



Norwegian University of
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Sustainable Business Models

A Need For New And Sustainable Business
Models

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Purpose

The purpose of this master's thesis is to increase the knowledge about how business can contribute to sustainable development through creating value related to the three dimensions of sustainability. The study aims to increase the knowledge of which sustainable elements the selected case companies are working with, to which part of the business model the elements are related, and what the relation is between focus on sustainability and actual integration.

Preface

This thesis is written as a final part of a master's degree at the NTNU School of Entrepreneurship (NSE), at The Norwegian University of Science and Technology (NTNU). The study has been conducted during the spring semester from January to June, 2016. The author has a background within architecture, and has a specialization degree from NSE within entrepreneurship, innovation, leadership and business development. A project thesis was conducted as a preliminary study for this thesis from September 2015 to January 2016. The author conducted the project thesis together with her co-writer Ina Vikøren Ronæss as a literature review (Ronæss and Heir, 2016) summarizing the field of theory on business models, business model innovation and sustainable business models to provide an overview of relevant theory, and to uncover if sustainability and profitability is a trade off or a synergy. A potential new framework for sustainable business models was proposed.

There is a lot of people I would like to thank for their involvement regarding the work with my master's thesis. With their help, contributions and support this has become a very interesting and educational semester, which has given replenishment of knowledge and inspiration to learn even more.

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I would also like to thank my previous sparring partner Ina Vikøren Ronæss for her shared understanding and passion for this field of research, and for her commitment to environmental issues, which has profoundly influenced me. In addition, I am truly grateful for all the valuable input and motivation from my friend Maren Smedsrud Rasmussen. I really appreciate all the time and energy she has spent helping me out. Finally, I want to thank my friends and my admirable family for their patience, understanding and caring. And a especially big thank you to the most persevering and committed people I know at The NTNU School of Entrepreneurship for all the inspiration, sharing of knowledge and memories; it has been two wonderful and crazy years.

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Summary

Business plays a key role for the sustainable development of the society. However, business models of today do not have a sustainable perspective, indicating that they do not balance the three dimensions of sustainability; the social, environmental and economical dimension. A change at the business model level is therefore required for sustainable business models to become the new business models of tomorrow.

The purpose of this study is to increase the knowledge of how companies can contribute to a sustainable development through the creation of value related to the three dimensions of sustainability. Furthermore, it is a wish that this study shall increase the knowledge of which sustainable elements the selected case companies are working with, and to which parts of the business model these elements can be related to. This study also seeks to uncover the relationship between the company's strategic plans for sustainability and the actual integration of sustainable elements. Two research questions are proposed to answer to the purpose of the study.

Examples of sustainable elements are waste management, change from fossil fuels to renewable sources of energy, recycling and reuse, to secure safe working conditions, reduce harmful emission and use of eco-friendly materials.

A literature review was conducted by Ronæss and Heir (2016) presenting a theoretical fundament which has been integrated as a part of the conceptual background for this master's thesis. The theoretical fundament consists of theory related to the fields of business models, business model innovation and sustainable business models. It is revealed to be little consistency regarding a common definition both for business models, business model innovation and for the relatively new area of research; sustainable business models. This implies a lack of theory, and uncovers a demand for more research related to these fields. The framework "the business model canvas" (BMC) is introduced in the conceptual background, and if further used as a framework for the analysis in this study.

The purpose of this thesis is fulfilled through a multiple case study approach, where information from case studies of six selected companies is used to acquire in-depth knowledge for the analysis. The empirical findings are analyzed in relation to the research questions, before the result of the analysis is discussed to which degree they answer to the research questions and the overall purpose of this study. The last part of the discussion relates the analysis to the challenges presented in the introduction.

Six goods-producing companies are investigated through the case studies, one of which also provides services related to waste management in the Norwegian industry. The Norwegian companies Plasto, Hexagon Ragasco and Wonderland are included in this master's thesis, all of which are part of the research project SISVI at NTNU. Additionally, the Norwegian companies Elkem, Norsk Gjenvinning and the Swedish company IKEA are included.

The analysis shows that the integrated sustainable elements in the companies' business models can mainly be related to three parts of the business model. It is also uncovered that integration of sustainable elements at the business model level can be challenging to measure. Through the analysis it is revealed that the relation between what the companies wants to do and what they are actually doing are related in a varying degree. Plans at the strategic level without being rooted in a plan of action do not prove to contribute to actual integration of sustainable elements. What has become clear is that the companies' commitment and focus on sustainability contributes to influence the industry, politicians and the society, and might contribute to increased facilitation, more incentive programs and more regulations concerning sustainable development.

This leads to a discussion of the various integrated elements, and whether one can say something about the extent of integration and the importance of which parts of the business model the elements are related to. In addition, is the relationship between the companies' plans and actual integration of sustainability

discussed, including the forces influencing how the company works with sustainable development. It is also discussed whether the integration of sustainable elements into a company's business model proves to contribute to sustainable development in the society, if the company balances the three dimensions of sustainability. The discussion touches upon if the integration of sustainability can have a positive synergistic effect on the companies' financial performance. A greater degree of integration is probably associated with an increased performance in the long run.

This study sets out to shed light on the importance of the fact that the research area of sustainable business models should be explored further in the future. In addition, the author encourage that further research should look into the order of which the sustainable elements are integrated in, the integrated extent of each element, and if the integration of sustainability can have a positive impact on the company's financial performance. In this way, the research might contribute to the development of new and sustainable business models that can be used in practice, addressing the three dimensions of sustainability.

Sammendrag

Bedrifter spiller en avgjørende rolle for den bærekraftige utviklingen av samfunnet. Men forvaltningsmodeller i dag har ikke et bærekraftig perspektiv, noe tilsier at de ikke balanserer de tre dimensjonene av bærekraft; den sosiale, den miljømessige og den økonomiske dimensjonen. For fremtiden krever det dermed en endring på forretningmodellnivå, slik at bærekraftige forretningmodeller kan bli de nye forretningsmodellene.

Formålet med denne studien er å øke kunnskapen om hvordan bedrifter kan bidra til bærekraftig utvikling ved å skape verdi relatert til de tre dimensjonene av bærekraft. Videre ønskes det at studien skal øke kunnskapen om hvilke elementer av bærekraft de utvalgte case selskapene jobber med, og hvilke deler av selskapenes forretningsmodell elementene kan relateres til. Studien søker i tillegg å kunne si noe om forholdet mellom selskapenes strategiske planer for bærekraft og faktisk integrering av bærekraftige elementer. To forskningsspørsmål har blitt utformet for å svare til formålet med studien.

Eksempler på bærekraftige elementer er avfallshåndtering, utfasing av fossile energikilder til fordel for fornybare, resirkulering og gjenbruk, sikre trygge arbeidsforhold, redusere utslipp av skadelige gasser og bruk av miljøvennlige råmaterialer.

En litteraturstudie utført av Ronæss og Heir (2016) presenterer et teoretisk fundament som har blitt tatt med som en del av en konseptuelt bakgrunn i denne masteroppgaven. Det teoretiske fundamentet består av teori om forretningsmodeller, innovasjon av forretningsmodeller og bærekraftige forretningsmodeller. Det viser seg å være lite konsensus hva gjelder en felles definisjon både for forretningsmodeller, for innovasjon av forretningsmodeller og for det relativt nye forskningsområdet bærekraftige forretningsmodeller. Dette viser mangler ved teorien, og et behov for mer forskning på disse områdene. Rammeverket "Business Model Canvas" (BMC) introduseres i den konseptuelle bakgrunnen, og brukes som rammeverk for analysen i studien.

Formålet med oppgaven oppnås ved å bruke en multippel case studie, hvor informasjon fra case studier av seks utvalgte selskaper brukes til å innhente inngående kunnskap til analysen. De empiriske funnene analyseres mot forskningsspørsmålene, før resultatene av analysen diskuteres i hvilken grad de svarer til forskningsspørsmålene og det overordnede formålet. Den siste delen av diskusjonen relaterer analysen til utfordringene presentert i introduksjonen av studien.

I case studiene undersøkes seks vareproduserende selskaper, hvorav ett i tillegg er et serviceselskap for avfallshåndtering for industrien. Inkludert i denne masteroppgaven er de norske selskapene Plasto, Hexagon Ragasco og Wonderland, som alle er en del av forskningsprosjektet SISVI ved NTNU, i tillegg til de norske selskapene Elkem og Norsk Gjenvinning og det svenske selskapet IKEA.

Analysen viser at de integrerte bærekraftige elementene i selskapenes forretningsmodell i høyeste grad kan relateres til hovedsakelig tre deler av forretningsmodellen. Det fremkommer også at integrering av bærekraft på forretningsmodellnivå kan være vanskelig å måle. Gjennom analysen avdekkes det i tillegg at forholdet mellom hva case selskapene ønsker å gjøre og hva de faktisk gjør henger sammen i varierende grad. Planer som kun er på strategisk nivå og ikke forankret i en handlingsplan viser seg å i liten grad bidra til faktisk integrering av bærekraftige elementer. Det som dog kommer frem, er at selskapenes engasjement og fokus på bærekraft er med på å påvirke industrien, politikerne og opinionen i samfunnet, og dermed kan bidra til økt tilrettelegging, flere incentivordninger og flere krav hva angår bærekraftig utvikling.

Videre fører dette til en diskusjon av de ulike integrerte elementene, og hvorvidt man kan si noe om omfanget av integreringen og hvilke deler av forretningsmodellen elementene kan relateres til. I tillegg diskuteres forholdet mellom selskapenes planer og faktiske integrering av bærekraft, og hvilke faktorer som påvirker selskapet til å jobbe med bærekraftig utvikling. Det diskuteres også hvorvidt integrering av bærekraftige elementer i et selskaps forretningsmodell viser seg å bidra til en bærekraftig utvikling i

samfunnet hvis selskapet balanserer de tre dimensjonene av bærekraft, og om integrering av bærekraft kan ha en positiv synergieffekt på selskapenes økonomiske prestasjon. Større grad av integrering er trolig assosiert med økt prestasjon i det lange løp.

Denne studien bidrar til å belyse viktigheten av at forskningsområdet på bærekraftige forretningsmodeller utforskes ytterligere. I tillegg oppfordrer forfatteren at det forskes videre på rekkefølgen av integrerte bærekraftselementer, det integrerte omfanget av hvert element, og om integrering av bærekraft kan ha positiv innvirkning på selskapets økonomiske prestasjon. På denne måten kan man gi et bidrag til utvikling av nye og bærekraftige forretningsmodeller som kan brukes i praksis, og som tar inn over seg de tre dimensjonene av bærekraft.

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List of Abbreviations

BM - Business models
BMI - Business model innovation
SBM - Sustainable business model
TBL - Triple bottom line
GRI - Global reporting initiative
CSR - Corporate social responsibility
SVC - Shared Value Creation

1. Introduction

1.1 Problem Context and Motivation

We live in a world restricted by nature and its ecosystem's capacity: We can only extract a restricted amount of resources without destroying the ecosystems, and the ecosystems only have a limited capacity for handling our waste and emissions. According to Global Footprint Network (2015) we are at the moment using resources to an amount and at a rate requiring 1.6 planets. In addition, the emissions of global greenhouse gasses are continuously rising simultaneously as we produce more waste than ever (WWF, 2012). A sustainable development on earth is dependent on the ecosystem's ability to reproduce the natural resources we take out and the nature's ability to handle the waste and emissions we demand. A sustainable development implies avoiding destruction of future generations' ability to survive (Steffen et al., 2015).

Sustainability and sustainable development as a term in the context of this master's thesis is obtained from the Brundtland report in 1987 and is defined as "development which meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987). This definition has a triple bottom line approach, where the social, environmental and economical dimension has to be balanced in order to achieve sustainability. Sustainability in the business context refers to the total effort of a company to reduce the negative impact on the Earth's life- and ecosystems, including both people and the planet (Hogevold and Svensson, 2012). Business sustainability could therefore be a requirement for firms to adhere to the principles of sustainable development, where the corporate firms contribute to strong communities and healthy ecosystems, in addition to create economic value. This is supported by the CMO of Unilever, Keith Weed, claiming that business growth needs to be sustainable economically, but in a resource constrained world it must also be sustainable environmentally and socially (Morse, 2014). These three dimensions of sustainability play an important role for a company's reputation amongst stakeholders, employees and customers (Strebel and Posch, 2004). Because of this, sustainability is about a company's ability to survive in the long term, and not least about its competitiveness in the future.

There is a rising awareness among people when it comes to the environmental and social impacts of the industry, and we see an increasing trend towards the willingness to change for a more sustainable development. The level of sustainability in society depends on the level of sustainable development of firms, and because of this, businesses should incorporate sustainable elements and processes for the transition to a more sustainable society (Clinton and Whisnant, 2014). In order to ensure sustainable development, the industry will have to switch from the current "linear" economic model which the society is build upon. This model relies on large quantities of cheap, easily accessible materials and energy, hence it is a model which is reaching its physical limits. A solution can, according to the Ellen MacArthur Foundation (2015), be a transition towards a so called "circular" economic model. The circular economy has recently attracted increasing attention from some of the major global companies, which is due to the huge financial, social and environmental benefits the circular economics creates (Lewandowski, 2015). However, the circular economy does not fundamentally aim for sustainable development. This is due to its wide scope and that it does not necessarily set goals for balancing the three dimensions of sustainability (Mentink, 2014). The circular economy will therefore only be used as part of the discussion, and the investigation of the direct link between the circular economy and sustainable business models is left for further research.

To foster sustainable development on a global basis, the United Nations (UN) has proposed 17 sustainable development goals (SDGs) for the road towards 2030. These goals set ambitious priorities for both governments and businesses in order to secure sustainable development. Ambitious goals will, however, never generate changes alone. It is therefore crucial to have more specific plans and processes for actions, implementation of elements and decision-making at all levels, from global to national, to business to individuals (Norström et al., 2014). One initiative for companies to internalize and improve

their commitment to sustainable development is through sustainable reporting. Such reports provide information about social, environmental and economic performance. Examples of reporting initiatives are the SDGs, the UN Global Compact, the GRI Sustainability Reporting Guidelines (G4), the Global Reporting Initiative and the IIRC's Integrated Reporting Framework. However, it has recently been a topic of discussion if the sustainability reporting initiatives have a positive impact on value creation for the company, whether it contributes to drive initiatives for a more sustainable development forward, or if it is more about the company's conscience; greenwashing versus good business (Wilson, 2013).

The increasing awareness and attention around sustainable development triggers a demand for new and sustainable business models. The issue of today is, however, that business models do not have a clear sustainable perspective. According to Bocken et al. (2013) "business as usual" is no longer a valid concept for the future. This is due to the rising global population, accelerating pace of development, increasing use of resources and the negative impact on the environment. Consequently, this demands a change in the business structure at the business model level. "Business as usual" is understood as the normal conduct of business regardless of current circumstances and has thus led us to where we are now. Bocken argues through her literature that sustainable business should be the new "business as usual". Jørgensen and Pedersen (2015) back this argument and claim that there is reason to believe that more of the same as of today will only increase the problem further.

Over the past years, several companies have started to integrate sustainable elements and actions related to the three dimensions of sustainability into their corporations, and have following reduced carbon emissions, conserved water, secured working conditions for employees and developed more and better eco-friendly products. Still, the changes are not moving fast enough as to prevent the current global climate changes (Mosher and Smith, 2015). Many companies claim that sustainability is "in their DNA", and although this is the case with some companies, sustainability is often held outside the company's core strategy which is fundamentally linked to the business model (Clinton and Whisnant, 2014). Very few companies have integrated sustainability into their business model in such a way that it facilitates social and environmental value in addition to financial returns. There are also indications of the fact that integration of sustainability into the business model can help companies prepare for future risks, secure a sustainable future, and act on opportunities. There exist evidences which connect sustainability to financial success (Mosher and Smith, 2015).

Development trends related to sustainability issues indicate that the future requires radical changes in the economical activity, and that there is a need for unlocking business value from sustainability (Clinton and Whisnant, 2014). With the three dimensions of sustainability, the triple bottom line, and the transition towards a more circular economy and sustainable world, knowledge about innovation and design for sustainable business models is needed in order to promote and enhance sustainable development. However, despite the fact that existing knowledge and theory provide several frameworks, innovation guidelines and tools to build and design a business model, it is impossible to say that there exists one generic business model that every company can fit their organization into, which will foster sustainable development (Lewandowski, 2015).

The author finds the topic of sustainable business development and sustainable business models to be both interesting and a necessary field of research for the future (Ronæss and Heir, 2016). During the work with the project thesis the nascent character and lack of consensus within this field was uncovered, which fostered the need for more research. This master's thesis sets out to contribute to both the academic field through a presentation of the current state of research on sustainable business models, and to the field of industry and newcomers by looking into how firms are working with the sustainability issue today, to see if there exists general examples of how companies can work towards a more sustainable development. One primary goal of this master's thesis is also to offer inspiration and facilitate reflection by raising questions and concerns for further research.

The reason for selecting this master's thesis is that innovation for sustainable business models, and the sustainable business models themselves are considered mere concepts. No consistent research is conducted around them, which has led to the lack of a common understanding of the concepts.

Consequently, there are few, or no consistent relevant frameworks for developing such business models. There is also a lack of theory and research done on the integration of sustainable elements. This is with regards to types of elements and which parts of the business model they are related to.

1.2 Research Objectives

With background in the importance of sustainable development in the business perspective, the overall purpose of this master's thesis is to increase the knowledge about how business can contribute to sustainable development through creating value related to the three dimensions of sustainability. This is done through investigation of six selected case companies to see how they are integrating sustainability into their business model. In order to reach this overall purpose, the thesis aims to reveal which sustainable elements the six selected case companies are working with, which part of the business model the elements are related to, and what the relation is between focus on sustainability and actual integration.

Based on this, the following research questions (RQs) are proposed:

RQ 1: To which parts of the business model are the integration of sustainable elements mainly related?

