulatory requirements. However, corporations can be exposed to risk when committing to sustainable strategies and initiatives, as the consequence of failure can affect the firm badly. This is seen in cases of greenwashing, where the consumer becomes skeptical to the corporations' product and services (Rahman, Park, & Chi, 2015). These consequences can influence the firm's reputation, which represent an intangible resource (Lourenço, Callen, Branco, & Curto, 2014), and result in decline in sales. The perceived risk reduction factor includes three questions from the SISVI survey, regarding risk of reputation failure, risk of decline in sales and risk of not being able to meet future regulatory requirements.

The objective risk reduction is calculated as the change in risk for the years 2015 to 2018, where risk in a given year is calculated as follows (Tariq, Badir, & Chonglertham, 2019):

$$\frac{\text{long term debt}}{\text{equity}}$$

3.3.4 Control Variables

The control variables in this study are measures of firm size and age. Firm size was measured by the number of employees at the time of survey distribution (2015). Firm age was calculated based on an open-response question in the survey providing the year of establishment of the firm. Both the firm age and firm size variables were recoded to be on a Likert-type scale from 1 to 7, as shown in Table 1. This was

done to make it easier to compare the control variables to the other variables in the analysis.

Table 1: Scaling intervals for the control variables Firm age and Firm size.

	1	2	3	4	5	6	7
Firm age	0-5	6-10	11-20	21-50	51-100	101-200	>201
Firm size	0-10	11-50	51-100	101-500	501-1000	1001-10000	>10 001

3.4 Assessing the Data

This section describes the process of screening the data used in the analysis, following the methods of James Gaskin (2017). The dataset comprising the responses in the SISVI survey and the complementing financial data from Proff Forvalt, results in a data sample of 682 cases. However, this dataset includes missing data. Seeing as the statistical software tool used in this thesis, SPSS Amos, requires complete datasets in order to suggest model adjustments for improvement, all missing data had to be dealt with. Another important aspect to assess is the normality of the dataset, which is part of the assumptions to the statistical analyses in this thesis. The process of handling the issue concerning missing data and N/A responses are presented first, before an assessment of the normality of the data is described.

3.4.1 Case Screening

In this thesis, a case regards a single respondent in the dataset. Firstly, 198 cases were incomplete, missing more than 20% of its values (Gaskin, 2017), and were therefore removed from the dataset. Secondly, the data was screened for disengagement, by calculating the standard deviation for each case within the Likert-type scaled variables. One case had a standard deviation equal to zero, which means the given respondent answered the same number on the scale on every single question in the survey, signaling strong disengagement, and thus this case was deleted from the sample.

3.4.2 Variable Screening

A variable represents a question from the SISVI survey in SPSS. According to Gaskin (2017), if there are more than 5% missing values within a variable it could be a risk

of dilution when imputing average values for these missing values. Thus, Gaskin (2017) suggests that variables containing up to 5% missing values may be imputed, but not those with higher percentage of missing values. The dataset had 38 variables containing missing values below 5%, and none between 5 and 20%, referring to the threshold for incomplete responses. The missing values within these 38 variables were imputed with the median for ordinal scales and the mean for continuous scales (Gaskin, 2017).

3.4.3 N/A Responses

The variables related to both the environmental and social initiatives had the 8th alternative (N/A) on their scale, and to deal with this, the following measures were taken. The variables that had received more than 20% 8's were removed to avoid the issue of dilution, resulting in removing one variable related to the environmental initiatives and two variables from the social initiatives. Then the cases answering 8 on the scale on 50% or more of the remaining questions related to environmental and social initiatives, were removed from the sample, as these are considered irrelevant for this thesis' purpose. 12 cases were removed due to this issue, while the remaining cases that had answered 8 were imputed with the median of the respective variables. The median were imputed since the variables are ordinal and not continuous. After performing the case and variable screening, and dealing with the N/A responses, the sample size was decreased to 471 cases.

3.4.4 Assessment of Normality

Multivariate normality is assumed in both factor analysis and in structural equation modeling. This assumption is rooted in the large sample theory, which is the theory SEM analysis is based upon (Byrne, 2010). Consequently, it is important to check that this criterion has been met, before performing further analyses.

The dataset was screened for skewness, kurtosis and outliers using SPSS, in order to assess the normality of the data. Skewness is the symmetry or tilt in a distribution, while kurtosis indicates the peakedness of the distribution (Garson, 2012). According to Garson (2012), the respective values of kurtosis and skew should both be within the range of 2 and -2. The initial skewness and kurtosis test showed that two items related to social initiatives were both highly kurtotic and skewed. According to Byrne (2010), it is especially challenging if a sample is multivariate kurtotic when using SEM analysis. The two kurtotic and skewed variables were therefore removed from the dataset. The final skewness and kurtosis results (after assessing outliers) are presented in Appendix 1.

Univariate outliers were visually investigated through plotting the continuous variables individually. A total of six cases were removed due to extreme outliers regarding the objective financial measures, as the respective firms did no longer exist in the later years of the time period included in this analysis.

Lastly, the multivariate assumptions were inspected through checking for influential variables and multicollinearity. To check for influential variables, a Cooks distance analysis was performed and there was one case that exhibited abnormal behaviour, thus this case was removed from the sample. Multicollinearity tests all showed variable inflation factors less than the threshold of 3 and tolerances well above .1, which according to Gaskin (2017) is considered satisfactory. The final sample size used for analysis in this thesis were then 464 cases.

3.5 The SEM Process

This section describes the process of establishing the measurement model, which is distinguishable from the structural model (equal to the research model presented at the end of the theory chapter), and the final structural equation modeling (SEM). The measurement model defines the relations from the manifest to the latent variables, meaning it measures the relation from the observed indicator variables (questions from the SISVI survey) to the unobserved latent variables (Byrne, 2010). All the latent variables in the hypothesized model are created through exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), according to the methods of Gaskin (2017).

3.5.1 Factor Analysis

The process of establishing the factors began with an EFA by factor extraction through maximum likelihood estimation in the SPSS software program. Maximum likelihood estimation is a technique used in both CFA and SEM, and according to Blunch (2008), the exploratory factor model is more in accordance with the measurement model of SEM compared to other factor extraction models. Two tests were performed to assess factorability, namely the Bartlett's test of sphericity and Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. For interpretation of the extracted factors, oblique rotation direct oblimin was applied, according to the methods proposed by Gaskin (2017). The Bartlett's test turned out significant with $p < .001$, and KMO gave a value of .925, which are considered excellent (Field, 2018).

Five factors were extracted in the EFA, resulting in 32 variables being placed in

factors for further analyses. One single variable measure was also used in the SEM analysis (for perceived cost reduction). The factor extraction process started out with 40 variables, meaning 7 variables were discarded, due to low factor loadings.

Having extracted the factors, confirmatory factor analysis was then conducted in SPSS Amos. This procedure of estimating the paths between the latent factors and their manifest variables is called running a measurement model, within the methodology of structural equation modeling (Byrne, 2010). A few small adjustments were done according to suggestions through modification indices given by SPSS Amos, which were to add some error-term co-variances within the factors, in order to improve model fit. Co-variances between error terms indicate that constructs have the same variation, which is not explained by their predictors. No further adjustments were needed in the CFA.

3.5.2 Assessing the Measurement Model

To assess the internal reliability of the factors established in the factor analysis, the measure Cronbach's alpha were applied. Cronbach's alpha measures the internal consistency or average correlation of questions in a survey to assess its reliability (Santos, 1999), and the value ranges from 0 to 1, where values above .7 are considered acceptable. The factor loadings represent the degree to which a variable is related to the factor, and the value ranges from 1 to -1, where 1 indicates perfect correlation and -1 indicates that a variable has purely negative correlation with the factor (Comrey & Lee, 1992). The higher a factor loading is, the better relation it has to the factor. According to Comrey and Lee (1992) the overlapping true variance between a variable and a factor is estimated as the square of the factor loading, which means a factor loading of .7 represents an overlapping variance of 49%. The factor loadings and Cronbach's alpha results are presented in Appendix 2.

Further assessment of reliability and validity of the CFA were performed according to the methods proposed by Gaskin (2017). This assessment included the factorial reliability and validity measurements; composite reliability (CR), average variance extracted (AVE) and maximum shared variance (MSV). Table 2 shows the results of these measures, together with a factor correlations matrix. The thresholds for the validity and reliability measurement are as follows; CR should be above .7, AVE should be above .5 and MSV should be lower than AVE (Hair, Black, Babin, & Anderson, 2010). The resulting values of these measurements are shown in Table 2, were all values are satisfactory according to the mentioned thresholds, except for the AVE value of the social initiatives factor, which are just below the threshold. However, according to Malhotra and Dash (2011), AVE is a strict measure of convergent valid-

ity and more conservative than CR, and they note that the researcher may conclude that convergent validity of the factor is adequate based on the CR measure alone. In Table 2, the diagonal values in bold represent the square root of the average variance extracted, and this value should be higher than the correlation between the factors. As can be observed in Table 2, all the bolded values are greater than the correlations, and this indicates discriminant validity.

Table 2: Factor correlations, means, standard deviations, and validity and reliability statistics.

Factor	Mean	S.D.	CR	AVE	MSV	1	2	3	4	5
Sustainable strategies (1)	3.578	1.347	.936	.620	.254	.788				
Environmental initiatives (2)	4.890	1.427	.810	.587	.118	.664	.766			
Social initiatives (3)	6.237	0.763	.718	.466	.027	.164	.128	.683		
Perceived value creation (4)	4.318	1.076	.910	.670	.316	.446	.311	.116	.818	
Perceived risk reduction (5)	4.452	1.109	.880	.710	.316	.504	.344	.081	.562	.843

When it comes to the measurement model, an assessment of the model fit statistics was done. The thresholds for SEM model fit statistics are provided by Byrne (2010). The minimum discrepancy divided by the degrees of freedom (CMIN/DF) value indicates good fit when the value is below five, and as can be seen in Table 3, the CMIN/DF value was 2.087 for the measurement model. Furthermore, the comparative fit index (CFI) should be above .9, which the measurement model is, with a CFI of .943. Lastly, the root mean square error of approximation (RMSEA) value are preferred below .05 to indicate good fit. The PCLOSE value indicates the closeness of fit, and should be greater than .5. The values of the measurement model fit statistics are shown in Table 3.

Table 3: Measurement model fit statistics.

	CMIN/DF	CFI	RMSEA	PCLOSE
Measurement model	2.087	.964	.048	0.658

3.5.3 Structural Equation Modeling

This section describes the procedure conducted in SPSS Amos to obtain an adequate model fit of the structural model to the data. The structural equation modeling (SEM) is a step further from the measurement model, where the focus lies on measuring the paths between the latent factors, as depicted in the research model at the end of Chapter 2. SEM analysis uses maximum likelihood estimation to test the hypothesized model statistically, in a simultaneous analysis of the complete system of variables (Byrne, 2010).

As with the measurement model (the CFA-analysis), the initial structural model had to be adjusted with a few error-term co-variances, that were suggested by the modification indices in the SPSS Amos output. The full SEM model returned adequate model fit statistics as reported in Table 4 below. For fit-statistics thresholds, see the end of the section 3.5.2. It is also worth mentioning that the goodness-of-fit statistic Hoelter's critical N returned a value of 225 for the .05 indice and 233 for the .01 indice. Values of Hoelter's critical N that are above the amount of 200, indicates a model that adequately represents the sample data (Byrne, 2010).

Table 4: Structural model fit statistics.

	CMIN/DF	CFI	RMSEA	PCLOSE
Structural model	2.155	.941	.050	.500

3.6 Research Quality

There exists uncertainty linked to the use of surveys as a source of data. The survey data regards questions to sustainable strategies, environmental and social initiatives and the perceived financial performance. As sustainability has received increased attention and the pressure towards firms on implementing sustainable practices is rising, firms that are participating in the survey may answer deceptively. Reasons for

the deceptive answers can stem from the firms' need to protect their reputations, and responses in the survey may be biased by social desirability (Windolph, Harms, & Schaltegger, 2014; Fernandes & Randall, 1992). Furthermore, a study by Hatakeda et al. (2012) point out that data samples collected through survey research, tends to be overrepresented by respondents which are expected to positively influence the desired results, as corporations engaging in sustainable practices tend to choose to participate in the survey.