RQ 2: What is the relation between plans for sustainable development and actual integration of sustainability?

These RQs will be answered by evaluating qualitative data. The empirical data for the analyses has been retrieved through interviews and submitted information from the case companies. The RQs in this master's thesis will be answered through the three following steps:

1. Identification of the state-of-the-art on the theory of business models, business model innovation and sustainable business models.
2. Case study of six companies to reveal and identify how they work with sustainability.
3. Synthesis of the relation between what the companies want to do (focus, strategic plans) and what they are actually doing (integration of sustainable elements).

1.3 Structure of the thesis

This master's thesis is divided into six main sections, as presented in figure 1, and it has a linear-analytic structure. According to Yin (2009) this is a standard approach when composing research papers of this kind. The second section in this thesis presents relevant theories of the concepts of business models, business model innovation and sustainable business models. In addition, a conceptual framework for business models is presented to be used in the analysis in order to structure the empirical findings. This give an overview of the state-of-the-art and together with the framework, this section form a conceptual background.

The methodology is described in section three; presenting the research design and applied method for this master's thesis. Limitations and weaknesses regarding the chosen methodology are addressed to shed light on the chosen methodology's contribution to fulfill the purpose.

In part four, the empirical findings of the six case studies are presented. The findings are sorted into three main themes in order to answer to the RQs proposed in this first section.

Section five analyses the empirical findings from section four through the presented framework and in light of theory from section two. Section six is a discussion where the analysis is discussed in relation to the RQs and the purpose of this thesis, and in relation to existing theory and the challenges presented in this first section of the thesis.

Finally, in part seven, the author presents a conclusion reflecting upon the findings, before presenting recommendations for future research. A summary of the structure is presented in figure 1.

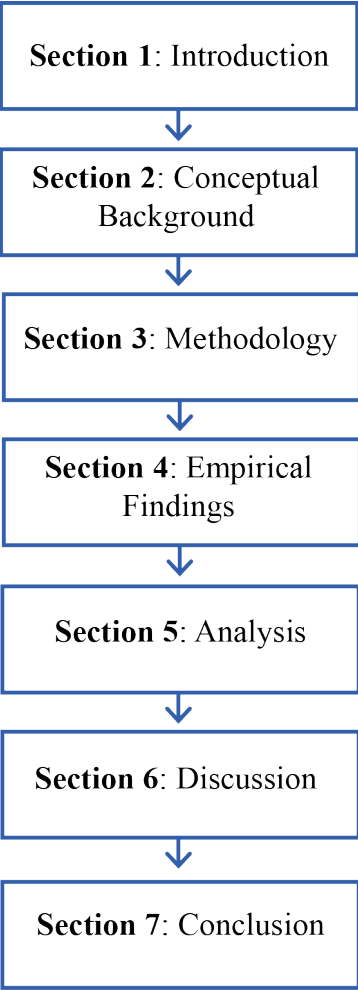


Figure 1: Structure of the study.

2. Conceptual Background

2.1 Introduction

This chapter is consisting of two main parts. The first part presents relevant theory of the concepts of business models, business model innovation and sustainable business models, in order to show the relationship between these three research areas. The three concepts are presented in such order as it is necessary to understand what a business model is and how to innovate it to understand how sustainable business models might be developed. Part two presents a framework for business models, aiming to be used for the analysis in section four. This section might contribute to a constructive understanding of how the research questions can be answered. Parts of this section is taken from the project thesis on sustainable business models by Ronæss and Heir (2016).

Part I

This first part of section two presents theory of the concepts of business models, business model innovation and sustainable business models. These three theoretical areas will be used together with the empirical findings for the analysis in section four.

2.2 The Concept of Business Models

In this section, literature about the traditional approaches to business models will be presented as a summary of this theoretical field, ending with an overview of the most common definitions, and the chosen definition for this master thesis.

2.2.1 Concept Development

There is no general agreement regarding a common definition of a business model amongst the researchers. In their review article from 2010, Zott et al. examined 103 studies looking into the business model literature. Throughout their work, the authors found the following four growing similarities of the business model concept: 1) a BM is a new tool for analysis; 2) that a BM presents a system level, holistic approach to explain how companies do their business; 3) that the activity of the company is playing a major role in the various and different conceptualization of a BM; and 4) that a BM explains how value in a company is created and captured. Further, Zott et al. (2010) states that these four commonalities might contribute to a more common study of the business model. One of the main findings in Zott et al.'s work is that they observed that researchers often adopt the definition of a business model to fit with their work and purpose, and that this makes it even harder to come to an agreement on what a business model really is, and they state that “despite the overall surge in the literature on business models, scholars (still) do not agree on what a business model is”.

2.2.2 Approaches to Business Model Definitions

Although there has not been found any consensus on one common definition of what a BM is, some authors writing about this subject purposes different definitions and approaches in their own research publications. These authors operate with different theories of what a business model comprises, depending on the purpose of their work. Based on numbers from the study done by Zott et al. (2010), it shows that out of 103 publications they have reviewed about business models, only 45 explicitly define or conceptualize the business model. Mainly, the concept of the business model is all about a company's effort to create profitability, and according to Jørgensen and Pedersen (2015, p. 41), a business model “tells the story of what the company really is, and how it really works”.

Table 1 are presenting a sample of some of the definitions found by Zott et al. (2010), and some definitions found outside of their work (Osterwalder, 2005; Jørgensen and Pedersen, 2015). The table does also show which papers presenting and using the different definitions.

Author(s)	Definition	Papers containing the definition
Amit and Zott, 2001	The business model depicts “the content, structure, and governance of transactions designed so as to create value through the exploration of business opportunities”.	Morris et al., 2005; Zott and Amit, 2007; Bock et al., 2010; Zott et al., 2010
Osterwalder, 2008	A business model “describes the rationale of how an organization creates, delivers and captures value”.	Osterwalder, 2008; Osterwalder, 2015.
Johnson et al., 2008	Business models “consists of four interlocking elements (customer value proposition, profit formula, key resources, key processes) that, taken together, create and deliver value”.	Johnson and Suskewicz, 2009.
Al-Debei and Avison, 2008	A business model is an “abstract representation of an organization, be it conceptual, textual, and/or graphical, of all core interrelated architectural, co-operational, and financial arrangements designed and developed by an organization presently and in the future, as well as all core products and/or services the organization offers, or will offer, based on these arrangements that are needed to achieve its strategic goals and objectives.”	Al-Debei et al., 2008.
Chesbrough and Rosenbloom, 2002	The business model is “the heuristic logic that connects technical potential with the realization of economic value”.	Chesbrough et al, 2006; Chesbrough, 2003; Teece, 2007, 2006.
Morris et al., 2005	A business model is a “concise representation of how an interrelated set of decision variables in the areas of venture strategy, architecture and economics are addressed to create sustainable competitive advantage in defined markets”.	Calia et al., 2007
Linder and Cantrell, 2001	The business model is “a tool that explains how business organizations generate revenues”.	Al-Debei et al., 2010
Magretta, 2002	Business models are “stories that explain how enterprises work. A good business model answers Peter Drucker’s age old questions: Who is the customer? And what does the customer value? It also answers the fundamental question every manager must ask: How do we make money in this business? What is the underlying economic logic that explains how we can deliver value to customers at an appropriate cost?”.	Pateli and Geaglis, 2003; Seddon et al., 2004; Demil and Lecoq, 2010.
Jørgensen and Pedersen, 2015	The conceptual framework for how the company seeks to create profitability - by offering and delivering value that is attractive to the customers and by charging customers in a way so that the business is left with an acceptable profit.	Jørgensen and Pedersen, 2015.
Teece, 2010	A business model articulated the logic, the data and other evidence that support a value proposition for the customer, and viable structure of revenue and costs for the enterprise delivering the value”.	Gambardella and McGahan, 2010.

Table 1: Sample of business model definitions

In their paper, Zott et al (2010) concludes that “a common conceptual base is still lacking”, and for further use in this thesis, the business model definition by Osterwalder and Pigneur (2010) are chosen:

The business model describes the rationale for how an organization creates, delivers and captures value.

The reason for choosing this definition is on the basis of its familiarity, simplicity, ease of use and global recognition.

2.3 The Concept of Business Model Innovation

To understand how a company can either renew their existing business model or look at the business model concept in a new way when constructing it from the start it's crucial to understand the concept of business model innovation (BMI). Business model innovation as a term, similarly to the term business model, has not yet achieved an accepted definition in the literature, even though there has been a recent growth in the literature focusing on this (e.g. Cavalcante et al., 2011; Chesbrough, 2010; Teece, 2010; Zott et al., 2011). In this part of the conceptual background different approaches to BMI will be presented, together with some barriers of the process of innovating a BM and a part about business model innovation for sustainability.

2.3.1 Approaches to Business Model Innovation

Business model innovation has been used by numerous authors to explain how technology is commercialized. Among these authors we find Jørgensen and Pedersen (2015), Chesbrough and Rosenbloom (2002), Demil and Lecocq (2010) and Christensen and Raynor (2003). In addition, Zott et al. (2010) says that innovation of a business model is the key to a firm's performance. Jørgensen and Pedersen (2015) states that an indication of a business success is the company's ability to a constantly renewal of their BM, stating that the question to be answered within BMI is how companies should respond to changes and which tools they should use to maintain their position. A BM is something dynamic, and BMI shows another layer of dynamics regarding the firm's BM. Jørgensen and Pedersen (2015) also points out the importance of innovation of the BM so that the company will not die out, and instead remain competitive in the middle of changing expectations from the society. Dahle et al. (2012) states that changes to the BM can be made in the short term, and that strategies are usually changed over a longer time, underlining the importance of innovating the BM itself to be better prepared for rapid changes in the market. Kaplan (2012) highlights the importance of innovation of the BM, and says that organizations today have to accept that they are not going to survive if they only fine-tune the BM they already have, and that constant renewal of the BM is important to “stay alive”. He also states that the high range of new technologies, ideas and practices spreading across the globe in high speed, implies that the rate of change also needs to be high, especially within change of the business model itself (Kaplan, 2012). Jørgensen and Pedersen (2015, p. 48) sums up BMI by presenting it as groundbreaking in the market by delivering value in a better way than existing BMs.

According to Chesbrough (2010, p. 354), development of technology are getting more expensive, and to succeed one must also focus on BMI. He states that a mediocre technology pursued with a great BM may be more valuable than a great technology exploited via a mediocre BM, and that to be able to innovate their BM, companies have to expand their capability, in addition to their ideas and technologies. Further, Chesbrough (2010) proposes three important processes on how to innovate a BM; organizational leadership, experimentation and effectuation. Zott et al. (2010) says that for firms to innovate their BMs, they can look at their BM as an innovating source, and that it is critical to also include innovation and improvements in the design process. Zott et al. (2010) also argues that it is a rising consensus that BMI is the leading factor for company performance.

The three authors Santos, Spector and Van der Heyden (2009) emphasizes that the behavioral aspects are important for BMI. They claim that you need mutual engagement and organizational justice to be

able to innovate a firm's BM. Cavalcante et al. (2011) presents different drivers for BMI, highlighting the importance of BM dynamics correlated to technology and market disruption. They present four groups of change; BM creation, extension, revision and termination. IBMs *Global CEO study* from 2006 shows that BMI drives profitability to a larger extent than other forms of innovation (Giesen et al. 2007). Giesen et al. (2007) classifies BMI into three groups: industry model innovation; revenue model innovation; and enterprise model innovation. Lindgardt et al. (2009) argues that to obtain innovation, a company have to include two or more elements of a BM. And these two elements have to be linked to value delivering. Similar to Giesen et al. (2007), Lindgardt et al. (2009) also divides BMI in three categories: value proposition; operating models; and business system architecture.

As it is presented in this part, the concept of BMI can refer to two main conclusions of what BMI really is (Jørgensen and Pedersen, 2015; Amit and Zott, 2012; Johnson, 2010; Chesbrough, 2007). First of all, BMI can refer to the *creation* of a new company presenting a new and innovated BM creating new markets or changing the status of competition in the existing market. Secondly, BMI can refer to businesses that are *changing or recreating* their existing business model.

For the further work with this thesis, business model innovation will be referred to as the second version of BMI; changing existing business models. The reason for this is that all the case companies in this master thesis are well established companies, aiming to change their existing business models to be more sustainable.

2.3.2 Barriers to Business Model Innovation

Due to the existing theory about BMI, there are certain areas for potential conflicts between current and new BMs. This has been discussed in the literature, and Chesbrough (2010) presents two types of barriers: the first type refers to the fact that barriers appears in conflicts between already existing BMs and assets. The other type of barriers Chesbrough presents are cognitive, illustrated by a leader who for a long time has worked within the same framework for the company's BM, having trouble understanding the growth potential in ideas and technologies that does not fit within the existing framework (Chesbrough, 2010).

Different barriers have also been identified by Christensen and Raynor (2003) and Zott et al. (2010); they agree on that leaders eagerly recognize the right BM, and that the BMI is resisted because of conflicts with the current BM. Teece (2010) emphasizes that BMI also can be a competitive advantage if the new BM is separated from the current BM, and that if it is hard for other firms to replicate the BMI. Bocken et al. (2013) states that some approaches to innovation in a BM can contribute to sustainable development, but this is not unified in the BMI literature. Yet, in recent literature there are some exceptions where a couple of authors (Teece, 2010; Chesbrough, 2010; Jørgensen and Pedersen, 2015) have tried to merge and categorize existing examples about sustainable business models in the literature under BMI as an overall theme.

2.3.3 Business Model Innovation for Sustainability

Wells (2013) argues that the mainstream literature on business models neglect the relationship to the environment and to the wider society in which the business model is operated, and according to Girotra and Netessine (2013) there is an increasing need to advance and develop the study of business model innovation in the context of sustainability. And for sustainability, BMI is defined as innovations that create significant positive and/or significantly reduced negative impacts for the environment and/or society, through changes in the way the organisation and its value-network create value, deliver value and capture value (i.e. create economic value) or change their value propositions (Bocken et al., 2013, p. 44). This refers to the fact that sustainability needs to be implemented in the building bricks of the business model, and for firms with existing business models, innovation of the business model are the only way to tackle the pressing challenges of a sustainable future.

In their working paper, Girotra and Netessine (2013) states that systematization of business model innovation is a central part in the creation of a sustainable business model and that a new business model

can contribute to make existing products and technology more environmentally and socially beneficial. For instance, can the lasting impact of many human and business activities be reduced through applying innovative business models that simplifies a more sustainable use of already existing technologies. In their paper, the two authors also clarify the fact that there is a transferability where companies can repurpose innovations from other industries, and that the one thing that often is missing is a unifying approach that allows one to see the common elements and enable the process of translation (Girotra and Netessine, 2013). As a conclusion Girotra and Netessine presents four design tools for development of sustainable business models, and they are; what key decisions are made, when are they made, who makes them and why are they made, and presents 12 approaches for idea triggers to change the four design attributes of each decision.

There has been done some research on business model innovation in the context of sustainability, and Delaney (2014) states that it is essential to explore the role collaboration plays in supporting new business models for sustainability. Through her work she found that for example the London Sustainable Industries Park was cited for its success in integrating the activities of complementary activities with connecting different companies and let them use each other's by-products, let them share energy, services and knowledge, regardless of industry. Through her research, Delaney also found that together with collaboration, customers, consumers, culture and capabilities are key elements (Delaney, 2014). Hall and Wagner (2012) has analyzed the role of innovation and business models for the link between the integration of sustainable management with other corporate functions and the economic and environmental performance of companies, and found a positive correlation. They conclude in their article that for companies are innovation of the business model the most common way to implement sustainable development into their business model.

To see how business model innovation can be used in a sustainability context, the next part of this section will examine the existing literature about sustainable business models.

2.4 The Concept of Sustainable Business Models

Examples of new BM design that works as a guidance for companies to achieve their environmental and sustainable aims is in the literature defined as a sustainable business model (SBM), and will contribute to this part of section two.

Jørgensen and Pedersen (2015) employs a working definition for the sustainable business model as an organizational design where the company's social and environmental effects are an integral part of the company's way of creating, delivering, and capturing value. This implies an understanding that the positive and the negative effects of the company's commercial activities arise as a result of the business model, and that they ought to be dealt with as a part of the design of the business model. Like Osterwalder and Pigneur (2010), Jørgensen and Pedersen (2015, p. 43) also builds their theory on a three-dimensional presentation of business models. These three parts are creating, delivering and capturing value from business opportunities. Jing and Jiang (2013) refers to this concept as the green BM, but it's virtually the same, and sustainable business models is the definition that will be used in this master thesis. Traditionally, the relationship between profitability and responsibility has been understood as a trade-off (Jørgensen and Pedersen, 2015), but will in the following be described as synergic strategy implemented in the BM.

2.4.1 Theoretical Approaches and Definitions

In this part of the conceptual background an overview of approaches and definitions to the sustainable business models will be presented, with the aim to identify the state-of-the-art on the theory of sustainable business models. After examining the field of research, the author found the literature findings within this field to be fragmented in such a wide specter that a comparison of all the theory is hard and to some extent against its purpose. Therefore, there has only been made a partial compilation of the literature in addition to present the main findings.

2.4.2 Approaches to Sustainable Business Models

Some of the literature about sustainable business models describes it as a model that incorporates a triple bottom line approach and consider a wide range of stakeholder interests, including environment and society (Bocken et al., 2013; Beltramello, 2013; Wells, 2013; Jørgensen and Pedersen, 2015; Boons et al. 2012; Stubbs and Cocklin, 2008). These new type of BMs, with a strong focus on sustainability, are currently emerging and include among other things green product and process based models, waste regeneration systems, circular value systems and alternative energy-based systems (Beltramello et al., 2013; Wells, 2013; Bocken, 2014). Jørgensen and Pedersen (2015) adds that these new BMs include ideas based on circular economy, sharing economy and collaborative enterprise. These contributions are ongoing throughout the literature, where they all focus on how the BM can implement low ecological footprints with simultaneously economical profitability and growth (Jørgensen and Pedersen, 2015; Bocken et al., 2013; Boons et al, 2012; Stubbs and Cocklin, 2008).

According to Birkin et al. (2006, 2007) there is a need for sustainable development, and because of this business models are changing to be able to respond to social and environmental changes. Boons et al. (2012) argues that to have a sustainable development, there is need for radical and systematic innovations, and these kind of innovations can be more effectively made and examined when building on the concept of the business model. Both Birkin and Boons argues for the importance of BMs, since this is the link between an individual firm and the larger production and consumption system it is a part of.

Boons and Lüdeke-Freund (2012) finds a trend that much of the research done on sustainable innovation does not include the way in which firms need to combine both value propositions, the organization of downstream and upstream value chain and a financial model in order to bring sustainable innovation to the market, and they are underlining this by proposing examples of requirements that BMs should meet in order to support sustainable innovations. Further, Boons and Lüdeke-Freund points out that the topic of SBMs are a crucial topic that has rarely been addressed in the literature. The authors state that no comparable conceptual notion of sustainable business models exists today, and that this might be a result of the fact that sustainable development does not denote a specific content, but rather a process where ecological, economic and social values are being balances in continuous actions.

Boons et al. (2012) argues that according to the concept of the business model, a company has to combine several elements to be successful; e.g. value propositions, configuration of value, and distribution of costs and benefits. They claim that most firms operate with BMs that are not sustainable, and that to meet the challenges of the future they have to move forward to more sustainable systems of production and consumption. Further, they present the concept of the sustainable business model as a conceptual link between sustainable innovations and economic performance at higher system levels, and how this leads to the discussion of how sustainable innovation links to competitiveness at different systemic levels. Birkin et al. (2007) states that environmental and social impacts are taken into consideration in firms' business models in a much broader way than earlier, and examples of this are the ISO 14031 environmental management standard, the UN Global compact and the Global Reporting Initiative. In their results, the authors present the fact that the need for sustainable development did not arise within the world of business, but rather outside present business conceptions (Birkin et al., 2006, Birkin et al., 2007).

Jørgensen and Pedersen (2015) distinguishes between two main types of SBMs: 1) companies who innovates their BM to make their own operations more sustainable, and 2) companies who creates an innovative BM who contributes with solving sustainability issues that they did not create themselves. The authors claims that the first type focus on BMs innovated by companies who takes responsibility for their own actions that have negative impact on the society and environment. The latter can be companies who builds their BMs in a strategic and operational way, capable for offering profitable products that reduces other company's footprints. These companies might have the profitable outcome as main goal, and the ecological benefit as a bonus that benefits the customer's willingness to pay. As

Jørgensen and Pedersen (2015) identifies; there is a distinction between the self-responsibility and the business opportunity here, but one does not exclude the other, and they might be combined in the SBM. Based on these different main motivations, the companies can build SBMs that integrates social and environmental achievements in a way that will make them both responsible and profitable.

Some authors claims that companies only will be sustainable if their business model is transformed, rather than supplemented by sustainability like social and environmental actions (Stubbs and Cocklin, 2008; Esslinger, 2011). In their article, Stubbs and Cocklin (2008) seeks to develop a sustainable business model where sustainability concepts shape the driving force of the firm and its decision making. Through their analysis they state that firms adopting sustainable business models also must develop internal structural and cultural capabilities to achieve firm-level sustainability and collaborate with key stakeholders to achieve sustainability for the system that the firm is a part of. In his research, Esslinger (2011) also presents that the important green shift requires a change in the way companies work, and in the way they interact and collaborate with their customers. The business models have to be innovated so that customers as well as executives can join on equal footing as competent caretakers of businesses and the world they serve.

Hogevold and Svensson's case study (2012) describes a business sustainability model, and their results points out that business sustainability actions is not only about doing one thing, because it is the total effect of the actions that matters. It is not only the company's own business operations they are referring to when talking about business sustainability, but the whole supply chain. Carbon footprint are becoming a criterion in customers' decision making process across industries, and they state that focusing on the corporate impact of the natural environment can be highly profitable for the company. Hogevold et al. (2014) argues that sustainable business models are being developed and implemented in order to reduce the impact the company have on the environment (eg. carbon footprint). They state that the environmental reasons often are the first driving force for sustainable business models, but that in reality it is economic reasons that encourage companies to become seriously committed to sustainability actions. In addition to Jenkins (2009), they say that corporate reasons involved in planning, implementation and evaluation of SBMs are often initiatives taken by one individual in the organization, which tend to increase the focus of sustainability within the company in the longer term, arguing that sustainability should be a part of every element of the business, and not externalities.

Lueg et al. (2013) found that sustainability in ways of corporate sustainability minimizes the downside risk of the business model, and that sustainable actions affects companies' performance in a positive way through increased goodwill and reputation with stakeholders, and leads to increased competitiveness. They conclude by claiming that because of this, sustainability must be implemented as a part of the business model. Waage et al. (2004) are confronting the arising challenges for companies committed to integrating sustainability concerns into decisions regarding products because they have to consider all the different types of materials and goods. Further, they claim that this can be one of the main reasons companies choose *not* to implement sustainable actions into their business model. Waage et al. highlight the fact that there is no consensus regarding how existing approaches are complementary or distinctive has resulted in confusion about the right pathway forward for companies regarding sustainable development, and concludes by presenting a framework for a better organizing of the assessment field, through putting the elements of sustainability together to describe a pathway for developing sustainable business models.

2.4.3 Sustainable Business Model Design

When linking the theoretical concept of BMI to the practical transformation mechanisms emerging for SBMs, the design of these models becomes crucial.

To expand the scope of business model innovations in practice and research beyond what is done today, business models needs to be designed in new ways. Bocken et al. (2013, 2014) provides an approach towards sustainable business model archetypes, and are presenting eight archetypes of this kind: maximise material and energy efficiency; create value from "waste"; substitute with renewables and

natural processes; deliver functionality rather than ownership; adopt a stewardship role; encourage sufficiency; re-purpose the business for society/environment; and develop scale-up solutions. The reason for these eight approaches are the attempt to linking the theoretical concept of business model innovation to the practical mechanisms of transformation to sustainable development.

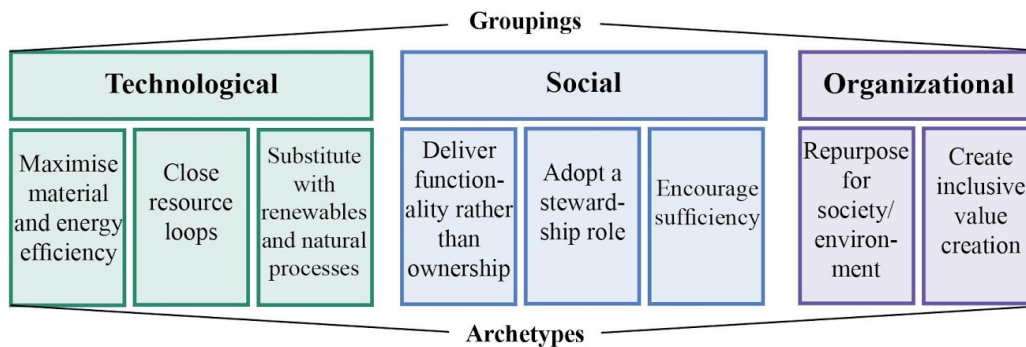


Figure 2: Sustainable Business Model Archetypes. Adapted from Bocken et al. (2013).

Bocken et al. (2013) claim that the SBM archetypes are important in implementing and driving business model innovation for sustainability. They can help attach sustainability into business processes and purposes, and serve as a key driver of competitive advantage. One of the key challenges addressed in this regard is to design a business model in such a way that it enables the firm to capture economic value for itself through delivering social and environmental benefits (Bocken et al., 2013; Schaltegger et al., 2012; Girotra and Netessine, 2013; Esslinger, 2011).

Sustainability itself does not necessarily lead to increased profitability, but sustainable behavior, as a result of the business models, can cause the company to offer new types of value to the customer, attracting new resources or they are able to carry out new value-added activities that they otherwise would not be able to execute (Jørgensen and Pedersen, 2015; Esslinger, 2011; Jolink and Niesten, 2013). Therefore, businesses can create innovations that have the starting point in sustainability, while simultaneously promoting profitability (Waage et al., 2004; Boons et al., 2012).

In his research, Esslinger (2011) points out the importance of understanding the vital role of design when innovating business models. He states that designers have a responsibility to connect and coordinate human needs and dreams with new opportunities and inspirations from science, technology and business in order for products and their usage to be culturally relevant, economically productive, politically beneficial and ecologically sustainable. This is also what Hogevoold and Svensson (2012) found in their case study where they are looking at the total effect of all the sustainability actions implemented in a firm's business model.

According to Girotra and Netessine (2013), one must alter associated design attributes and search for new models to develop novel business models that have lower inefficiencies than traditional models. They state that firms should decompose the business model into key decisions made by the organization. Further, sustainability should be implemented in each of these key decisions in order to design a sustainable business model. This way of reconstructing and innovating the existing business model can, according to Jenkins (2009) and Jolink and Nietsen (2013) lead to sustainable development. To ensure a lasting positive impact of sustainable measures, they must be implemented in the basic values of the company's business model. Both Hogevoold et al. (2014) and Jenkins (2009) found in their research that it is essential with a design of business models that facilitate implementation of sustainable elements without this resulting in too large and unfortunate complications for the company itself.

2.4.4 Sustainable Business Models for Goods-Producing Companies

Lindahl et al. (2013) argues that all ecological and many social sustainability problems are directly or indirectly related to materials and material flows. Their study is based on a literature review and semi-structured interviews with companies and creates an insight into what considerations come into focus

and what types of solutions are revealed when companies apply a strategic sustainability perspective to material management. From the findings of their study they claim that the negative impacts from goods occurs throughout the materials' life-cycles focused on the extraction through transport, production, use and disposal of the materials. They also conclude that by not applying a strategic sustainability perspective to materials management, organizations risk phasing out materials perceived to be unsustainable which, managed differently, could be helpful for sustainable development.

Fet et al. (2014) backs this argument, claiming that sustainability is closely connected to the design and characteristics of the products in addition to how the production technology is managed. To create a practical approach, the authors provides specific examples of this argument. An example they point out is the aluminum-sector. If a company base their aluminum-production on hydropower rather than fossil energy, it adds a lower ecological footprint to the products in addition to increasing the competitive advantage. Further they argue that the focus on the climate challenges results in an increasing demand for trustworthy and transparent information on the products' footprints and the company's overall achievements regarding sustainability. Fet et al. adds the "lean-thinking" within the manufacturing sector as a main principle to remove all unnecessary noise from the value chain, and will create a great starting point for the improving work with sustainable value creation in a business model. Another finding from their article is that a prerequisite for a corporate sustainable development is good tools and methods for companies to measure the footprint in goods-producing companies. They suggest that the existing models and methods used today must be further developed and new models that that can work from plans for future products and manufacturing processes must be defined.

Waage et al. (2004) provides an article developed through collaboration among several environmental, social and sustainability-oriented researchers and practitioners highlighting the need to draw out interconnections between the wide range of current work to integrate environmental and social issues into material product business decisions. In their work they propose an adaption on a framework for organizing the assessment field, including development of exemplary sustainable product characteristics and their inclusion in a "strategic sustainable development" decision-making model and process. They suggest that goods-producing companies should constantly ask questions regarding impacts of products through its lifecycle. These questions should include factors like locations of extraction, production, transportation, manufacturing, sales and disposal of products.

Part II

This part of section two presents a framework of the business model, which is used for the further analysis in section four of this master's thesis.

2.5 The Concept of Business Model Frameworks

According to Lewandowski (2015) there are quite a lot of different conceptual frameworks for business models, where the business models are broken down into various building blocks or components, depending on the researchers or authors of the various framework theories. Linder and Cantrell (2001) addresses this as a problem, because the various components are not business models by themselves, they are just pieces of a complete model. Because business model components range from revenue models and value propositions to organizational structures and arrangements for trading relationships, might each one of them be an important part of a business model, but not the whole thing alone (Linder and Cantrell, 2001).

On the basis of this, there has been carried out various frameworks or structural approaches to the business model. And according to Girotra and Netessine (2013), academics have tried to break down the business model into pieces or building blocks and put them together in systems or frameworks. Examples of different pieces are the profit formula, processes, value propositions and resources (Johnson et al. 2008) and activities (Amit and Zott, 2012), and examples of frameworks or structures are Identifying New Business Opportunities (INBO) (Girotra and Netessine, 2013), The Business Reference Model, The Component Business Model, and the Business Model Canvas, proposing its nine

building blocks (Osterwalder and Pigneur, 2010). It is beyond the purpose of this thesis to go more in depth of the various business model models. And for this master thesis, the business model structure has been defined on the basis of the business model canvas (BMC).

Both the definition of the business model and the use of the business model canvas as a tool for understanding the business model was chosen because of its easy and straightforward practical application, the simplicity of the complexity of the different components, and the well known and global recognition. In the following the BMC is described.

2.5.1 The Business Model Canvas

The business model canvas consists of nine components or building blocks put together in a system created as a *shared language for describing, visualizing, assessing, and changing business models* (Osterwalder and Pigneur, 2010). According to Osterwalder and Pigneur (2010), the business model canvas shows how companies intend to make money through the nine building blocks, covering the four main areas of a firm; customers, offer, infrastructure and financial viability. The nine building blocks of the business model canvas give a holistic overview of the business model of the company, and the nine building blocks are presented in the following in the same order as done by Osterwalder and Pigneur (2010). In addition to a short description of each component, some examples of sustainable elements related to each one are presented. The suggestions of sustainable elements are inspired by the work done by Lewandowski (2015) and Ronæss and Heir (2016).

Customer segment: This first building block is according to Osterwalder and Pigneur (2010) the heart of the business model, because without customers no company can survive in the long run. The customers are whom the company creates value for, and the customer segments define the different groups a company aims to reach and serve (Osterwalder and Pigneur, 2010). They suggest that one should segment the different customers into groups based on e.g. common needs and behaviour, and that a business model should be designed based on a strong understanding of the customers needs (Osterwalder and Pigneur, 2010). Sommer (2012) argues that the perception of customers are too narrow for a sustainable business model, and that such models should be related to multiple stakeholders, e.g. within society or the environment.

Sustainable elements: Directly linked with value propositions. Value proposition design depicts the fit between value proposition and customer segments.

Value proposition: This building block relates to what is described as the value proposition for the customer, meaning the bundle of products and services creating value to customers in a systematic and sustainable manner (Osterwalder and Pigneur, 2010, p.22). It typically involves the ability to offer products or services that are either different due to innovation or value adding, or delivered at a lower cost than competitors, and the VP is often the reason customers turn to one company instead of another (Osterwalder and Pigneur, 2010).

Sustainable elements: Virtual service, incentives for customers in take-back-systems, circular products, product-life extension.

Channels: This building block describes how a company communicates with its customer segment. The communication is based on delivering the company's value propositions. This include communication, sales and distribution channels (Osterwalder and Pigneur, 2010). Delivering the value propositions can be done directly or indirectly, e.g through direct sale or a website.

Sustainable elements: Virtual channels, communicate virtually with customers, online service, take-back systems.

Customer relationships: This building block describes what kind of relationship the company has with each of its customer segments, both regarding the relationship to one customer and to the overall customer experience (Osterwalder and Pigneur, 2010). Customer relationships can vary from personal relationships to automatic relationships. Sommer (2012) states that getting new customers seems to be

more expensive than retaining the company's existing ones. The customer relationships include trust, brand and personalization (Osterwalder and Pigneur, 2010; Sommer, 2012).

Sustainable elements: Production on order, social marketing strategies.

Revenue streams: This building block is about the cash a company generates from each of its customer segment, or in other words the value which the company captures. The different revenue streams linked to various customer segments can have unlike pricing strategies and pricing mechanisms (Osterwalder and Pigneur, 2010), e.g. fixed, differential or market dependent (Sommer, 2012). Sommer (2012) states that the pricing mechanism can have environmental impact due to that subscriptions generate consumption, unlike if the customer has to pay per use.

Sustainable elements: Input-based, performance-based, usage-based.

Key resources: This building block relates to the key resources that are required by a company to deliver the value propositions for the customer. A company's key resources describe the most important assets it requires to make the business model work (Osterwalder and Pigneur, 2010). Different resources are needed for different types of business models. These typically comprise both equipment, financing, people and knowledge (Sommer, 2012)

Sustainable elements: Eco-friendlier materials, regeneration and restoring of natural capital and natural resources, virtualization of materials, retrieved resources, waste-based materials, knowledge about sustainability, certifications, technology, competence.

Key activities: This building block relates to the key activities that the business do in order to deliver the value propositions. In other words, does the key activities describes the most important things a company have to do to make its business model work (Osterwalder and Pigneur, 2010). Such activities are embedded in the firm's operational and administrative systems (Osterwalder and Pigneur, 2010; Sommer, 2012).

Sustainable elements: Change from fossil fuels to renewable energy, waste management, recycling, remanufacturing, product design, technology exchange, reduce use of energy, effective processes, waste reduction, circulation of products, transparency through supply chain, R&D.

Key partnerships: This building block describes a company's network of partners and suppliers which it relies on to make the business model work. In many companies are partnerships becoming more and more important to survive, and companies build partnerships and alliances to reduce risk and optimize their business model (Osterwalder and Pigneur, 2010). Osterwalder and Pigneur points out three main motivations for companies to create partnerships; optimization and economy of scale, reduction of risk and uncertainty and acquisition of resources and activities.

Sustainable elements: Cooperative networks, clusters, different types of collaboration, outsourcing, supporting initiatives, infrastructure, relations, suppliers, sales partners, collaborative R&D.

Cost structure: This building block describes the costs belonging to operate the business model. These costs can be calculated easily after a company has defined its key activities, key resources and key partnerships (Osterwalder and Pigneur, 2010).

Sustainable elements: Evaluation criteria, guidelines to account the costs of material flow.