The most prominent criteria to ensure when evaluating the quality on social research, are reliability, replication and validity, which are three interconnected concepts (Bryman, 2008). The reliability of the study concerns if the measures are repeatable and consistent. The measures applied in the SISVI survey mainly follow the same ranges on the scale, proving consistency throughout the survey, which is transferable to the output data. The questionnaire also reflects the concept they are supposed to devote, and there is a connection between the questions and which sub category they belong to. The methods applied in the analysis of this thesis, are explained in full detail to ensure future attempts in replicating the study. The validity involves the integrity of the measurements and the findings, as well as the importance that the questions reflect the intended purpose.

The SISVI survey is answered by top management of the firms, which causes the data provided from the SISVI survey to be a cross-sectional self-report data survey, as the survey is answered at a single time from a single source. The data from the SISVI survey does not consider the time perspective and the answers is an acknowledgement of one person's perception. To ensure reliability in the analysis, objective financial data was provided, where the financial data is measured over a four-year time period. The objective financial data is collected from an objective source of information, which ensures reliability by providing the analysis with two independent sources of information. The use of two sources of financial information strengthens the quality of the study and provides more robust findings.

A crucial factor that can have potential effect on the quality of the research is the common method bias, which is described as one of the main sources of measurement errors. Measurement errors can provide an alternative explanation of the observed relationship measured of a construct that is independent of the one hypothesized (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). The common method bias occurs in self-reported questionnaires, which the SISVI survey is, where the research data stems from the same time and the same respondent (Podsakoff & Organ, 1986). However, the SISVI survey has taken into account common method bias, and the survey has a temporal, proximal, psychological, or methodological separation of measure-

ment, which should help minimize the risk of errors, as recommended by (Podsakoff et al., 2003).

By applying a single-common-method-factor approach in the confirmatory factor analysis (CFA) in SPSS Amos, the common method bias was investigated according to the method by Gaskin (2011). This approach included adding a latent common factor in the CFA, then checking the resulting common method variance, which in this case was satisfyingly low (1.4%).

4 Results

This chapter presents the results of the structural equation modeling. The 14 hypotheses under study are evaluated in line with the overview of the results in Table 5. As can be observed in the table, five of the hypotheses were supported and statistically significant with critical ratios >1.96 (Byrne, 2010), while nine hypotheses were rejected. The model fit statistics are also listed below Table 5.

Sustainable strategies are found to be positively associated to both environmental and social initiatives. Thus, both hypotheses concerning sustainable strategies are supported.

Environmental initiatives are found to have a positive association to perceived financial performance. However, the objective financial effects of environmental initiatives were not statistically significant. The hypotheses exploring the effects environmental initiatives on objective financial performance were thereby rejected, while the hypotheses regarding the perceived financial effects of financial performance are supported.

The associations from social initiatives with both perceived and objective financial performance are found to be statistically insignificant, thus all hypotheses concerning social initiatives and financial performance are rejected.

The variance explained for the endogenous latent variables in the structural model are indicated by the squared multiple correlations, which gives the percentage of the variance that is explained by the predictors of the given variable (Byrne, 2010). The results gave squared multiple correlations of 51.6% for environmental initiatives, 2.8% for social initiatives, 14.2% for perceived value creation, 3.5% for perceived cost reduction, 17.3% for perceived risk reduction, 0.8% for objective value creation, 0% for objective cost reduction and 0.3% for objective risk reduction.

The model is controlled for firm age and size, based on years since foundation in 2020 and number of employees at the time the SISVI survey was distributed, respectively. Firm age are found to be positively associated with environmental initiatives, with a $SRW = .136$ and significance at the .01 level.

Table 5: Structural model parameter estimates.

	Model parameters	SRW	CR	Hypothesis evaluation
H1a	Sustainable strategies → Environmental initiatives	.698***	11.796	Supported
H1b	Sustainable strategies → Social initiatives	.173**	3.036	Supported
H2a	Environmental initiatives → Perceived value creation	.360***	6.598	Supported
H2c	Environmental initiatives → Perceived cost reduction	.172***	3.407	Supported
H2e	Environmental initiatives → Perceived risk reduction	.410***	7.312	Supported
H2b	Environmental initiatives → Objective value creation	.058	1.095	Rejected
H2d	Environmental initiatives → Objective cost reduction	.001	.025	Rejected
H2f	Environmental initiatives → Objective risk reduction	.036	.703	Rejected
H3a	Social initiatives → Perceived value creation	.077	1.456	Rejected
H3c	Social initiatives → Perceived cost reduction	-.097	-1.860	Rejected
H3e	Social initiatives → Perceived risk reduction	.036	.685	Rejected
H3b	Social initiatives → Objective value creation	-.060	-1.114	Rejected
H3d	Social initiatives → Objective cost reduction	-.022	-.412	Rejected
H3f	Social initiatives → Objective risk reduction	.031	.578	Rejected

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$ (two-tailed)

Model fit statistics:

CMIN/DF = 2.155, CFI = .941, RMSEA = .050, PCLOSE = .500

The statistically significant model parameters from Table 5 is depicted in Figure 3. All hypotheses that were rejected, because they were not statistically significant, are disregarded in the model for the purpose to clearly visualize which hypotheses were found to be statistically significant. The five paths included in Figure 3 also shows the standardized regression weights estimated for the given structural paths.