These building blocks are put together in a system like figure 3 shows.

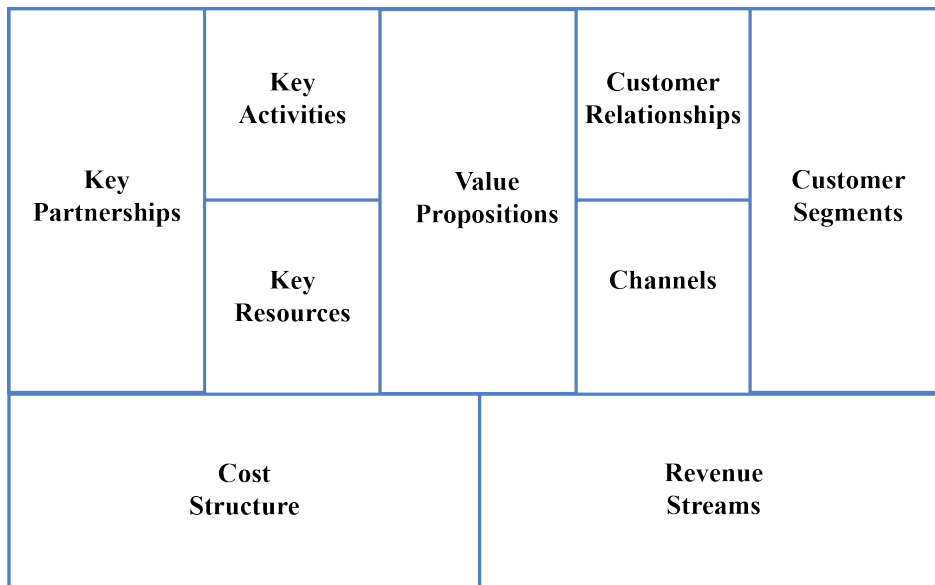


Figure 3: The Business Model Canvas (BMC).

Linking the business model canvas to the chosen definition of the business model, you can say that a firm creates value through its value propositions, key activities, key resources and key partners, that a firm delivers value through its customer segments, channels and customer relationships, and that a firm captures value through its cost structure and revenue streams. This is summarized in figure 4 below.

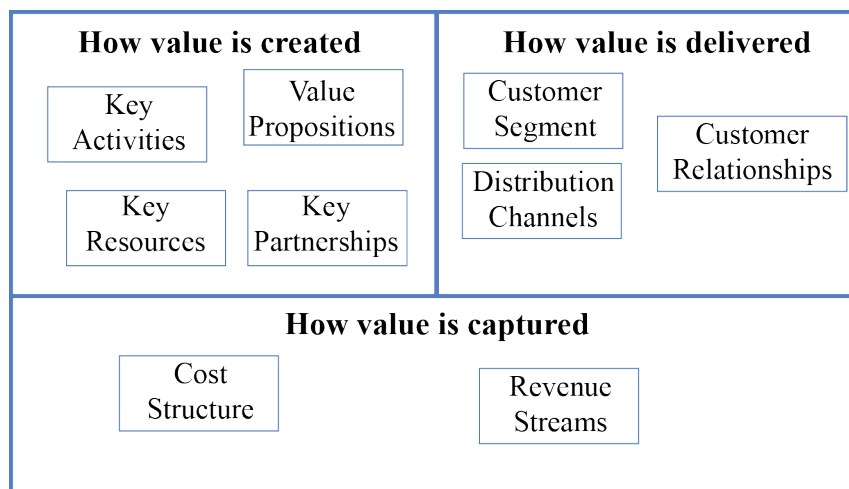


Figure 4: The relationship between the definition of a BM and the nine building blocks.

3. Methodology

3.1 Introduction

This section describes the chosen methodology for the work with this master's thesis, and entails how information was collected and analyzed with the overall objective of answering the selected research questions and thereby the purpose of this thesis. The first part of this section describes the reason for choosing a qualitative research approach. The second part elaborates on the actual research design. The third part describes how the data was obtained, and last part of this section discusses the limitations for the chosen methodology.

As presented in the first part of this master's thesis, this paper is successive to a preliminary literature review, a project thesis, which was conducted during the autumn of 2015 (Ronæss and Heir, 2016). The project thesis scrutinized the topics of business models, business model innovation and sustainable business models, in addition to some other fields of research. The author concluded after writing the project thesis that particularly the field of sustainable business models was fragmented, incomprehensive, compiled and relatively new. This was therefore chosen as the main field for a deeper and more careful research in this master's thesis.

3.2 Qualitative vs. Quantitative Research

According to Flick (2015) qualitative research is a method which integrates small numbers of cases according to their relevance, where the aim is to get a detailed description of a situation. He states that this method is often used as to discover new aspects of a situation and to develop new theory from the findings. Flick (2015) also claims that this type of data collection might be more open than for qualitative research, so that the participants can help create a more comprehensive picture. Quantitative research, on the other hand, is according to Flick (2015) often used when the goal is to study, in order to get an overview of a phenomenon. He also states that quantitative research is more aligned with numbers, and that the data collection is designed in a standardized way (Flick, 2015). Yin presents the method to be particularly of use when the aim of the research is to identify inequality, correlations, and random factors between variables (Yin, 2009).

Due to the fact that the intention and overall purpose of this master's thesis is to increase the knowledge about how business can contribute to sustainable development, a qualitative research approach seemed like the most reasonable method. It was assumed in advance that this is something that varies among the selected companies, and the purpose is as Flick (2015) addresses, to get a detailed description of a situation, in this case a description for the different situations for the selected case companies.

3.3 Research Design

Uwe Flick describes the research design as a systematic plan for a research project (Flick, 2015, p. 270). In other words, one can argue that the research design is a framework for how the information is conducted. However, according to Yin (2009) it is important to remember that the research design is more than a plan for the work to be done; part of the objective designing the research is to avoid situations where the collected data fails to address the given research question and the purpose of the study (Yin, 2009).

In their book, Bryman and Bell (2011) present six variations of research designs: Experimental design, cross-sectional or social survey design, longitudinal design, case study design, comparative design and mixed-methods design. For this master's thesis the mixed-method design is chosen, which quite recently has come to be an increasingly accepted approach to conducting business research (Bryman and Bell, 2011).

3.3.1 Choice of Research Design

This master's thesis applies a mixed-method case study design including six case studies. According to Bryman and Bell (2011) multiple case studies are considered a comparative design when the aim is to compare the included cases. They state that utilizing multiple case studies allows you to compare and contrast the findings, hence making it easier to spot the common and unique traits among the case studies (Bryman and Bell, 2011).

According to Yin (2009), one should choose the case study approach when questions of why, how and when are present, and when the researcher possess little or no control of the situations. The case study design is proposed to be a highly popular and widely applied research design in business research, and the case can according to Bryman and Bell (2011) be either a single organization, a single location, a person or a single event. In this master's thesis, the cases presented are four Norwegian goods-producing companies, one Swedish goods-producing company and one Norwegian company which is both a goods-producing company and a service provider.

3.3.2 Choice of Case Companies

For the evaluation and selection of the case companies, both the research project SISVI at NTNU and the sustainability consulting firm Pure Consulting have provided assistance and made suggestions and proposals of various relevant companies. Initially, the author only wished to look at goods-producing companies for the case studies. This approach was based on theoretical findings in the project thesis (Ronæss and Heir, 2016), in which the researchers Lindahl et al. (2013) and Fet et al. (2014) argue that all ecological and many social sustainability problems are directly or indirectly related to materials and material flows, and that sustainability is closely connected to the design and characteristics of products, in addition to how the production technology is managed. However, besides the goods-producing companies, the author decided to also include one company which is both a goods-producing company and an industry service provider. This was done in order to shed light on the other side of the industry, hence offering a different perspective as well.

The research project SISVI at NTNU aims to provide Norwegian industrial firms with four crucial building blocks which are eligible for utilization whilst developing their own unique competitive strategy. Environmental and green aspects as drivers of innovation are emphasized. The purpose of the SISVI project is to develop knowledge which strengthens the industry's long term competitive capabilities in a way that is consistent with the concept of shared value. The author's co-supervisor, Annik Magerholm Fet is the project manager, and has helped recommend companies for this thesis. Furthermore, she also put the author in touch with people whom she considered most relevant for being interviewed in the respective case companies. As a result, the companies chosen from the SISVI project are Plasto, Wonderland and Hexagon Ragasco.

The sustainability consulting firm Pure Consulting has been the source of the other three case companies in this master's thesis. Nina Scheffe and Kia Klavenes have been of help by recommending Norsk Gjenvinning and IKEA. Through contact with Norsk Gjenvinning, the author was further recommended one of the companies in the Eyde cluster, the Elkem Group. It was decided to utilize these six companies as the unit of analysis in the further research; a presentation of the case companies is given below.

3.3.3 Company Presentations

Plasto is a company which creates, designs and produces plastic products. They have previously delivered a lot of different products varying from kitchen equipment, food packaging, toys and pens, to automotive components, electronics and video telephones. They have had a focus on the oil and gas industry for many years; however today their main focus is on the maritime sector, and plans are made as to enter the sports and health industry as well.

The interviewee is employed at the top level of the company. The person is Chairman of the board of four different companies and organizations, and is also the deputy for one company and board member of a faculty at one of the Norwegian universities. The person has extensive experience with R&D based innovation in the field of thermoplastic, design, processing, recycling, automation and mass production. By looking at the background of this interviewee it becomes clear that this person is indeed an appropriate candidate for the conduction of this case study.

Wonderland produces beds and mattresses for furniture dealers in Scandinavia. The range includes box mattresses, continental mattresses and adjustable beds. In addition, they supply accessories such as headboards, bedside tables and pallets. Wonderland's head office is located in Åndalsnes.

The interviewee is employed at the top level of the company, and has extensive experience from the Norwegian oil and gas industry within management, business development, consulting and engineering. This person is Chairman of the board of three different companies and organizations, and is also a board member of three other companies and organizations. The interviewee is because of this thought to be a very appropriate object for this case study.

Hexagon Ragasco is a subsidiary of the Hexagon Composites Group and is the leading manufacturer of composite liquefied petroleum gas (LPG) cylinders. The company is committed to quality, safety and innovative solutions that add value to their customers and preserve the environment. Hexagon Ragasco's vision: "Hexagon Ragasco is the global leader worldwide in composite LPG cylinders".

The interviewee is not employed directly in the company, but holds a position in a close cooperation company as a senior advisor for business development. The interviewee has been in the Raufoss system since the early 90s, and has followed Hexagon Ragasco on the road from idea to a well established company. The person is working with Hexagon Ragasco in his everyday work life, and has been involved in many of Hexagons projects with sustainability perspectives. The interviewee has a long experience with R&D, product development and as business manager, and is with this background considered a very appropriate interview person for this case study.

Elkem is one of the world's leading companies for environmentally responsible production of materials. Its principal products are silicon, silicones, Ferro silicon, foundry alloys, carbon materials and micro silica. The company consists of four business areas: Elkem Silicon Materials, Silicones/Bluestar Silicones International, Elkem Carbon and Elkem Foundry Products.

Two interviews have been conducted for the case study on the Elkem Group. In this part of the master's thesis, the two interviews are merged with the rest of the information about the company. The first interviewee is employed as a technical manager in one of the divisions, and has great responsibility and experience within the fields of energy efficiency, energy management, and innovative sustainability projects. The other interviewee is a director in one of the divisions, and responsible for innovations and new initiatives in the company. The person has extensive experience with R&D, and has been with the company for almost thirty years. With their background, they were thought to be suitable interview objects for this case study.

IKEA is a furniture creating company offering a wide range of well-designed, functional home furniture. They aim to produce and sell their products at a price so low that "everyone" will be able to afford them. IKEA's vision is: "To create a better everyday life for the many people".

The interviewee is employed up high at the company. The interviewee has worked within the company for many years, and has had the responsibility for the company's sustainability projects. The interviewee has extensive experience with waste management projects, with closed loop projects. Today the person is working with circular economy within IKEA. The interviewee is with this background meant to be a very appropriate interview person for this case study.

Norsk Gjenvinning is to the present date Norway's largest supplier of recycling- and environmental services. The company has the ambition to be the best actor in the industry in terms of sustainability; in 2015 Norsk Gjenvinning strengthened their position within sustainable development.

The interviewee is employed at the top level of the company. This person works with business development within strategy and sustainability. The interviewee has great experience from leading company-wide innovations and strategic projects focusing on a transition to a circular economy. The interviewee has extensive experience as an advisor for the company's customers in terms of sustainability and circular economy. Working with evaluating and managing innovation processes and partnerships strategies within both academia and research institutions, this person is considered a very appropriate candidate for this case study.

3.4 Data Collection

According to Bryman and Bell (2011, p. 41), a research method is simply a technique for collecting data. They exemplify by saying that a research method might include self-completion questionnaires, structured interviews and observation of participants. A research method is mainly chosen after the research design, and is a description for how the data is going to be collected (Bryman and Bell, 2011). In addition to the three methods mentioned above by Bryman and Bell (2011), Yin (2009) presents the following four methods for providing data: Documentation, archival records, direct observation and physical artefacts. For this thesis, the methods of documentation, interviews and self-completion questionnaires are chosen for data collection.

3.4.1 Interviews

According to Yin (2009), an interview is one of the most important sources for information regarding case studies, and he points out the following three types of case study interviews: In-depth interviews, focused interviews and surveys. Bryman and Bell (2011) also present three more types of interviews, namely focus groups, structured interviews and semi-structured interviews. They highlight that all manners of information, e.g. behavior, attitude, norms, beliefs and values are important to elicit when conducting a business research interview.

For this master's thesis, the semi-structured version is chosen for the interviews. When describing the semi-structured interview, Bryman and Bell (2011) refer to a context where the interviewer has a series of questions that are in the general form of an interview schedule, more like topics, but is able to vary the sequence of the questions for the interviewee to answer more freely. They also explain that the interviewer in this case usually has some latitude to ask further questions in response to what are seen as significant replies (Bryman and Bell, 2011, p. 205).

The interviews for this master's thesis were conducted in collaboration with the author's co-author of the project work and at the early stage co-author of this thesis. Together they developed a general interview guide as a part of the preparations for the interviews. The interviews were conducted by telephone in order to save expenses related to both time and money. During the actual interview, the co-author led the conversations, while the author simultaneously transcribed the entire conversation, word for word. To accomplish this, the interviewee informed that the write-down would be done simultaneously so that the conversation could be kept calm and slow-paced. Every interview lasted for about a little more than one hour.

The interviews were conducted by telephone, a method which can have several advantages according to Bryman and Bell (2011). They present some of these advantages to be cost- and time- saving due to expenses regarding travelling, and the fact that it might be quicker to administer. Additionally, a perk is also that the interviewee is not affected by the characteristics of the interviewer.

3.4.2 Documentation

According to Yin (2009), documentation is one of the methods presented for collecting data. He states that documentary information is likely to be relevant for every case study topic, except for studies of preliterate societies. Yin says that documentation as a type of information can take on many forms and should be the object of explicit data collection plans (Yin, 2009, p.101). He further states that for case studies, use of documentation should be to corroborate and augment evidence from other sources (Yin, 2009).

In this master's thesis, the use of documentation has been limited to administrative documents, e-mail correspondence and internet-based information. With regards to IKEA, the author has received their "People and Planet Positive - IKEA Group Sustainability Strategy" report and their "2015 Sustainability Report". For Norsk Gjenvinning the author received their "Bærekraftsrapport 2015" and was referred to specific pages in order to retrieve more comprehensive and relevant information. For Hexagon Ragasco, the author received the reports "Hexagon Ragasco Improve Smartness" and "A better pattern for your business". For Plasto, Wonderland and Elkem, necessary information was provided via their respective web pages. All the companies, except IKEA and Norsk Gjenvinning, also answered some short "personals" about their company, regarding locations, M&A's, number of employees, divisions, operating revenue e.g. For IKEA and Norsk Gjenvinning, this information was accessible at their web pages.

3.5 Data Analysis

Bryman and Bell (2011) explain that one of the main difficulties with qualitative research is that it often generates a huge, cumbersome amount of data from interview transcripts and documents. Additionally, they state that there are few well-established and widely accepted rules for the analysis of qualitative data (Bryman and Bell, 2011, p.571). They further argue that one of the most common ways of approaching qualitative data analysis is through sorting out the conducted information to what they call a thematic analysis. According to Thomas and Harden (2008), a thematic analysis is a method often applied to analyse data in primary qualitative research, like this master's thesis. They state that the use of this type of analysis can bring together and integrate the findings of multiple qualitative case studies (Thomas and Harden, 2008).

For this master's thesis, the data analysis part consists of four steps. At first the transcribed interviews were proofread and corrected, and after that the author compiled the various parts of the interviews under relevant and overarching themes. Through this process, the transcribed interviews were synthesised together with data from relevant documentation into a descriptive case study. Then the various sustainable elements were italicized and adapted to the most relevant building blocks of the business model canvas. Thus, the business model canvas was used as a theoretical framework of analysis.

3.6 Research Quality

According to Bryman and Bell (2011) there are three overall important criteria for evaluation of research, and these are reliability, replicability and validity. Reliability and replicability are basically only a concern regarding quantitative research, meaning that for this part of the section only the validity of the study will be addressed. Bryman and Bell (2011) refer to validity as the most important criterion for evaluation, and consider it to concern the integrity of conclusions that are drawn from the conducted research. Leung (2015) refers to validity in qualitative research as "appropriateness" of the tools, processes, and data used in the research. Validity includes among other things whether the research question is valid for the desired outcome, the choice of methodology is appropriate for answering the research question, the research design is valid for the methodology, the sampling and data analysis is appropriate, and finally if the results and conclusions are valid for the sample and context (Leung, 2015). Bryman and Bell (2011) refer to Lincoln and Guba's (1985, as cited in Bryman and Bell, 2011) proposal

of four ways to validate qualitative research: Credibility, transferability, dependability and confirmability. In addition, research ethics concerning this thesis and limitations to the research design are included.