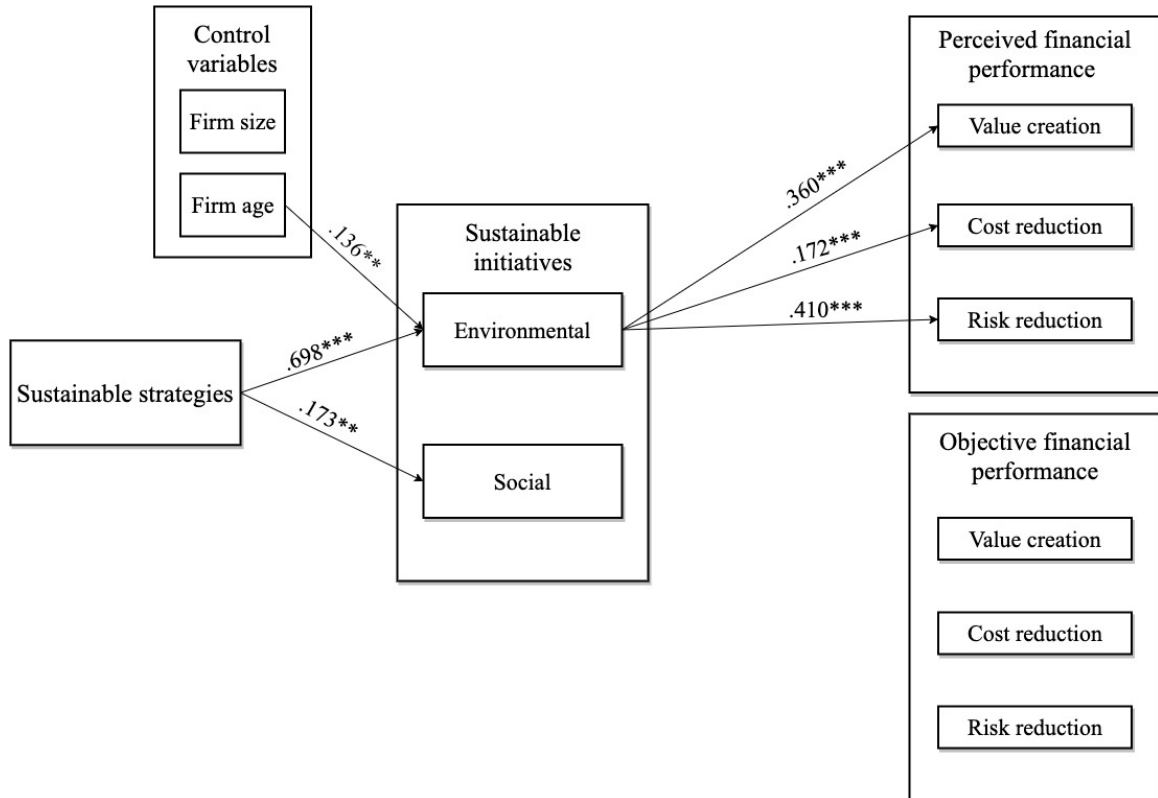


Figure 3: Standardized regression weights that were statistically significant in the structural equation analysis results.

5 Discussion

The results from the structural equation modeling analysis present that sustainable strategies are positively associated with environmental and social initiatives. The results further confirm a positive association from environmental initiatives onto the perceived financial performance parameters regarding value creation, cost reduction and risk reduction. However, the hypotheses concerning the objective financial effects of environmental initiatives were rejected. The hypotheses concerning social initiatives and perceived and objective financial performance, are all rejected.

The following chapter present a discussion concerning the influence of sustainable strategies on both environmental and social initiatives, followed by a discussion regarding the financial effects of environmental initiatives. Furthermore, the financial effects of social initiatives are elaborated. Then, the managerial implications of the findings are discussed. Lastly, the limitations of this study are reviewed and suggestions for further research are presented.

5.1 The Influence of Sustainable Strategies on Sustainable Initiatives

The hypotheses exploring the influence of sustainable strategies on environmental and social initiatives are constituted by the hypotheses H1a and H1b, respectively. The results show that sustainable strategies positively influence both environmental and social initiatives, and indicate that the activities are aligned with the strategic goals of the corporation.

Corporate strategies represent the pattern of decisions in a company that determine the corporations objectives and goals, and which initiatives they will implement to reach these goals (Andrews & David, 1987). Hence, corporate initiatives are most commonly in line with the strategies that have been set. As the attention towards sustainable strategies is increasing, the importance of a seamless transition from strategy to practical implementation of sustainable initiatives is crucial (Maxwell et al., 1997). The findings from this thesis show that there is a positive influence of sustainable strategies on sustainable initiatives, which imply that the sustainable initiatives are in line with the sustainable strategies, and not coincidentally executed as indicated by several studies (Baumgartner & Ebner, 2010; Lubin & Esty, 2010).

The positive association from sustainable strategies with sustainable initiatives shows that the corporations' functional level strategies are aligned with the sustainable initiatives they implement, and that corporations are able to strategically communicate

and implement their core values (Hallahan et al., 2007). Hence, Norwegian manufacturing companies do not engage in greenwashing. Greenwashing is a highly discussed concept, where the respective corporations' business value, objective and communication strategies suggest that companies communicate environmental-friendly practices, without actually implementing them (Walker & Wan, 2012). Corporations engaging in greenwashing may harm their reputation, and can further result in profound negative effects for consumers' and investors' confidence in green products (Delmas & Burbano, 2011). As the consequences of greenwashing are critical and damaging for corporations and can negatively influence financial performance, the fear of being accused of it may encourage corporations to align their environmental and social initiatives with their sustainable strategies.

As observed in Table 5 in Chapter 4, there is a higher regression weight on the structural path from sustainable strategies to environmental initiatives, than the path from sustainable strategies to social initiatives. As all corporations in the dataset apply to Norwegian legislation, the corporations most likely score similarly on the questions in the SISVI survey concerning social initiatives, as they merely represent legal requirements within the workplace (Arbeidsmiljøloven, 2005). The variables related to social initiatives are therefore not exposed to great internal variation, and will thus not give an equally strong influence from sustainable strategies to social initiatives, compared to the influence of sustainable strategies to environmental initiatives.

The large regression weight on the structural path from sustainable strategies to environmental initiatives, may be rooted in how the majority of the strategy-related questions in the survey concern production and manufacturing strategies. The environmental initiatives in this thesis strongly relate to the sustainable strategies concerning production and manufacturing. These entail sustainable production methods to reduce pollution, conserve energy and improve utilization of resources, while enhancing the economic life of the corporation (Quinn et al., 1998; Veleva & Ellenbecker, 2001). The sustainable strategies related to production and manufacturing are transferable to environmental initiatives proposed in this thesis, and are linked to environmental management (Zsidisin & Siferd, 2001), which seeks to reduce greenhouse gases, impact on local ecosystems and reduce the use of harmful materials.

5.2 The Financial Effects of Environmental Initiatives

The hypotheses exploring the financial effects of environmental initiatives are measured through the financial parameters; value creation, cost reduction and risk reduction. The associations to perceived financial performance are constituted by the hypotheses H2a, H2c and H2e, while the associations to objective financial performance

are constituted by the hypotheses H2b, H2d and H2f. The results show a positive effect of environmental initiatives on the perceived financial performance parameters. However, the results show that the association from environmental initiatives to the objective financial performance are not statistically significant. The financial effects of environmental initiatives have many different influencing factors. Hence, the varying results when measuring the perceived and objective financial effects of environmental initiatives, rise for interesting discussions. There may be several reasons for the inconsistent results, and the arguments presented throughout this section are in our opinion the most eminent ones to discuss.

A reason for the varying results can stem from the short-term measure of the economic parameters for the objective financial performance. The financial data used for measuring the objective financial performance extends over a four-year period, from 2015 to 2018, which is the time period after the survey was conducted. A study enhancing the influence of the time perspective used while measuring financial performance, is a study by Cordeiro and Sarkis (1997). The study investigates how environmental activities influence firm's financial performance, and the findings conclude with a negative effect. The authors argue that measuring data over a period of 5 years focuses on short-term results, however, most environmental initiatives demand heavy investments in sustainable technologies, and such investments will contribute to negatively influence the short-term measurements of financial performance. The same argument applies for the study by Delmas et al. (2015), which investigate the financial effects of environmental initiatives, measuring financial effects both short- and long-term. They find that the effects are negative for the short-term and positive for the long-term measurement, as the possible long-term benefits from environmental initiatives may not be reflected when applying a short-term measurement of financial performance.

A consequence of measuring data over a short time period, is that the financial performance can be affected by abnormal events that will affect short-term results. This occurred in a study by Velte (2017), who argues that his data collection was influenced by the effects of the financial crisis in 2008/2009. It was difficult to measure the implementation of corporate sustainability on firms' financial performance, because the data was measured over a short period of time, and reflected almost exclusively the financial crisis. Velte (2017) argues that the financial effect of sustainability could have been detected more extensively through a longer-termed study. The time period included in this thesis, 2015-2018, are not subject to any national or international incidents that have influenced the economy extensively, such as the financial crisis mentioned above. However, smaller incidents may have influenced the corporations economy, even though they are not apparent in the greater sense.

Another important factor to assess, is the economic calculations of the objective financial performance that are applied in this thesis. González-Benito and González-Benito (2005) found neutral results when measuring the financial effects of environmental practices. They explain their results by how implementing environmental practices does not necessarily generate value in terms of enhanced profitability, which makes it challenging to measure the effect of environmental initiatives on financial performance. González-Benito and González-Benito (2005) measured financial performance through return on assets (ROA), an economic short-term measurement of financial performance. Similarly, a study by Delmas et al. (2015) also apply ROA as a short-term measurement of sustainability, and find that there is a negative financial effect of implementing environmental initiatives. The economic measurement ROA is applied in this thesis to measure objective value creation. Thus, the statistically insignificant results when measuring the objective financial effects of environmental initiatives in this thesis, may indicate that the effects of implementing environmental practices do not generate financial improvements immediately. Furthermore, it can indicate that the economic measurements applied to calculate the objective financial performance may not be adequate to reflect the financial effects of the environmental initiatives. The arguments presented, concerning inadequate economic measurements for value creation, also applies for the economic calculations for cost reduction and risk reduction, as these calculations may not measure the effects of environmental initiatives as intended.

The findings regarding the financial effects of environmental initiatives, show that perceived financial effects are positive, while the objective financial effects were statistically insignificant. An argument to explain this difference, can be that corporations measure the financial effect of sustainable initiatives in other ways, compared to how it is calculated in this thesis. The respondents of the SISVI survey have answered questions regarding how the sustainable initiatives influence the economic parameters value creation, cost reduction and risk reduction, which together constitute the perceived financial performance in this thesis. The corporations have more knowledge about their environmental initiatives, and have a clearer picture on how it influences these economic measurements. In this way, corporations can in broader ways define and measure the financial effects more accurately, compared to how the financial effects are measured through objective financial performance in this thesis.

A factor which may contribute to the positive effects of environmental initiatives on perceived financial performance, is linked to the uncertainty regarding the survey, as pointed out in section 3.6. The data source used to constitute the measure of perceived financial performance stems from a cross-sectional survey, and there exist

uncertainties related to the possibility that top management which have responded to the SISVI survey, have answered differently compared to the actual corporate situation. This will give a false impression of the effect that environmental initiatives have on financial performance. A reason to why respondents may have overestimated when answering the survey, can be that the firms feel the need to protect their reputation, and corporations may be influenced by social desirability bias (Windolph et al., 2014; Fernandes & Randall, 1992). Another uncertainty linked to use of surveys is pointed out by Hatakeda et al. (2012), which argue that data samples collected through survey research tend to be over-represented by respondents which is expected to positively influence the desired results. This is because it is expected that firms with high focus on environmental performance are included in the sample collection, as they choose to respond on the survey.

The demographic variables firm size and firm age were controlled for in the research model, where the results show that firm age is found to be slightly positively associated with environmental initiatives. This indicates that the older the companies are, the more likely they are to implement environmental initiatives. A reason for this can be that older companies poses more capital, which is beneficial when investing in environmental initiatives, as investing in sustainable practices can be viewed as a luxury product (Eccles et al., 2014). Older firms may also be more known in the community due to their age, and have had the opportunity to build a strong brand and create trustworthy relationships with their customers and partners. These corporations can be more exposed to bad reputations if not securing the environmental dimension, as these companies are more known in the public space and there are more available information about them (Charlo, Moya, & Muñoz, 2015).