3.6.1 Credibility

Credibility is, according to Bryman and Bell (2011) about internal validity. This means that for the study to have high credibility it needs to be believable to critical readers, and has to be approved by the research objectives, e.g. the interviewees in the study. For this master's thesis, the author believes a degree of credibility has been ensured through that the transcription was done while the interviews took place, and through internal peer debriefing of the interviews.

3.6.2 Transferability

According to Bryman and Bell (2011), transferability is about external validity. This means that for the study to have a high transferability, the findings in one context have to be applicable to other contexts and settings. The fact that the case companies in this master's thesis have the common denominator that they are goods-producing companies, but are of unequal magnitude and operate in different markets, can increase the transferability to other goods-producing companies in different markets. In addition, the importance of the study was confirmed by the one industry case company, which has worked with these issues with customer companies for many years. The author is nevertheless aware of the weakness of the transferability because there are so few companies included in the research.

3.6.3 Dependability

According to Bryman and Bell (2011), dependability is about parallel reliability. This means that for the study to have a high dependability, there must be stability and consistency of the process over time. For this master's thesis, to increase the dependability, the logic used for selecting the design, method and case companies for the research are clearly presented in this section of the thesis. By providing a clear overview of the research process, the author believes that a degree of dependability has been reached. To further strengthen this overview, the interview guide is attached in Appendix A. The transcripts of the interviews are not attached as they are written in Norwegian, and because the interviewees are anonymized.

3.6.4 Confirmability

According to Bryman and Bell (2011), confirmability is about parallel objectivity. This means that for the study to have a high confirmability, the research results must be supported and confirmed by others. To increase the confirmability of this master's thesis, the results have been presented and discussed with the representatives from the firm Pure Consulting regularly throughout the process, and the structure of the study and the results clearly separate the respective statements of the interviewees and the author.

3.6.5 Research ethics

According to Bryman and Bell (2011), research ethics is about ethical treatment throughout the course of conducting research. They state that participants in the study should be treated ethically. To ensure ethical treatment of the participants included in this master's thesis, it has been important to ensure an open and direct dialogue between the interviewer and interviewees. The interviewees were informed in advance that they could choose to remain anonymous in the thesis, and they were closely informed about how the interview process would take place. The participants have also been offered to receive the thesis after its completion in order to utilize the results within their own companies.

3.6.6 Other Limitations

Regarding the choice of semi-structured interviews as the main method for conducting information in this master's thesis, there are some limitations. Interviews as a research method has a certain limitation partly because the author puts great credence to a stranger's individual thoughts, opinions and memory. Because there are only one or two people being interviewed from each company, it is difficult to indicate

if the person's opinions reflect the company in its entirety, and it is difficult to say to what extent the answers are influenced by other factors such as the current mood, energy level, position in the company etc.

With regards to the case studies, only six interviews have been conducted in total. Even though the interviews reveal a great amount of empirical information, it should be taken into consideration that this is a small selection of relevant companies. Furthermore, in order to enhance the thesis' importance and validity, a few more companies should have been included in the case studies.

Moreover, the time span of the interviews could also be viewed as a limitation to this thesis. All interviews lasted for a little over an hour, and the author noticed that this limited time affected the answers as not enough deep and thorough reflections were obtained to each of the questions in the interview guide. Due to the issue of time, two of the interviews ended before all the questions were asked. Still, the author believes that enough information has been compiled for each company; this is based on the available and received documentation.

The author has not been much critical of who has been interviewed in the various companies. Due to the fact that these specific interviewees were recommended to the author, she is under the impression that they were the ones most suitable to provide the relevant knowledge regarding the main issue of the thesis. Also, the author felt lucky just to have the opportunity to even get an interview with the specific company.

The phone interviews were done without the use of a recorder. The reason for this was that we were two people conducting the interviews over the phone, where one asked the questions and the other one focused on transcribing simultaneously as the interview took place. It can be argued that this method for conducting the interviews worked out well, but it did happen once or twice for each interview that the writer dropped out and lost some information because the conversation went too fast, or because it was difficult to understand what was being said. Consequently, the method is deemed as successful, but it is a weakness that one small part of one of the interviews was not included in the transcript.

The thesis also has some limitations regarding the resources associated with collection of data. Because of expenses and time related to traveling, this was given a lower priority in favor of telephone interviews and e-mail correspondence. Face-to-face interviews would probably have provided a different outcome to the interviews. However, the author still thinks that the actual outcome of the interviews are sufficient enough as to respond to the objective of this master's thesis.

Because the research areas of sustainable development and sustainable business models are so young, it might be a limitation to this research that the definitions and relationships to the various words and phrases are not consistent and recognized alike by the author and interviewees. Consequently, it is not necessarily a guarantee that the answers in interviews contribute to the objective of the thesis. Still, the author has made an attempt as to clarify the choice of words and definitions during the interviews and in e-mail correspondences. The author is therefore of the opinion that the conversations and communications have generated the same meaning for both parties.

Taking these limitations into consideration, the author still believes that this master's thesis can be of value to the relevant industry practitioners, to the academic field, and also serve as an inspiration for further research on the development of sustainable business models.

4. Empirical Findings

4.1 Introduction

This section presents both relevant background information of the business cases that are chosen for the research part of this master's thesis, and the empirical findings from the case studies. Each company is presented in separate chapters, and are divided into two sections: First a short and brief strategic history of the company, and second the empirical findings from the case studies.

The goal of this section is to reveal the various companies' understanding and use of the concept of business models in a sustainability context, and to uncover the relation between sustainable elements and their business model.

The empirical findings from the six companies have been sorted into three main topics, which are:

- The company's business model in a sustainable context
- Sustainability at the company's general level
- Sustainability within the company

4.2 Plasto

Plasto is one of the Norwegian case companies introduced to the author through the SISVI project at NTNU.

4.2.1 Short history

Plasto AS is a family owned company, managed by Lars Støbakk Stenerud. Plasto is located in Åndalsnes, Norway and has its headquarters and production facilities at the same location. Since its establishment in 1955, the company has developed within the thermoplastics industry and today the main focus is on product development within injection molding of thermoplastics. Plasto currently has 40 employees; this number has been stable during the last couple of years. They are organized in the following divisions: Administration, research and development (R&D), production, automation, maintenance, warehouse and workshop. Plasto has remained one unit since its establishment and has no history with joint ventures, nor M&A. Plasto's total operating revenue was 109,7 MNOK in 2014 with a downward shift to 70 MNOK in 2015.

4.2.2 Empirical Findings

The business model in a sustainable context

The company has since its establishment focused on sustainable processes, and when they built their first factory in Åndalsnes in 1969, they made sure it was quality and environment certified. Plasto's business model is a result of market analysis, always focusing on what they can deliver. This mindset has been a vehicle for changes in Plasto's business model, where they have transitioned from providing a range of products to only focusing on the aquaculture segment. Their strategy is to keep their existing technologies and rotate their business towards possibilities in the market. When it comes to strategic changes and decisions, it is the management that decides the changes to be integrated, but the employees have a strong influence in the strategy processes; ¼ of all employees are attending strategy process meetings. Today sustainability is integrated in the company's DNA, both in strategies and in their business model. Even though Plasto does not have an own division for sustainability, all employees work indirectly with this area, whereas three employees work directly with the SISVI project at NTNU. Plasto is always trying to put a price on every element of integration, and it is easier to motivate the employees and the management if they can save or make money. The company has been eco-certified since the middle of the 90s, and they are working continuously as to improve their sustainability efforts further. Plasto is mainly producing on request from and in collaboration with their customers.

We define sustainability in more than just the green perspective, including financial terms. The hope is that we find that long-term sustainability of the business side is well linked with sustainability from an environmental perspective and in terms of social responsibility regarding jobs and suppliers. We hope for a future where manufacturers need to take greater responsibility for the entire lifecycle of their products (Interviewee, Plasto), (author's translation).

As supported in the statement above, Plasto is addressing its focus on all the three dimensions of sustainability regarding their business model. The company has already implemented social responsibility related to education and its general participation in the local society. Plasto is a firm open for visits from children from kindergartens and secondary schools. They are also hosting an “entrepreneur camp”, and the vocational students in Åndalsnes has their internship and education at Plasto. Together with three other firms, they have contributed to build homes for the vocational students, where they can establish themselves after the internship.

As a company, Plasto is aware that the sustainability issue is a fact, and that for the future, the company needs to change their business model to remain in their position and to gain an even bigger competitive advantage. They have already experienced the synergic effect of integration of sustainability through improved profitability, supported in the statement below:

We have a perception that there are few that really knows what sustainable development is all about and have sufficient knowledge about it. The sustainability issue is demanding, and for the management to have an impact, our actions have to have an economic gain as well. And we can see through the processes we have that traditional sustainability and economics goes hand in hand, meaning there is a synergic effect between the two (Interviewee, Plasto), (author's translation).

Plasto wants to change the environment and the society they are a part of through integrating sustainability in their business model, and they know this will take a lot of time. The company is well aware that even after you have started, it might take a long time before they see any effect of what they are doing. Plasto wishes to be prepared in the best possible manner to tackle the challenges of the future, and they acknowledge the belief that those acting early could create a competitive advantage.

Sustainability at the company's general level

At Plasto they have included sustainable elements on the basis of a wide range of perspectives. This because the company is aware that they have a responsibility for both society and the environment, and because they want to be resource effective as a company. They aim to create a positive sustainable image, and believe that a local footprint is the same as a global footprint. However, sustainable elements are also included due to reasonable economic effect for the company.

Transparency throughout the supply chain and dependability on materiality origin is very important for Plasto. They have a great overview of the material transparency because their suppliers are offering tracking down to the batch level of the materials, including human rights, processing, HSE etc. These sustainable efforts are among others very important for their customer relationships, hence creating an advantage for the company.

With regards to R&D, Plasto is transferring their research results into innovative plastic products for several different business segments, primarily within O&G, but for the marine and aquaculture industry as well. Plasto is focusing on how the products are going to be used as to optimize the characteristics of the product, regarding everything from design and functionality to impact on the environment and how it should be recycled. The company has computerized production lines with robots that ensures a smooth and good quality of all products. The company has developed its own R&D department in order to conduct research on technology improvements. Their view on the importance of R&D are confirmed in the following statements:

R&D gives us knowledge enabling us to develop new products consisting of reused materials such as used aquaculture equipment that have been left out for several years. It is important to come up with

solutions that are sustainable both environmentally and economically. We envisage that requirements and regulations can come in the future, and perhaps it could be a business model to be aggressive and proactive within R&D so that we can make money on it before the regulations are forcing us to change (Interviewee, Plasto), (author's translation).

Effective robotization of the production has contributed to that a significant part of the production is brought home from abroad to Åndalsnes (Interviewee, Plasto), (author's translation).

Plastos' competitors are only using recycled materials when it is demanded or if it is much cheaper than the alternative. This is an unfortunate trend in the industry. However, recycled materials are more often used when the products do not have specs that are complicated to fulfill, and when the safety requirements of the products are not as high. For Plasto's production of elements to the aquaculture industry, there are huge possibilities for reuse of more recycled materials, and this will be profitable both economically for the company, and for the environment. For Plasto as a company it is demanding to quantify the recycled material because of its inconsistent quality and certification requirements. A huge challenge for Plasto is that their customers have to approve the use of recycled materials because they own the products.

In the long run, Plasto wants to be able to have its own closed loops, and not just be part of a large system in which they deliver their waste to an external station. The company wants to have a closed loop to their customers and to their market segment, and consequently gain control of the material quality and be able to recycle with high quality for the materials, and thus be able to reuse as much as possible.

Sustainability within the company

One of Plasto's main focus points regarding the environmental dimension of sustainability, is about recycling and reuse of materials and resources at their locations. They are aware that the economic gain of this cycle can be outweighed by costs related to transport of materials from where they are collected to their recycling facilities, and then back to where they should be used. Still, this is one of their main focus areas regarding sustainability.

In addition to the focus on waste management, some of their current sustainability elements of improvement are energy use, type of energy sources and use of water. This concerns less use of energy, change from fossil fuels to renewable energy and less use of resources in general. The company has for instance changed their use of water in their production systems, and now they are recycling the production heat and use it for the heating of their facilities. Plasto is also working on using its technology in new and smarter ways, with smaller machines and faster molding, which will hopefully result in less use of energy. In addition, the company has incorporated filters in its machines, resulting in much lower use of oil, and they are not shifting oil based on time intervals, but based on when it is needed. This has reduced their use of oil significantly.

Plasto's main challenge regarding integration of sustainability is effective use of their plastic and electricity resources, and to reduce the amount of plastic scrap. The company is mostly using thermoplastic, meaning that what is superfluous in production can be ground up and reused, optimizing the process and the use of materials. Plasto has had some pilot projects regarding the reuse of other types of plastic waste in their production processes, but these projects have not been successful. However, the reuse of their own plastic scrap is proved to work out well, and has resulted in less use of new materials in their processes.

4.3 Wonderland

Wonderland is one of the Norwegian case companies in the master's thesis, which was introduced to the author through the SISVI project at NTNU.

4.3.1 Short history of the company

Wonderland AS was established as a spin-off from the a foam-producing company established in 1969 in Åndalsnes, Norway. Jon Daniel Nesje is the general manager, and Wonderland's headquarter is located in Åndalsnes, where their production facilities are located as well. The company is a multinational company represented in Norway, Denmark, Sweden, Germany, Netherlands and Belgium. Wonderland AS has 100 employees, and they are organized in the following divisions: Sales and marketing, innovation, production, logistics, finance and administration. The company has no separate sustainability division, but 2-3 people are working part time with sustainability. The company's operating revenue was 290 MNOK in both 2014 and 2015.

4.3.2 Empirical Findings

The business model in a sustainable context

Wonderland's business model has changed as a consequence of the company transitioning from a raw material producer and supplier to a furniture company delivering finished products for distribution. Their main product is beds, and the company has an equal focus on sustainability, the use of renewable resources and proper material selection as they have on sleeping comfort and sleeping climate. The company wants their beds to be sustainable quality products produced in Norway.

Wonderland as a company is working with sustainability, but they find it hard to measure the effect of sustainability related efforts, and at the moment, sustainability is mostly just a cultural factor within the company. Still, they are convinced that integration of sustainability will change the bottom line eventually. Wonderland does not have a holistic focus on circularity and sustainability, but they are still working to integrate some elements of sustainability. The willingness to change is the main reason for Wonderland joining the SISVI project. The concept of the triple bottom line and the three dimensions of sustainability is a relatively new concept for Wonderland. Still, they do admit that the company is aware that in order to be part of the international market, they have to integrate sustainability in the company's production processes. Viewed in a Norwegian context this might be a competitive advantage due to the fact that standards are currently low.

Wonderland wants to stay ahead in the competitive landscape by developing new business models, and not wait for politicians to take the lead and force them to change. Wonderland wants to act proactively, because they think it is the right thing to do and because it may also generate economical benefits as well.

The main challenge for the company with regards to sustainability is that their products are multi-material based. This means that they are composed of various materials, which poses difficulties regarding recycling and the re usage of the materials. Their goal is to design and construct the products for deconstruction, and create supply chains for recycling and reuse. Wonderland's focus on recycling is confirmed in the following statement:

We want to be able to recycle used materials, and last year Wonderland had over 40 tonnage of waste. It is enormous amounts of textiles and waste from the industry. It is challenging to handle this waste because it consists of cumbersome materials, which are difficult to get apart. The waste are not organic, and can therefore not be deposited, but still we think it is a resource in some way (Interviewee, Wonderland), (author's translation).

For the company, incorporation of sustainability can compromise for economical profitability, but they see it as an investment for the long term. For Wonderland, sustainability has to go via strategy to be reformulated into the business model in order to penetrate all levels of the company.

Sustainability at the company's general level

When it comes to other elements of sustainability, Wonderland is conscious of the choice of materials, both regarding transparency, tracking and eco-certification. Regarding transparency, Wonderland wants to secure human rights, HSE and know where their materials come from. The company is concerned

with the fact that the products they are using in their beds are sustainably produced, both socially and environmentally. But it is a challenge for Wonderland that not all of their suppliers have transparent material processes. They do however have good control of some components, like the latex in their bed padding and the mattresses. This latex is manufactured to the requirements of EcoTex100 standard, and all frames and wooden components are made by the current ISO standard, and are delivered to Wonderland by one of their local partners, which secures short transportation distances. The company's focus on sustainable materials, e.g. latex is supported in the following:

We are conscious about the choice of materials for our products. This concerns both eco-certification and tracking of materials. For instance, latex can be produced in different ways, and we are conscious that it is produced in a sustainable way, both socially and environmentally (Interviewee, Wonderland), (author's translation).

With regards to requirements of material performance, it can be a challenge for Wonderland when it comes to usage of recycled materials. This is due to the fact that the material must meet certain safety requirements, e.g. for fire. Regarding other sustainability efforts, Wonderland employs a system for donation of b-products and returned items. These furniture are donated to an orphanage in East Europe, which shows that Wonderland is taking on responsibility for the social aspect. In addition to this, Wonderland is a huge contributor to local cultural and sporting activities in Åndalsnes.

Wonderland wants to create new supply chains regarding recycling and reuse of waste, and the company believes that there should be some political forces facilitating the process. For Wonderland, the Enova energy arrangement is a positive incentive regarding processes of changing their energy sources etc., but the company believes that the most important factor of all is sharing of knowledge.

In Wonderland's industry, sustainability and sustainable development is an increasingly hot topic, but unfortunately this is not the case with regards to their distribution channels. For the companies selling Wonderland's products, the levels of awareness are terribly low. This applies to all aspects of sustainability. Nevertheless, it is a higher awareness throughout Wonderland's supply chain, and the company is importing materials from countries and industry in which expectations regarding sustainability exceed those in Norway.