5.3 The Financial Effects of Social Initiatives

The hypotheses exploring the financial effects of social initiatives are measured through the financial parameters; value creation, cost reduction and risk reduction. The associations to perceived financial performance are constituted by the hypotheses H3a, H3c and H3e, while the associations to objective financial performance are constituted by the hypotheses H3b, H3d and H3f. The results show that these hypotheses are rejected, both for the perceived and objective financial performance. The social initiatives applied in this thesis concerns employees' working conditions, fair payments, and transparency within the corporations.

The social dimension of sustainability is originally a part of the concept of sustainable development. However, the importance of the social dimension has often been neglected in favour of the environmental dimension. Moreover, attempts of assessing

the social dimension as part of sustainable development has been inadequate, and the unsuccessful approaches have resulted in a regained interest in the social dimension (Vallance, Perkins, & Dixon, 2011). As the interest towards the social dimension in sustainability has increased, several studies have been conducted on how it affects firms' financial performance. The results of this thesis are not in line with the literature presented in Chapter 2, since the hypotheses concerning financial effects of social initiatives were all rejected. The rejection of these hypotheses are in contradiction to studies showing that implementing social initiatives concerning employee health, safety and working conditions, can lead to value creation (Gruman & Saks, 2011; Charlo et al., 2015), cost reduction (Gimenez et al., 2012; T. Smith, 2005), and reduced risk (Orlitzky & Benjamin, 2001; T. Smith, 2005). Furthermore, the results of this thesis are in contradiction to a literature review study conducted by Roman, Hayibor and Agle (1999), which conclude that the vast majority of the studies investigating the impact of social performance on financial performance, support that implementing social initiatives does not lead to poor financial performance, and most studies reviewed indicate a positive effect of corporate social performance on corporate financial performance.

The measurement of the effect of social initiatives on objective financial performance, were conducted in the same way as the measurement of the objective financial effects of environmental initiatives, with the same economic calculations. A reason for the unsupported association from social initiatives to objective financial performance, can stem from the way the measurements were conducted, in terms of both the length of the time period and of the economic calculations applied. As mentioned in section 5.2, the time period lasting four years from 2015 to 2018, may be characterized as a short-term measurement, which may influence the results. The economic calculations applied to measure objective financial performance, are not necessarily adequate when measuring the financial effects of social initiatives, as discussed for environmental initiatives in section 5.2. The measurement over a short period of time, combined with inaccurate economic calculations, can contribute to diminish the economic effects of implementing social initiatives, as the economic measurements do not reflect the social initiatives implemented by the corporation.

The social aspect of sustainability has been focused on in Norwegian corporations over a long period of time, which can influence the statistically insignificant results when measuring the financial effects of social initiatives. The corporations which have participated in the SISVI survey are already subject to strict Norwegian governmental regulations and laws related to employees' rights with regard to wages and working conditions. The initiatives concerning social dimensions are by many seen as pure working requirements in Norway through the law of labor (Arbeidsmiljøloven, 2005),

which is a comprehensive law the employers must relate to, rather than “voluntary” social initiatives they can choose to participate in. Through the strict laws and regulations, all Norwegian corporations have implemented good social initiatives, and thus a corporation will not be able to obtain competitive advantage in this aspect. The social initiatives in the SISVI survey represent necessary fulfillment of existing regulations and laws, rather than representing an engagement in “voluntary” social initiatives. As the social initiatives represent the corporations conditions for the employees, many corporations naturally scored highly on these questions. This can be observed in that the means of the variables related to social initiatives in the model are all above 6 (refer to Appendix 1). The high scores in these variables will result in little to no variation in the social initiatives factor, thus it will be difficult to obtain significant results between social initiatives and financial performance.

5.4 Managerial Implications

Positive financial effects of implementing environmental initiatives can change the way corporations relate to sustainable development, as sustainability can represent a source of competitive advantage, increased economic growth and improved financial performance (M. Porter & Kramer, 2011). Showing the financial benefits corporations can achieve through implementing sustainable practices, may motivate firms to manage the challenges in society, and simultaneously improve their financial performance. Implementing environmental initiatives into corporations can demand high investments in technologies related to sustainability, manufacturing and R&D (Cordeiro & Sarkis, 1997). However, if there are positive financial effects of environmental initiatives, corporations do not need to consider their investments in sustainable practices as an economic loss, but rather an investment for increased value creation and opportunity for economic growth (Pätäri, Jantunen, Kyläheiko, & Sandström, 2012).

Positive financial effects of environmental initiatives may convince more corporations to implement sustainable practices, which have implications for market participants (consumers, policymakers and investors), as they require corporate transparency. The consumers are being more aware of their behaviour (Müller, 2014), as well as the environmental and social challenges, and they may favour sustainable products and services, leading to a source for value creation. Thus, the corporations implementing sustainable practices may expand their customer base. Furthermore, corporations implementing sustainable practices will also influence how investments are considered (Eccles et al., 2014). Dalal and Thaker (2019) argue that investors prefer corporations that have implemented sustainable practices and focus on the environmental and social challenges in society, and corporations adopting sustainable practices can thus attract investors (Chelawat & Trivedi, 2016). Moreover, the policymakers that

administer laws and regulations will also be affected by the positive financial effects, as the possibilities to enforce incentives and policies favouring sustainability may be more easily accepted in the managerial community.

There exists many positive benefits that may be generated from the positive financial effects of environmental initiatives, where the financial effects were measured through perceived financial performance. However, the effects of environmental initiatives on the objective financial performance were found to be statistically insignificant. The varying results can create uncertainty for corporations, as to whether it is beneficial to invest in sustainability, since companies may be uncertain if it will actually generate improved financial performance and economic growth. Eccles et al. (2014) explain how investing in sustainable practices can be viewed as a luxury product, meaning that corporations performing well and with access to more money, have a higher opportunity to integrate sustainable practices. Thus, if there exists uncertainty whether or not sustainability will lead to improved financial performance, smaller firms with less capital, may not be willing to invest in sustainability, as the financial trade off may be difficult to observe.