Sustainability within the company

All materials in the beds produced by Wonderland are approved by the standards in one or more eco-certificates. The utilization of such eco-friendly materials is to be found in the textile of Wonderland's beds. They are produced with EcoTex-branded raw materials; additionally, no chemicals are added during the production process.

Examples of the use of eco-friendly materials are the textile in Wonderland's beds which are produced with EcoTex-branded raw materials, and in addition, it is not added any chemicals during the production process.

At the moment, Wonderland has not established reuse of products or materials in their business model, but they still think it's important to recycle based on their value evaluation. Wonderland has a large amount of waste, and they wish to develop a system for handling the waste, and for reuse of materials. But for the moment it is really demanding to handle this, because a lot of their waste consists of cumbersome fusions of different materials. Wonderland still think that the waste can be a resource in some way, they just don't know which yet. They have, however, started projects for reducing the amount of waste from their production.

Wonderland believes that it can be a competitive advantage to have a thoughtful philosophy throughout the manufacturing, logistics and supply chain regarding reuse and recycling, and that this can open up for new and sustainable business models. Regarding recycling and reuse of products and materials, one of Wonderland's plans forward is to arrange a take-back system for products, but they are not sure how to handle the huge amount of mattresses yet.

4.4 Hexagon Ragasco

Hexagon Ragasco is one of the Norwegian case companies in the master's thesis, which was introduced to the author through the SISVI project at NTNU.

4.4.1 Short history of the company

Hexagon Ragasco was established in 1997 by Skjalg Sylte Stavheim, who still holds the position as general manager of the company. Their production facility is located in Raufoss Industry park where the headquarter for Hexagon Ragasco also is, while the headquarter for the Hexagon Composites Group is located in Ålesund. The company is a multinational firm operating only in Norway, but they sell their products worldwide. The Hexagon Composite Group have over 500 employees, of whom 119 are working in Hexagon Ragasco at Raufoss. Of all the employees everyone is working with sustainability because it is a part of the company's main values and work ethics. Hexagon Ragasco's operating revenue was 553 MNOK in 2014, and their numbers for 2015 was not ready when the interview took place. Today the company has an export rate of 95% with over 10 million units in use worldwide, and the cylinders are approved and certificated in over 70 countries globally.

4.4.2 Empirical Findings

The business model in a sustainable context

Today, one of the most important parts of Hexagon Ragasco's business model is being a part of the Raufoss cluster, where they share competence and resources between the associated companies. This is a part of Hexagon Ragasco's DNA; collaboration through sharing of material resources, knowledge, competence and production resources. In the cluster, there are 8-10 companies benefiting from each other. Hexagon Ragasco has overall a very transparent business model, and the employees know everything about production details, the business model, the whole supply chain and how the company is managed. Sustainability has been a part of Hexagon Ragasco's business model since day one, and is a part of both their production and product development.

Hexagon Ragasco has all their production at Raufoss; this is because of the practicality of such, but also because a local production is more sustainable due to short transport distances. For Hexagon, sustainability is a part of the brand and strengthens the company's position in the market. Their goal is to deliver competitive products and at the same time care about sustainability.

Sustainability at the company's general level

Sustainability is integrated in Hexagon's business model all the way from the design process where they focus on transparency through the supply chain and designing the products for low weight and security. Some life cycle assessment has been done, and is now part of the decision making of product design and the production. The company has also established two circular processes, one for refill of gas, and one for take-back of containers.

However, because of the young age of the company's globally distributed products, the products are not yet old enough to be recycled and reused. And when the time is right, it is a challenge for the company to handle the take-back systems both internationally and nationally. The company wants to be able to create closed loop systems for recycling and reuse, and for this, they need partners to be able to handle the whole circle. Hexagon Ragasco suggests that Norsk Gjenvinning could be a valuable partner for these kind of processes.

At the moment, Hexagon Ragasco is looking into new technology in order to increase the lifetime of their products, as a sustainable effort. The company is in addition working on new technology for safer fleet management and tracking of the the products they are selling, because they want to be able to develop an effective take-back system. They are also working to reduce their emissions and with

responsible handling of hazardous waste, because this is an investment for the local community, both socially and environmentally.

For Hexagon's industry, there is a trend of increased focus on sustainability in Norway, but unfortunately not in all divisions. Particularly for the Norwegian customer segments, sustainability is outcompeted by what is practical and what is not. Still, Hexagon Ragasco gets feedback that their awareness and focus on sustainability challenges are positive for the company's reputation. The fact that sustainability has an increased focus, is supported in the statement below:

Quality was supposed to be an advantage, but became a matter of course. Sustainability was supposed to be an advantage, but is heading towards becoming a matter of course (Interviewee, Hexagon Ragasco), (author's translation).

Hexagon Ragasco is an integrated part of the local society, and has won the 2015 award for Norway's smartest company, and the reason for this is that the company includes people, and is a digitalized fabric. Still, sustainability as a whole is a challenge for the company, and is also seen as an economical expense at the moment. However, through incorporating sustainability, the company will reach a bigger market because they can use sustainability as a selling point. At the moment, it is hard to measure the direct results of sustainability, and Hexagon thinks there has to be some sort of political regulations regarding sustainable development.

Sustainability within the company

Hexagon Ragasco has been working to optimize their use of materials, e.g. through reducing the amount of scrap from the production. This is cost effective because it gives them a high utilization of raw materials. The company has also been working on optimizing the use of other production resources, e.g. energy. They have done this through two steps: Design the products to using a minimal amount of material and create a better and more sustainable material combination.

When it comes to the company's production, they have a high awareness concerning the environment, and every employee is working with continuous improvements, from lean processes to integration of sustainability. Hexagon Ragasco has a high production rate with a low number of workers, reflecting their focus on efficiency. Their high involvement of workers and their extreme transparency has a direct positive impact on the company's margins and profitability. Hexagon Ragasco has a loyal and engaged workforce continuously looking for improvements, because the focus on sustainability is part of the firm's culture.

Regarding waste management, Hexagon Ragasco is recycling and reusing some of their plastics, but not everything. The company admits that it is a real challenge to recycle the whole gas container, because it consists of different elements. The plastic part is easier to recycle, but for the composite part it is a challenge. The company is in a process working to see if recycled composite materials can be ground and reused as reinforcement material in other products.

Hexagon Ragasco acknowledges that their products initially are made of materials that have huge environmental footprint, but they are constantly looking into how they can reduce the footprint by using other materials, and thus increase the extent of recycled materials in their products. The company's main challenge is to reuse composite materials, which are basically not recyclable. The company is also looking into how discarded products and materials might be utilized as input material in new products, e.g. in concrete.

4.5 Elkem

Elkem was introduced to the author through the contact with Norsk Gjenvinning and further the Eyde Cluster, which is a sector in southern Norway gathering members from key process industry enterprises and related suppliers.

4.5.1 Short history of the company

Elkem Group AS was established in 1094 and is today led by the general manager Helge Aasen. Elkem's headquarter is located at Skøyen in Oslo, and the company has 21 production sites worldwide in Iceland, Canada, China, Malaysia, Paraguay, Brazil, South Africa, France, Spain, Italy, Germany and USA, including seven in Norway. The company has its R&D center in Kristiansand, and is a part of the process industry network Eyde Cluster. In 2011 the Chinese company China National Bluestar bought the Elkem Group, and merged it with Bluestar Silicones in 2015. Today there are 3600 employees in the Elkem Group worldwide, including 1350 in Norway. When it comes to sustainability they do not have a separate sustainability division, but it is incorporated in all the four divisions, with an extra responsibility at Elkem Technology (R&D). They do also estimate that about a several hundred of their employees are working quite a lot with sustainability. The company's operating revenue was 13 BN NOK in 2014 and 15 BN NOK in 2015.

4.5.2 Empirical Findings

The business model in a sustainable context

Elkem's business model consists of five divisions, with local production all over the world. Raw materials, access to power and the various markets are often the reason for selecting location. Each division has its own products and markets, but they also use collective assets within the company. Elkem is focusing on integration of sustainability into their business model because they are aware of the efficient effect it has on the environment and on the society. Elkem is focusing on sustainability because it is both a necessity and a business opportunity for the years to come.

Sustainability has been a part of Elkem's business model for a long time, and the first sustainable initiative they had was the recovering of dust from silicon ovens, in which everything was turned into products that could be sold. The recovering of production dust was at first a demand from the government, but it also became a great business opportunity. The dust was further used as filling material in other processes for other companies (building bridges, concrete to the offshore industry etc.).

Sustainability at the company's general level

One important sustainability initiative in Elkem's business model is being a part of the Eyde cluster. Being a part of this cluster allows Elkem to recover energy as steam, and sell it to the other companies as a resource through a cooperative model. For Elkem, the cooperation between the companies regarding recycling, recovering and reuse of energy streams, is an important factor of success. The company is also working closely with local governments on climate actions, and tries to exploit the local compilation of the industry to use each other's waste as resources. The Eyde cluster is important for the different companies being able to help each other with more closed loop systems.

Elkem has for the last 4-5 years been involved in 25 projects where they have applied for support from Enova to reduce their use of energy and specialize their energy usage. One example is energy recovery at their production facility at Thamshavn, where they are recovering energy in a dedicated power plant producing steam that is sold and used by neighboring companies through collaboration, same as for the Eyde cluster. The reduction of emissions is related to the company's social responsibility.

Elkem is also trying to take responsibility regarding their products, e.g. by making their lithium batteries cheaper and increase the capacity of the batteries through improving the quality of silicium. The company is also focusing on reducing the footprint of the materials they use today, to protect the environment. Elkem is working on a solar project in Kenya, trying to make a positive contribution to the people living there. They are also facilitating education with new technology through the solar project in Kenya, and they are educating people about solar cells and the use for communication among other things.

Elkem is included in collaborative research projects with other companies on sustainability and the environment, trying to develop new and more sustainable technology for better and more efficient

processes. Through international collaboration between the different parts of the company, Elkem is trading materials, and make use of others' "waste" in useful products. For Elkem, the change for a sustainable development is an expensive process, but through supporting initiatives, Elkem is one of the first companies leading the way in their industry. The incentives are reducing the risk, but the government also demands the company to do something that has a ripple effect in the rest of the industry. The importance of the initiatives and for the Government to take a leading role in the transition are supported by the following statements:

The political interest regarding sustainability increases each month, and it reached a new level at the climate meeting in Paris in 2015. The Norwegian Government are forefront through incentives like Enova and other subsidies like the environmental technology arrangement at Innovation Norway and the Norwegian Research Council (Interviewee #1, Elkem Group), (author's translation).

A challenge for us is that the energy costs are so low at the moment, that it hardly pays off to recycle, and this is both a challenge for the environment and for the circular economy. The government needs to build a framework that can promise the companies that the changes we implement are safe for the future, and they must regulate the conditions in Norway to be the same as in the rest of the world for Norwegian companies to be able to compete in a global market (Interviewee #2, Elkem Group), (author's translation).

One example of this is Elkem's green certificate on their silicon, which makes them able to sell to more markets. For Elkem, this documentation and certification can give a competitive advantage, both in Norway and globally. For the company, the Horizon 2020 and the guidelines of the World Business Council for Sustainable Industry are leading stars in the transition to a more sustainable development.

Sustainability within the company

One of the most important element of sustainability for Elkem was starting with energy savings and recovery, as mentioned above. Another focus has been to recycle their metal side flows for reuse in their own processes. Elkem has different activities when it comes to reducing the amount of energy used, recycling of energy and for waste reduction, and they are focusing on that more should be salable material, also when it comes to solar processes.

Elkem has developed the world's most energy effective process for producing silicon to solar cells, and that this process is using $\frac{1}{4}$ of the energy compared to standard methods. In addition to this they try to use every unit of silicon in controlled manners. Elkem has also improved their emissions of NOX, and they have a newly implemented technology which reduces the emissions by 40 %.

For sustainable initiatives to be successful for Elkem, it has to have great support from the whole company, and every employee has to have the same goal, all the way from the bottom to the top. Most parts of the industry have huge ambitions regarding the change for sustainable development, and in Elkem there is an internal culture where people are working continuously with innovative issues regarding sustainability on their own initiatives. The importance of the internal sustainability culture is confirmed by the following statement:

We notice a greater expectation and pressure from the public opinion, and sustainability has a huge focus in the general society. Since the people in our company represent the population, it has to be a certain pressure from within the company for us to be at the forefront of sustainable development (Interviewee #1, Elkem Group), (author's translation).

Elkem has had a promising R&D-project in the last year, where they are working on recycling the energy surpluses from every process. Further, they want to implement this in every production facility. The company also has a project where they are trying to reduce the KWH per tonnage produced through recycling of non-salable material; by doing this they get a larger output from the process.

Elkem's newest sustainable project is carbon neutral metal production. This is done by having no fossil fuel emissions and no net energy consumption. This is a circular economy project where the goal is to produce metal with a CO₂-footprint at zero. For Elkem to be successful, they are working towards replacing fossil coal as the reduction material in their processes. The goal for the project is to be finished by the end of 2016.

4.6 IKEA

IKEA is a goods-producing company introduced to the author by Pure Consulting.

4.6.1 Short history of the company

IKEA is a Swedish multinational furniture company founded in Småland, Southern Sweden in 1943 by Ingvar Kamprad. Today the IKEA Group is a global company, with operations in 48 countries. IKEA has 328 stores in 28 countries, and has over 155.000 co-workers worldwide. Today the company is managed by Peter Agnefjäll who is both Chairman and CEO. From 2014 to 2015 their sales increased by 11,2 % to 31,9 BN EUR, and their total revenue increased by 11,5% to 32,9 BN EUR.

4.6.2 Empirical Findings

The business model in a sustainable context

IKEA's vision to create a better everyday life goes beyond home furnishing. This is because the company wishes to have a positive impact on the world, from the communities where they source their materials to the way the products enable the customers to live a more sustainable life at home. IKEA believes that by sharing what they do, and speaking up for what they believe in, they can be part of a positive change in society. IKEA works to answer sustainability questions and then integrate them into the business model; that is when they see results of their efforts.

IKEA has a business model that has changed over time. Mostly the business model is linked to distribution of their products through their warehouses, and through the integrated supply chain. IKEA's sustainability strategy is a cornerstone of their company, and they have a mindset that it is not the sustainability experts that should operate and manage various projects related to sustainability, but that everyone in their company should be able to do this. For IKEA this is about integration of the employees, and allowing them to work with different issues and questions.

IKEA's biggest challenge is that whereas the company was constructed on a linear model, a transition now has to be made into a circular one. This also demands a huge cultural change within the company; a change of attitude. The transition to the circular economy and sustainable development is a long way to go, and for instance there are some materials that is not profitable to recycle due to limitations in technology and infrastructure. The importance of changing towards a more circular business model is illustrated through the following statement:

We have to go from the linear model to the circular. We have to go from what we know of today, to what we believe is right for tomorrow by acting proactive (Interviewee, IKEA), (author's translation).

Through their program "Growing IKEA together - 2020" the company aims to invest in responsibility to make more sustainable products and solutions affordable and available. When it comes to sustainability initiatives, IKEA has decided to go all in. For instance, they switched their entire lighting range to LED in September 2015, and they have committed 1 BN EUR for climate action: 600 MEUR going to investments in renewable energy and 400 MEUR to support communities most impacted by climate changes.

IKEA has ambitions of being more transparent than they are today, and are working on tracking e.g. cotton and wood. IKEA believes that there is a link between transparency, sustainable development and the circular economy. The company has just started their journey towards a more circular and sustainable IKEA, including closed material loops, activities, services etc. Most of these are still just pilot projects,

and are not yet included in the business model. For IKEA, the most important aspect of sustainable initiatives is that they have to create a value for the customers and have a beneficial impact on the environment, and of course lead to a positive output for IKEA as a company. This is confirmed in the statement below:

Going from a linear business model to a more circular one is going to cost, but there are also revenue for this types of models. If IKEA wants to survive as a company for the next 50 years, we have to take into consideration the limitations that come with material exhaustion, and we are forced to think more circular as to secure a sustainable development. For our company, a circular business model also has to have a triple bottom line to be sustainable (Interviewee, IKEA), (author's translation).

Sustainability at the company's general level

IKEA has integrated a concept called “I-WAY” to their purchasing operations. The “I-WAY” concept is a code of conduct for purchasing products, materials and services, and comprises a minimum requirement related to the environment and to social and working conditions, including HSE and child labor. Every one of IKEA’s suppliers have to fulfill the I-WAY test in order for IKEA to buy products and goods from them. As an element of sustainability, IKEA is focusing on the design of sustainable products throughout the whole supply chain, and they have requirements for use of energy and material efficiency for all their suppliers. All the products IKEA is designing, have to pass through the sustainability scorecard regarding use of energy and material effectiveness. IKEA has a high focus on transparency through the whole supply chain, but finds it challenging that some suppliers are hiding behind patent rights.

IKEA has workshops where they include their customers to upgrade their products and solutions; as a result of the workshops, IKEA has improved their channels as a sustainable element, and has established e-commerce where customers can shop online, and then pick up their things at IKEA’s “pick-up-points”. Because of this, the business model has changed due to customer needs. IKEA has done a survey among their customers, which proved their customers to be more conscious regarding the durability of the products and of sustainable development than others. This furthermore enhances IKEA’s focus on sustainability.

IKEA is working with a take-back solution where they can donate products and furniture which their customers do not want. IKEA provides activities regarding reparations of broken and damaged products to their customers, and is hereby giving customers the right incentives and solutions for recycling by offering other products and services. Another social initiative is that IKEA-family members are allowed to sell things for free at online marketplaces. This is a small contribution to society and the environment as it stimulates to reuse of goods. This has been very positive for IKEA’s reputation and credibility.

Of the 28 countries in which IKEA has their warehouses, Belgium is the country where they have made most progress in terms of implementing sustainability. This is due to the fact that Belgium is susceptible to such thinking; consequently, Belgium is designated as a "test country". This allows IKEA to get an overview of both the successful and failing measures, and allows them to subsequently decide which projects are most eligible for implementation in other countries. Still, even if it works great in Belgium, there is no guarantee that it will work elsewhere. This is particularly if the country in which IKEA operates has had little opportunity to facilitate recycling and circular thinking due to lacking political regulations and poor infrastructure.

IKEA as a company has to learn how to change the way they think to become more sustainable and circular. One solution for a more circular economy is for the company to cooperate with different companies with the same overall goal, because no one can do everything through the whole supply chain alone. If more companies come together, they can produce higher volumes. This will make it easier for other parts to invest along the supply chain. One example of this is that IKEA has joined forces with H&M, Adidas, Nike and Marks & Spencer to use more sustainable and durable cotton, because together they share/control a large part of the global market. The importance of a transition towards a more circular economy is for IKEA confirmed in the statement below:

Circularity, the circular economy and sustainable development is an increasing trend in the general society, and the fact that political regulations like the EU directive about circular economy focus on waste management and classification of waste is essential to meet the challenges of sustainable development (Interviewee, IKEA), (author's translation).

Sustainability within the company

IKEA has started the product and service line “a more sustainable life at home” to help people create a better and more sustainable life in their homes. This is done by offering products for energy saving, water saving, waste recycling, support and knowledge. For this product line the sale of products are increasing faster than for any other product line, resulting in a positive economical result for IKEA. For IKEA, an increased income and reductions in expenses is the result of several sustainable initiatives. However, sometimes the company also has to invest in the future even though these investments might not be profitable from the start.

IKEA has come a long way with regards to recycling and reuse of materials, because they have the infrastructure and processes for recycling, and is doing this with both plastic, paper, woods and metals. The quality of the recycled materials is very high and can therefore be used again in production. IKEA has also developed a strategy for zero waste to landfill, and to reach this main goal, they have three smaller goals: Waste reduction, use 80 % recycled materials within 2020, and 90 % recycling rate and energy recovery. IKEA also has two recycling loops, one internal at their warehouses, and one where they are recycling materials from external sources. Since the production facilities rarely are at the same place as the actual warehouses, IKEA tries to recycle locally, instead of transporting materials over long distances.

4.1 Norsk Gjenvinning

Norsk Gjenvinning (NG) is the only company on the industry-side of recycling and material handling in Norway. They were introduced to the author through Pure Consulting.

4.7.1 Short history

Norsk Gjenvinning started out as a small junkyard by Adolf Jahr in 1962, and has since then developed from a paper return service to its operations as they are today: Waste handling, metal recycling, industrial services, hazardous waste, downstream solutions, household renovation, demolition, environmental restoration, management of masses and security shredding. Today, they are handling 1,8 million tons of waste every year, and is led by the CEO Erik Osmundsen. NG has over 90 locations in Norway, Sweden, Denmark and the UK. The organization has in total 1500 employees which of 571 are situated in Norway. This makes the company leading within recycling and environmental services in the Norwegian market. The company is organized into the following divisions: Recycling, metal, industry and offshore, downstream and four other niche divisions. NG's activities are marketed under several brand names; whereas Norsk Gjenvinning is the main brand in Norway, the brand is named Nordic Återvinning in Sweden and IBKA in Denmark and the UK. NG works as a Group with one mother-company which is owned by the holding company, VV Holding AS. Their total operating revenue was 4,135 MRD NOK in 2014, and the numbers for 2015 are not yet available.

4.7.2 Empirical Findings

The business model in a sustainable context

The business model for Norsk Gjenvinning is based on a lot of different services. The company is both a service-provider and a goods-producing company. They have one market upstream, where the business sector, private householders and the public sector buy their services, and a downstream market where they are selling waste-based raw materials like recycled paper, plastic, metals and fuel. In addition to this, NG is providing sharing of knowledge and consultancy regarding waste handling for the industry. NG is mostly a raw material supplier and provides a link between customers and producers of raw

materials. NG has also developed new business models for the recycling of glava isolation to glas, and coffee capsules to aluminum.

The vision for Norsk Gjenvinning is that waste is the key to future resource problems, because with the rapidly growing population and limited availability of raw materials, the resource stocks will be emptied with a linear mindset. Based on this, Norsk Gjenvinning believes that the recycling industry might be the solution.

Sustainability at the company's general level

Norsk Gjenvinning's thinking is based on the inverted pyramid that forms the basis for priorities of European waste management. Together with their customers, NG primarily works with three parts of the pyramid: waste reduction, general reuse and recycling of materials. This is because they find these parts to be the most important areas of innovation. NG believes that cooperation throughout the supply chain is the most important factor for success, and this needs development of new business models for collaboration and a circular economy. The importance of cooperation is supported by the following statement:

It is the process industry in Norway that is leading on in the sustainable development, and among the best you find the Eyde Network, because of their supply chain collaboration through their organization of sharing material streams and using each other's energy flows. This kind of cooperation can lead to competitiveness (Interviewee, NG), (author's translation).

Norsk Gjenvinning proposes that to have a successful integration of sustainability, and to be able to transform the business model into a sustainable business model, goods-producing companies have to think sustainability throughout the whole supply chain. From sustainable design of products, how they are offering their products to the market, to how they should be able to recycle the product for its next life. The importance of integrating sustainability into the business model is illustrated in the following statement:

Sustainable development needs to be a part of the business model. Strategy is only CSR decoupled from the core activities. The companies buy themselves good conscience without really fixing the problems. It is called green washing. Unilever is one of the best examples; they closed down their CSR department, and made sustainability a part of everyone's job. Real sustainability has to address the three dimensions of sustainability, and has to be integrated into the core strategy of the business model (Interviewee, Norsk Gjenvinning), (author's translation).

Norsk Gjenvinning believes that it is impossible to fully transform into a sustainable business model alone, and that everyone depends on collaboration in their business models. People need practical solutions to exemplify and to understand the circular economy, and because of that NG has developed e.g. waste management solutions that also answer to the three dimensions of sustainability. The company states that a precondition for success is that strategy and sustainability has to be implemented into the core values of the company through the business model. One of the most important tasks for NG is to contribute to the business policy through development of sustainable and circular business models together with their customers. The fact that NG is a proponent for the transition towards a circular economy for a sustainable future is confirmed in the following:

Political regulations are necessary, and political reports for divisions like Grønn Skattekommisjon and EU's circular package are important as leading stars. A transition towards the circular economy can contribute to more jobs in Norway, because it requires a greater proportion of service workers. This is one important reason for the politicians to be forefront when it comes to circular thinking and the circular economy (Interviewee, NG), (author's translation).

Regarding the social dimension of sustainability, NG has recently developed a new solution for safe storage of hazardous waste. They have done this because of their strong focus on HSE and because they want to take responsibility for their own employees, and the surrounding society. In addition, NG has

developed general waste solutions for the society, contributing to both the environmental and social dimension.

Sustainability within the company

NG's perception is that most people think that the circular economy is only about waste management and recycling, which is a huge misunderstanding. One of the most important tasks for NG is therefore to be a minister of knowledge of sustainable development and the circular economy. Today there is a lot of focus on replacing virgin raw materials with secondary and waste-based resources, but there is a lack of standards inhibiting the process. Many of NG's customer companies feel more secure relying on what they know of, and in addition, governmental regulations are at the moment limiting the use of secondary resources in an illogical way. There is a lack of economical incentives, and use of secondary resources can be costly because the recycling process is resource demanding and expensive. NG claims that regulations need to be changed, because most people think it is safe to do what they always have done. As a result, innovation is demanding, but still necessary.

One of Norsk Gjenvinning's most important banners is that there in 2030 will be a lack of resources like zinc, silver and some noble metals, and they state that a sustainable business model with circular thinking can be the solution. NG emphasizes IKEA as a leading company with increased awareness regarding sustainability, and points out that this is the kind of customers where NG can make an important difference as a partner and facilitator for the loops of recycling and waste management. Norsk Gjenvinning is fighting for the case that if companies are not able to start the integration of sustainability now, it will have negative consequences for that specific company in the future. NG is focusing on sustainability and sustainable development because they think it will be profitable to take a position and to be a leading star in the transition towards a circular economy and development of sustainable business models.

For the future, Norsk Gjenvinning presents the importance of decoupling the use of resources and economical performance. The company points to the fact that most parts of the business life are talking about the environmental dimension of sustainability, regarding use of nonrenewable and renewable energy sources. This underpins the fact that one of the most important jobs for NG is to spread the knowledge about the importance of thinking of every resource a company depends on and uses.

5. Analysis

5.1 Introduction

In this section, the analysis of the empirical findings from section four is presented. The information from the case studies will be analyzed in light of theory from section two. This section of the master's thesis consists of three main parts. In the first part, all of the six companies are analyzed together with the goal of breaking down the various sustainability initiatives to individual elements, and then link each element to the building blocks of the business model canvas. This is done in order to answer RQ 1. In part two, the relation between the various companies' plans and actual actions related to sustainability is analyzed. This is done in order to answer RQ 2. The section ends with a summary of the analysis.

By analyzing which elements that are integrated and their relation to strategic plans, that they together will provide a support for the link between the RQs, the conceptual background and the purpose of this thesis.

According to Bocken et al. (2013) there is a need for the business models to have a clear sustainable perspective, including all three dimensions of sustainability. The authors state that integration of sustainable elements is exactly the change that needs to be done for businesses today. This is supported by Jørgensen and Pedersen (2015), whose definition of sustainable business models proposes that the company's social and environmental effects have to be an integral part of the company's way of creating, delivering and capturing value. From the case studies, the author has revealed that the selected companies are well aware of the concept of business models, and are working continuously with processes of changes towards sustainability, which can be viewed as business model innovation. This correlates with Hall and Wagner's (2011) work, stating that innovation of the business model is the most common way to implement sustainable development into the business model. Boons et al. (2012) and Birkin et al. (2006) state that the innovations necessary for a sustainable development have to be built on the concept of the business model to be successful, and not just be a part of a strategic plan. Backed by these authors, the author reveals that there is a need for the sustainable elements to also be a part of the business model.

5.2 Elements of Sustainability

During the interviews and through the information gathering, it has emerged that the case companies have integrated a lot of different types of sustainable elements. It is also revealed that sustainability is integrated at various levels of the companies. This means that some elements are related to internal processes, e.g. recycling of waste, and some are related to external processes, e.g. choice of eco-friendly materials. In addition to integration at various levels, the companies have also integrated sustainability to a varying degree. Varying degree in this context refers both to which extent each element is integrated into, e.g. waste management of all materials in all processes versus waste management only for one type of material in one single process, and to differences regarding integration related to the three dimensions of sustainability, e.g. some companies focus more on the environmental dimension than the social dimension.

The following table has been conducted through analyzing and linking all of the individual sustainable elements uncovered and italicized in the empirical findings to various parts of the business model. The business model canvas (BMC) by Osterwalder and Pigneur (2010) has been used as a framework of analysis synthesizing how the sustainable elements apply to each of the building blocks related to the business model. It is revealed that the number of various elements is bigger than the number of building blocks, but regardless of which level of the company the elements are related to or to which degree the elements are integrated, they can still be linked to the same building block. One example is the two elements "general waste management" and "recycling of plastic scrap", which both are linked to the building block *key activities*, because they are both related to activities the company is physically doing.

As presented in table 2, all the sustainable elements are mainly linked to three of the nine building blocks of the business model canvas; *key activities*, *key resources* and *key partnerships*. Some of the case companies have also integrated elements related to the building blocks *value propositions*, *customer relationships*, *customer value* and *channels*. These are, however, only addressed in the table and are not a part of the following analysis as this thesis aims to look at to which parts of the business model the elements are mainly related. A complete overview of each company with their integrated sustainable elements and the link to each building block is presented in the following table.

Table 2: Overview of sustainable elements and the link to the building blocks of the BM.

Company Name	Integrated Elements	Building Block
Plasto	Reuse of materials Optimizing processes and production Recycling of materials Shift to renewable energy Increase Transparency through supply chain (Secure human rights, HSE, materiality origin) Collaboration with customers Eco-certifications Reduce use of energy Less use of resources (e.g. water) Social responsibility related to education and participation in the local society R&D Choice of materials (thermoplastic) Waste management	Key activities Key activities Key activities Key activities Social and environmental Key partnerships + Customer relationships Value propositions + Key activities Key activities Key activities Key activities Social dimension Key activities + Key partnerships Key resources Key activities
Wonderland	Eco-friendly materials Eco-certifications Increased transparency through supply chain (Secure human rights, HSE, materiality origin) Waste reduction Tracking of materials Donation of b-products and returned items Social responsibility related to cultural and sport	Key resources Value propositions + Key activities Social and environmental dimension Key activities Key activities Social dimension Social dimension
Hexagon Ragasco	Sharing of resources and knowledge Cooperation in cluster High transparency through supply chain Local Production Thinking sustainability in design of products LCA part of design of products Reduction of emissions Responsible handling of hazardous waste Optimize use of materials (reduce amount of scrap) Optimize production resources, e.g. energy High utilization of raw materials Use minimal amount of material More sustainable material combinations	Key partnerships + Key activities + Key resources Key resources Key partnerships Social and environmental dimension Key activities Key activities Key activities Key activities Key activities Key activities Key activities Key activities Key activities Key activities Key resources

	<p>Recycling of products Reuse of materials Integrated part of the local society Employees works with sustainability</p>	<p>Key activities Key activities Social dimension Social and environmental dimension</p>
Elkem	<p>Reuse of materials Recycling of materials Energy recovery Energy savings and reduction Energy effective processes Cooperation Part of a cluster R&D Cooperative R&D Controlled use of raw materials Waste reduction New and more sustainable technology Reduce footprint of products Replace use of fossil coal Reduce emissions</p> <p>Producing cheaper batteries Improving quality of materials Solar project in Kenya Education project in Kenya Closed loop systems together with cluster Waste as resource Green certification No fossil fuel emissions Recycling of side flows Employees works with sustainability Carbon neutral metal production</p>	<p>Key activities Key activities Key activities Key activities Key resources Key partnerships Key partnerships Key activities Key partnerships + Key activities Key resources Key activities Key resources Key activities Key activities Key activities + Social and environmental dimension Social dimension Key resources Social dimension Social dimension Key partnerships + Key activities Key activities + Key resources Key resources Key activities Key activities Social and environmental dimension Key activities</p>
IKEA	<p>Cooperation with customers Take-back solutions for products Donation of used products Reparation service of damaged products New channels Requirements for use of energy and material efficiency Design of sustainable products Sustainability scorecard Eco-friendly materials Recycling of materials The I-WAY concept Free online marketplace for IKEA-family members Reuse of goods Collaboration R&D project Transparency through supply chain (Secure human rights, HSE, materiality origin) Reuse of materials Recycling loops More sustainable and durable materials</p>	<p>Customer relationships + Key activities Customer value + key activities Social dimension Customer value + key activities Channels Key activities</p> <p>Key resources Key activities Key resources Key activities Key activities + Key partnerships Customer value</p> <p>Key activities Key partnerships + Key activities Key activities + Social and environmental dimension (not part of BMC) Key activities Key activities Key resources</p>

	Energy recovery Waste reduction	Key activities Key activities
Norsk Gjenvinning	Selling waste-based raw materials Sharing of knowledge and consultancy Knowledge Waste reduction Reuse of materials Recycling of materials Cooperation through supply chain Sustainable design of products Collaboration in business model Develops new BMs with customers Development of safe storage for hazardous waste Developed waste solutions for the society Replace raw materials with secondary and waste-based resources	Key activities Key activities + Key resources Key resource Key activities Key activities Key activities Key partnerships Key activities Key partnerships Key partnerships + Customer value Key activities + Social dimension Key activities + Social and environmental dimension Key resources + Key activities

Starting with the first of the three blocks that the sustainable elements are mainly related to, the **key activities**, it appears that the sustainable elements linked to this building block in general are about improvements, efficiency, replacement of resources and new processes and solutions. Containing among other things recycling of materials, reuse of resources, a shift from fossil fuels to renewable energy, less use of energy and water in production, sustainability and transparency throughout the supply chain, creating closed loop systems and R&D.

According to Osterwalder and Pigneur (2010), the **key activities** are related to what the business do in order to deliver the value propositions for its customers. These activities reflect the most important work the company has to do to make its business model work. Throughout the work with the case studies, the author has revealed that the company's key activities related to sustainability not necessarily provide increased value directly to its customers. Instead, the key activities include actions and changes in the company's internal and external processes. The key activities relate to both the systemic level and the internal level of the company. This means everything that has to do with the company and the relation to the environment and the society it is part of, e.g. that Elkem is changing from fossil fuels to renewable sources of energy, and processes, waste management and changes in use of resources within the company, e.g. that Plasto is reusing surplus material from their plastic production. The key activities related to sustainable elements do not necessarily match with the theory of what the building block contains according to Osterwalder and Pigneur (2010), but the empirical findings fit well with the sustainable elements related to the key activities in a sustainable context, proposed by Lewandowski (2016) and Sommer (2010). Among others, they highlight the change from fossil fuels to renewable energy, waste management, recycling, reuse and remanufacturing to be important elements.

For the second of the three main blocks to which the sustainable elements are related, the **key resources**, it appears that the sustainable elements concern raw materials, change of resources and materials to more sustainable alternatives and competence about sustainability within the company. Containing everything from aware employees building a sustainability culture within the company to changing from virgin materials to reusing materials or secondary sources.

According to Osterwalder and Pigneur (2010), the **key resources** as a component relate to the resources that are required for the company to deliver the value propositions for their customers, and a company's resources describe the most important assets required to make the business model work. Throughout the work with the case studies, the author revealed that the key resources not necessarily fit into this description of what the key resources are according to Osterwalder and Pigneur (2010). For many of the case companies, the key resources are related to increased internal knowledge of how things should be

done differently for the company to be more sustainable, e.g. that all employees at Hexagon Ragasco have a huge focus on and are always looking for improvement regarding sustainability. In addition, the key resources are also about replacing specific types of resources and raw materials with more sustainable alternatives, mainly to reduce the company's negative impact on the environment. One example is that Norsk Gjenvinning is replacing their raw materials with secondary and waste-based resources. These changes can be to use a higher amount of recycled plastic in their plastic products, or change to raw materials which is delimited by nature for use in their production. The author reveals through the case studies that neither this building block of the business model canvas in a sustainable context necessarily is related to delivering the value propositions for all companies' customers, as Osterwalder and Pigneur define the key resources to be. The sustainable elements related to the key resources fit better with the theory proposed by Lewandowski (2016), stating that in a sustainable context, the key resources are related to eco-friendlier materials, knowledge about sustainability and to use recycled materials.