The results in this thesis did not support financial effects of social initiatives, however, many other studies have found the financial effects to be positive. As mentioned in section 5.3, the influence from the Norwegian context concerning social initiatives may have played a major role in explaining the results. Nonetheless, one must keep in mind that social conditions are very different and varying on an international level. For some countries, the social initiatives regarding employees' working conditions, fair pay and transparency in the corporations are not seen as compliant to the governmental requirements, as there may not exist laws and regulations concerning the social dimensions at the workplace. As social initiatives are taken on by companies exposed to comprehensive legal requirements, and that companies in developing countries have struggled to meet legal expectations, there is a chance that corporations in developing countries have more potential in introducing social initiatives aligned with their strategies, compared to corporations in developed countries (Lu, Chau, Wang, & Pan, 2014). So even though this thesis found statistically insignificant results when measuring the financial effects of social initiatives, the value of implementing social initiatives in developing countries must not be diminished. Sustainability can represent a source for economic growth, where economic growth works as an enabler for freeing larger parts of the population from poverty (Kuznets, 1955), improving living conditions simultaneously as providing economic growth.

5.5 Limitations and Further Research

As mentioned in Chapter 3, there are certain limitations related to the construct validity. Especially, there are validity related uncertainty on whether the calculated objective financial performance variables sufficiently measures the intended concepts. The short time period of measurements, combined with the calculations of objective financial performance, may not accurately reflect the financial effects of environmental and social initiatives, as in this thesis the hypotheses concerning the objective financial effects of environmental and social initiatives are rejected. Moreover, when dealing with the 8th alternative for the variables related to environmental and social initiatives as described in section 3.4.3, there might exist better methods to deal with this type of data, thus the method used in this thesis may be viewed as a limitation.

Another limitation regards the external validity and generalization of the findings in the study on an international level, as the data is based on a sample collection of exclusively companies working within the Norwegian manufacturing industry, which relate to strict social and environmental regulations. Both the environmental initiatives, and especially the social initiatives are influenced by the strict and regulated Norwegian context. Hence, it may be difficult to generalize the studies for other nations. Other nations may have other governmental regulations that companies must comply to, which can result in varying results in similar studies. However, the findings from this thesis may be generalized for companies working within the Norwegian context, as they are already exposed to strict social and environmental regulations.

This thesis has contributed with valuable findings concerning research on the influence of sustainable strategies on environmental and social initiatives, and further the financial effects of sustainable initiatives, measuring both perceived and objective financial performance. Based on the varying results and different ways of measuring the financial effects of sustainable initiatives, there exists an absence of clear guidelines and frameworks. The inconsistent use of methods to measure the influence of sustainability on economic parameters is in accordance with a study by Roman, Hayibor and Agle (1999), which point out the importance of agreeing on a common standard measure for corporate social performance and sustainable practices, and obtain reliable and valid sources for data and information.

A suggestion for further research is to develop a common set of standards and constitute an applicable framework on how to correctly measure the financial effects of sustainable practices. In this way, corporations can achieve the correct results that will provide great insight for corporations engaging in sustainable practices, and also contribute with correct information to market participants who is affected by how

corporations manage the environmental and social challenges in society.

Another suggestion is to explore a new set of social initiatives, as the situations concerning the social dimension is varying across nations. It would be interesting to research social initiatives for employers to concern for example further education paid by the corporations, free daycare solutions for children, offering life insurance and cover the costs of dental and medical services. The repercussions of adapting social initiatives for the given context and standards, can result in interesting research on how developed countries relate to social initiatives that is considered as not pure governmental requirements, but rather voluntary social initiatives, and how these initiatives influence financial performance.

It is increasingly important to perform research on the financial effects of sustainable practices, in order to improve knowledge on the subject and provide accessible and important information for corporations and other market participants. In this way the corporations can learn how to achieve increased financial performance through implementing sustainability into their practices, as a motivational factor to contribute to reduce the environmental and social challenges in society.

6 Conclusion

This thesis has through structural equation modelling analysis in SPSS Amos, explored the influence of sustainable strategies on environmental and social initiatives, and further investigated the associations from sustainable initiatives with both perceived and objective financial performance. The measures of financial performance are constituted by the economic parameters value creation, cost reduction and risk reduction. Data used in the research model is collected from two independent sources, the SISVI (Sustainable Innovation and Shared Value Creation) survey and Proff Forvalt. The questions from the SISVI survey is answered by top management in corporations working within the Norwegian manufacturing industry and includes the perceived financial data. The financial data gathered from Proff Forvalt constitutes the objective financial performance in the model.

This study has contributed with valuable findings, showing that sustainable strategies positively influence both social and environmental initiatives. The results suggest that Norwegian manufacturers do not engage in greenwashing, meaning that corporations actually implement their sustainable strategies into their practice through sustainable initiatives. This indicates the importance of aligning the sustainable initiatives with the sustainable strategies, and that sustainable strategies are an important tool for corporations in guiding them on the path to becoming sustainable.

Furthermore, the results show that the effects of environmental initiatives on financial performance vary, depending on how financial performance is measured. The hypotheses concerning the perceived financial effects of environmental initiatives were supported, while the hypotheses concerning the objective financial effects of environmental initiatives were rejected. The arguments presented to explain the varying results, concern difficulties on how to correctly measure the objective financial performance. There exists uncertainty related to the short period of time of which the objective financial performance is measured, as well as the economic calculations applied in the objective parameters. Furthermore, there are uncertainties regarding the data from the SISVI survey, seeing that there exists bias when dealing with social research as mentioned in section 3.6. Even though the results are varying, they still show that there are positive financial effects by implementing sustainable practices, and that corporations can reduce the environmental impacts in society, while increasing their financial performance, which is in line with the shared value creation principle (M. Porter & Kramer, 2011).

The effects of social initiatives on perceived and objective financial performance are also explored, where the findings are all statistically insignificant. A reason for this

can stem from the same argument applied for the environmental initiatives and objective financial performance, which highlights the uncertainty regarding the calculations of the objective financial parameters. Moreover, the influence of the Norwegian industry sector also plays a vital role in explaining the statistically insignificant results. Norwegian governance entails strict regulations regarding social and human rights at the workplace, and the social initiatives suggested in this thesis are seen as standard requirements, rather than a voluntary engagement.

As the attention towards the environmental and social challenges is increasing, the corporations' engagement in sustainability is seen as a means to reduce these challenges. Thus, it is evident to understand its impact on firms' financial performance, as presenting the financial benefits of implementing sustainable practices can pose as a motivational factor for firm's to engage in sustainable development. As discussed in section 5.5, there is a need for more standardized frameworks on how to properly measure financial effects of sustainable practices, and what sort of measurements that are applicable. In this way, corporations and researchers can achieve better and more comparable results, which can lead to more suitable environmental and social initiatives. It is important to provide continuous research on the financial effects of sustainable practices in corporations, as it can lead to improvement or adjustment of present sustainable practices and theories. Refined and pertinent knowledge is key for corporations to keep up with trends and address the challenges in society, while creating value.

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Appendix 1: Tests of normality

No.	Variable	Mean	Skewness	S.D.	Kurtosis	S.D.
1	Sustainability (environment and society) is an inspiration to ongoing improvements in our production - we reduce costs through sustainability	4.22	-.222	.113	-.547	.226
2	Sustainability (environment and society) is integrated into our business strategy - we see new business opportunities in sustainability	4.34	-.182		-.777	
3	Sustainability (environment and society) is a fundamental value for our business - we want to change the industry we work in	4.18	-.055		-.588	
4	Sustainability (environment and society) is an ongoing discussion in our top management team	3.76	.127		-.760	
5	We have established clear objectives and indicators concerning sustainability for our company	3.74	.134		-.849	
6	We publish the results of our sustainability activities	2.79	.847		-.272	
7	In our company it is given incentives to employees for achieving results concerning sustainability (environment and society)	2.59	.828		-.012	
8	We use capital and resources in such a way that our goals for sustainability (environment and society) are reached	3.60	.194		-.842	

9	Sustainability (environment and society) is an ongoing discussion in our board	3.19	.464	.113	-.675	.226
10	We work with other actors to solve the major challenges related to sustainability (environment and society) in our industry	3.36	.337		-.962	
11	We strive to reduce or eliminate impacts on local ecosystems	4.48	-.522		-.598	
12	We strive to reduce or eliminate emissions of potentially harmful substances	5.63	-1.362		1.196	
13	We strive to reduce or eliminate emissions of greenhouse gases	4.56	-.587		-.523	
14	Everyone who contributes in our value chain is paid in such a way that it provides them an adequate standard of living	6.16	-1.833		4.009	
15	Everyone who contributes to our value chain have fair working conditions	6.54	-2.384		8.063	
16	Everyone's concerns is actively solicited, impartially judged and transparently addressed	6.01	-1.086		1.305	
	How does the company's commitment to sustainability (environment and society) affect the company's ...					
17	sales growth (increased volume)	4.28	-.393		.832	
18	perceived value for the customer (the willingness to pay)	4.39	-.480		.913	
19	customer loyalty	4.50	-.546		.913	
20	ability to avoid direct competition	3.96	-.436		.711	
21	ability to introduce new products and services	4.46	-.352		.700	

22	operating costs	3.86	-.200	.113	.535	.226
23	risk of reputation failure	4.58	-.384		.660	
24	risk of a decline in sales	4.32	-.360		.874	
25	risk of not being able to meet future regulatory requirements	4.45	-.359		.672	
26	Firm age	4.12	-.002		-.141	
27	Firm size	2.15	1.348		2.278	
28	Change in ROA 2015-2018		-.990	.113	5.066	.226
29	Change in operational costs 2015-2018		1.455	.113	6.063	.226
30	Change in risk 2015-2018		0.280	.113	21.976	.226

Appendix 2: Results of factor analyses

No.	Variable	Factor loading	Cronbach's alpha
Factor 1: Sustainable strategies			.942
1	Sustainability (environment and society) is an inspiration to ongoing improvements in our production - we reduce costs through sustainability	.678	
2	Sustainability (environment and society) is integrated into our business strategy - we see new business opportunities in sustainability	.799	
3	Sustainability (environment and society) is a fundamental value for our business - we want to change the industry we work in	.790	
4	Sustainability (environment and society) is an ongoing discussion in our top management team	.881	
5	We have established clear objectives and indicators concerning sustainability for our company	.863	
6	We publish the results of our sustainability activities	.705	
7	In our company it is given incentives to employees for achieving results concerning sustainability (environment and society)	.652	
8	We use capital and resources in such a way that our goals for sustainability (environment and society) are reached	.844	
9	Sustainability (environment and society) is an ongoing discussion in our board	.839	

10	We work with other actors to solve the major challenges related to sustainability (environment and society) in our industry	.731
Factor 2: Environmental initiatives		.805
11	We strive to reduce or eliminate impacts on local ecosystems	.752
12	We strive to reduce or eliminate emissions of potentially harmful substances	.768
13	We strive to reduce or eliminate emissions of greenhouse gases	.778
Factor 3: Social initiatives		.713
14	Everyone who contributes in our value chain is paid in such a way that it provides them an adequate standard of living	.630
15	Everyone who contributes to our value chain have fair working conditions	.823
16	Everyone's concerns is actively solicited, impartially judged and transparently addressed	.569
Factor 4: Value creation		.911
17	sales growth (increased volume)	.819
18	perceived value for the customer (the willingness to pay)	.894
19	customer loyalty	.864
20	ability to avoid direct competition	.715
21	ability to introduce new products and services	.782

Factor 5: Risk reduction	.880
<hr/>	
23 risk of reputation failure	.889
24 risk of a decline in sales	.850
25 risk of not being able to meet future regulatory requirements	.785