For the third building block which the sustainable elements mainly are related to, the *key partnerships*, it appears that the sustainable elements are about cooperation through the supply chain, cooperation with customers, collaborative R&D projects, support initiatives through partnerships and working in clusters. Containing everything from transparency deals with suppliers and raw material producers, development of new products together with customers, R&D projects where several companies and researchers develop new technology that will benefit all the companies and the society they are a part of, and companies working in clusters to take advantage of each other's energy and waste flows. Delaney (2014) found in her research that collaboration has an essential role in supporting new business models in the sustainable context, and that the reason for clusters' success is the connection of different companies, letting them use each other's by-products, share energy, service and knowledge, regardless of industry. This goes well with the findings from the case studies.

According to Osterwalder and Pigneur (2010), the *key partnerships* relate to a company's network of partners and suppliers, which it relies on to make the business model work. They state that for many companies the partnerships are becoming more and more important to survive, and that companies are creating partnerships to reduce risk and optimize their business model. Throughout the work with the case studies, the author revealed that what is related to key partnerships in a sustainable context for the companies necessarily does not fit with the theory of what Osterwalder and Pigneur (2010) define the key partnerships to be. For the companies, the key partnerships mainly revolve around collaboration, and without the need for the partnership to be defined between the different firms. This means that the companies can cooperate through various R&D projects, without any further commitment to each other. These kinds of research projects might be financed by external parts, like Enova or Innovation Norway, where the goal is for the companies to develop new technology, new materials or new solutions which will benefit both the involved companies, and have a beneficial value for the rest of the industry. Other examples of cooperative projects revealed through the case studies are collaboration in clusters, like the Eyde Network and Raufoss Industry Park, where the involved companies take advantage of each other's energy flows, recycled waste and knowledge. What is just waste and emissions for some, could be useful and valuable resources to others. The empirical findings from the case studies fit better with the theory of the sustainable elements related to the component of key partnerships, than what is the case for key activities and key resources. Lewandowski (2016) highlights the sustainable elements related to key partnerships to be cooperative networks, clusters, outsourcing and new types of collaboration.

Synthesizing the empirical findings from the case studies and the existing theoretical framework of the business model canvas, one can say that the companies mainly link sustainability to creation of value. This is based on the link between the business model canvas and the chosen definition of the business model, where key activities, key resources and key partnerships together with the firm's value propositions is how the companies creates value.

Still, innovation of the business model through integration of sustainable elements which goes outside of the general components that the BMC holds, can also be related to delivering value. This kind of delivering value is supported by Jørgensen and Pedersen's (2015) definition of a sustainable business

model: the company’s social and environmental effects should be an integrated part of how the company creates, delivers and captures value. This implies an understanding that the positive and negative effects of the company’s activities arise as results of the business model. Nevertheless, value can also be delivered in forms of delivering value to the social and environmental dimension of sustainability. Through increased focus on working conditions, HSE, transparency, child labor etc. can value both be created for and delivered to people involved in the company’s processes from the extraction of raw materials and all the way throughout the supply chain. This also includes the local society where the company operates, and the company’s own employees. One example is IKEA’s “I-WAY” concept, aiming to secure social and working conditions, including HSE and child labor. In an environmental dimension, value is created for and delivered to the environment and the global society through reduction of the company’s amount of emissions, through changing to eco-friendlier raw materials and through recycling and reuse of materials. This implies that if one takes into account these two dimensions of sustainability, the company creates and delivers value directly to the environment and the society. From the empirical findings, it is revealed that all of the case companies have integrated various elements of sustainability related to both the social and environmental dimension. The modification of figure 4 from the conceptual background is presented in the following figure 5.

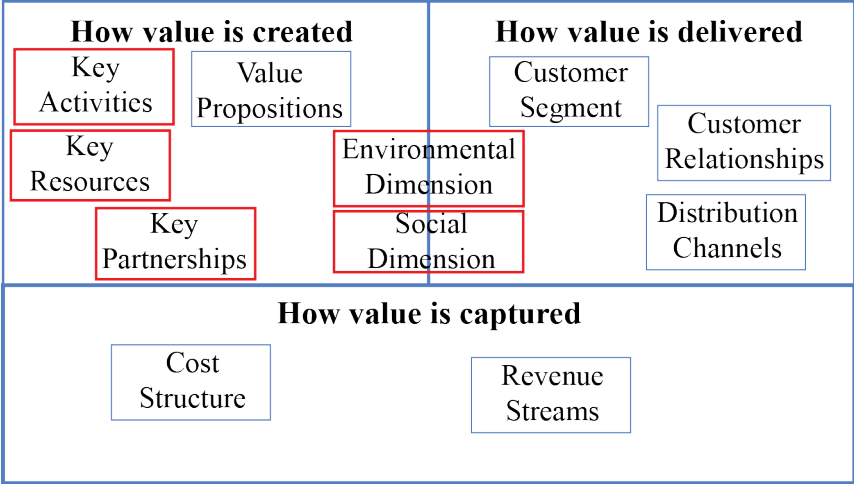


Figure 5: The relationship between the definition of a BM and the nine building blocks, including the environmental and social dimension.

5.3 Relation Between Strategic Plans and Actual Integration

As presented above, the empirical findings show that there is great variation between the case companies regarding what kind of sustainable elements they have integrated. These various elements are in the previous part linked to the building blocks of the business model. As presented in the previous part, the degree of integration is both related to the extent of the integration, and the relation to the three dimensions of sustainability. However, the author does not reveal specific, comparable efforts that can be measured by using different parameters to see to what degree the case companies have integrated the sustainable elements into their business model. Still, addition to the discovery of difference in the type of sustainable elements, the author also finds a difference in what the case companies want to do, and what they are actually doing regarding sustainability.

One example is that Wonderland’s beds are supposed to be sustainable quality products, and in addition, the company state that waste can be a resource in some way, highlighting the importance of recycling and reuse of materials. Nevertheless, they have not yet developed any system for recycling their waste or for reuse of materials. This underpins the fact that for some of the case companies, sustainability is more about strategic plans and wishes for the future than actual integration of specific actions. However, for some of the case companies, it is the other way around. This seems to be the case for Elkem, undermining the scope of what they actually do. For example, regarding the company's huge investment

in carbon neutral metal production, which is only mentioned briefly in the interview. On the basis of this, it looks like the companies from the case study can be categorized on the basis of how their focus on sustainable development is related to the actual integration of sustainable elements.

For some of the case companies, sustainability seems to be partly at the strategic level, without necessarily a plan of action embedded in the business model. An example of this is Wonderland, which is presented above. This means that they are making plans related to sustainability, without it being transferred to actions integrated in the company's core business. Using Wonderland as a further example, the company is working with the social dimension of sustainability by donating b-products to an orphanage in East Europe. However, this is something the company does in addition to their core business, referred to as corporate social responsibility (CSR). CSR is not an integrated part of the business model. Stubbs and Cocklin (2008) and Esslinger (2011) claim that companies only will become sustainable if their business model is transformed and innovated, rather than supplemented by sustainability related to social and environmental actions outside the business model, like CSR. All of the case companies are mainly changing their existing business model by integrating sustainability in the model they already have, instead of developing a new one being more sustainable from the start, and instead of adding on efforts or elements outside of the business model. This corresponds to one of the two definitions of BMI; changing or recreating the existing business model (Jørgensen and Pedersen, 2015; Amit and Zott, 2012; Johnson, 2010; Chesbrough, 2007).

As indicated in the previous part of this section, the analysis shows that none of the six case companies have integrated sustainable elements to each of the nine building blocks of the BMC. This means that they are not working with sustainability related to their whole business model, but only to some specific parts. All of the companies have integrated elements mainly related to the three building blocks key activities, key resources and key partnerships. Through the empirical findings, the author finds that the number of sustainable elements are unequally distributed related to the three dimensions of sustainability. For example, is Plasto working more with sustainability regarding the social dimension related to the local community, than what both Hexagon and Elkem are. According to Boons et al. (2012) a company has to combine several elements related to the three dimensions of sustainability and the various building blocks of the business model to be sustainable. Nevertheless, the authors are not addressing to which degree the elements have to be integrated, how many elements that has to be combined, or the relationship between the number of elements related to the three dimensions of sustainability.

It is however important to bear in mind that the extent of the sustainable elements which the companies are addressing is challenging to measure. Both Plasto and Hexagon Ragasco are addressing recycling and reuse as important integrated elements, but the interviews reveal that Plasto is focusing on recycling and reuse in every process related to every product, and that Hexagon Ragasco is only focusing on one part of their product. This highlights the huge differences regarding the extent of integrated sustainability, which might not be reflected in the data for this thesis, and is therefore almost impossible to measure for now.

As presented above, it seems that the companies can be put into different categories on the basis of how their focus on sustainable development is related to the actual integration of the sustainable elements. On this basis, the six case companies may be categorized as following: Early starters, limited integrators, partly integrators and fully integrators. Regarding the actual integration of the sustainable elements, it could be a solution to divide the case companies into groups on the grounds of how many elements they state to have integrated. Still, the empirical findings do not give enough in depth information for this to be substantial, as exemplified with Plasto and Hexagon Ragasco in the previous paragraph. Therefore, the number of integrated elements is only used as an idea of where the companies stand related to actual integration of sustainability, to be able to see this in relation to their strategic plans and focus. Grouping the companies in terms of their number of integrated elements will be too uncertain because the extent of integration is not clear. The companies are categorized in the following.

Early starters

Only one of the case companies is categorized as an early starter. This company is Wonderland, and the reason for this categorization is mainly because the company has integrated a small number of sustainable elements. However, Wonderland has a strong focus on sustainability and sustainable development, and is addressing both wishes and strategic plans for the future, as previously exemplified in this analysis. Through the empirical findings, the author reveals that Wonderland is a company talking about the importance of sustainable development, and are well aware that they have to integrate sustainability in order to still be a part of the competitive picture for the future. Still, the company has only integrated few elements, and is therefore categorized as an early starter. Joining the SISVI project at NTNU in addition to their awareness of the importance related to sustainability, puts the company in a good position to achieve much of what they have planned in the future.

Some reasons as to why this case company has yet to integrate sustainability to a deeper level, might be as Waage et al. (2004) argue. They state that there is an arising challenge for goods producing companies regarding this, because of the products and the fact that they have to consider all the types of materials which could potentially be utilized in order to find the most sustainable one. The authors claim that this can be the main reason for goods producing companies not to integrate sustainability into their business model.

Limited Integrators

Three of the companies from the case study are categorized as limited integrators. These companies are Plasto, Hexagon Ragasco and Norsk Gjenvinning. The reason for putting these three companies in this category is due to their strong focus on sustainability. Additionally, they have integrated a higher number of sustainable elements than the company categorized as an early starter.

From the empirical findings the author brings to light that Plasto has had focus on sustainability since the day it was established, and the company is now taking part in the SISVI project to become more knowledgeable regarding sustainable development. Today, sustainability is in the company's "DNA", both when it comes to strategic plans and regarding integration into their business model. As table 2 shows, Plasto has integrated sustainable elements in the wide range from reuse and recycling, to new energy sources and large R&D projects. All the employees at Plasto are working continuously with sustainability, and this is contributing to a culture fostering sustainable development. According to some authors (Santos, Specter and Van der Heyden, 2009), mutual engagement within the company is important to be able to innovate a firm's business model.

Hexagon Ragasco as a company has, according to the empirical findings, integrated fewer sustainable elements into to their business model than Plasto, but it is still sufficient to be part of the category. The empirical findings mainly showcase that similar to Plasto and NG, the company is well aware of the importance of sustainability; it has both plans and strategies of how to reach its goals, and what it has to do in order to achieve them. What the company refers to regarding waste handling and reuse of materials only concern small parts of their products, but they are continuously working to develop solutions for recycling of all their materials. As for Wonderland and Plasto, Hexagon Ragasco has joined the SISVI project to learn how to drive their sustainable integrations even further.

Norsk Gjenvinning is the last company considered to be part of this category. This is based on their extensive focus on sustainability and sustainable development, and the fact that they have integrated various elements related to sustainability. Norsk Gjenvinning is the company with the highest awareness of sustainability among all the case companies, but because of the actual amount of integrated elements, they still belong to the category of the limited integrators. The function that NG has regarding the important role as facilitator, communicator of knowledge and consultancy for all the other companies, is not taken into account for this categorization. Norsk Gjenvinning is performing a lot of sustainable efforts within its own company, but is also helping and facilitating other companies in their sustainable processes. They are mainly helping out with training, waste management and development of new and

more sustainable business models in the Norwegian industry. This role has been crucial for the Norwegian industry with regards to sustainable development.

All these three companies are addressing their focus on all the three dimensions of sustainability regarding their business model. These companies are all doing an effort for the society, and they are all well aware of that the sustainability issue is a fact, and that for the future all companies need to change their business model to gain an even bigger competitive advantage and to be able to survive as a firm. This goes well with Jørgensen and Pedersen's (2015) definition for a sustainable business model, where the company's social and environmental effects are an integral part of how the company creates, delivers and captures value.

Partly Integrators

Two of the companies from the case study are categorized as partly integrators. These companies are Elkem and IKEA. The reason for these two companies to be put in this category is on the basis of their strong focus on sustainability in addition to have integrated the highest number of sustainable elements of all the case companies.

Elkem as a company is well aware of the efficient effect business today has on the society and environment, and is because of this focusing on integration of sustainability into their business model. They see this both as a necessity and as a business opportunity for the future. The company has integrated a wide range of sustainable elements, and is mainly focusing on recycling, reuse and recovery of waste, energy and other resources. In addition, being a part of the Eyde cluster has been essential for how they have managed to incorporate sustainability to such extent. For IKEA, sustainability seems to be a part of every level of the company. The company has a huge focus externally on sustainability. This is further reflecting how important sustainability is for the company and how much they are focusing on it. Still, the author can reveal from the findings that sustainability for IKEA also seems to function as an image creator to win even more customers. Some of the services they are offering their customers do not necessarily lead to any increased sustainable value, but is referred to as CSR, where the sustainable elements are not part of the business model. A barrier to actually integrate sustainability can also here be related to the findings of Waage et al. (2004) presented for the early starters, only applicable to a lesser extent.

None of the six case companies are categorized to be fully integrators. This is due to the fact they they have not integrated sustainable elements related to every part of the business model, and because their focus on sustainability is not strong enough. Full integration of sustainability requires that the companies have integrated sustainability to their whole business model. This is supported by the research done by Høgevoold and Svensson (2012), who state that business sustainability is not only about doing one thing, because it is the total effect of the actions that matter. Business sustainability also include the whole supply chain of a company; the company has to secure sustainability through every level of their chain.

The five last companies all contain elements from six of the business model archetypes proposed by Bocken et al. (2013, 2014). The relation to the archetypes is based on the companies' various sustainable elements presented in table 2 in section 5.2. They are related to the archetypes "maximize material and energy efficiency", "close resource loops", "substitute with renewable and natural processes", "encourage efficiency" and "create inclusive value creation". Bocken et al. state that these archetypes are important for integrating and driving innovation of the business model for sustainability. By using the archetypes, the companies might gain even more help to attach sustainability into the business processes, and they can serve as key drivers for competitive advantage. Still, the authors address the main challenge in this regard to be designing a business model in such a way that it enables for the firm to capture economic value through delivering social and environmental benefits. This is confirmed by the case studies, where the companies admit that sometimes they see integration of sustainability as just an investment for the future, and other times they see this as a synergy with increased economical profit. It is also essential with a business model design which facilitates integration of sustainable elements without resulting in too large and unfortunate complications for the companies, according to Høgevoold

et al. (2014) and Jenkins (2009). As a summary of this part of section five; the companies and their corresponding category are illustrated in figure 6.

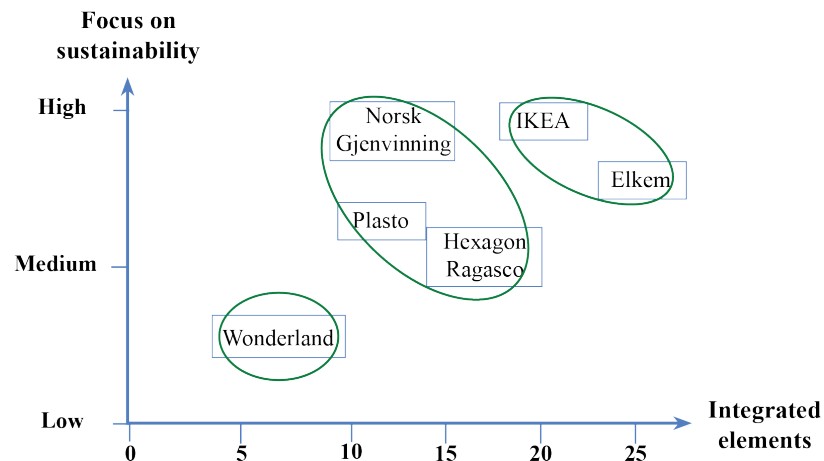


Figure 6: The relation between integration of sustainable elements and focus on sustainability.

The circles are illustrating the three categories which the six case companies are grouped into. If the only factor for categorization was the companies' focus on sustainability, one could have grouped Elkem and IKEA together, Plasto, Hexagon and NG together, and Wonderland alone. However, this is not the case because the actually integrated elements of sustainability seem to be an important factor. This is supported by Norström et al. (2014), who argues that ambitious goals regarding sustainable development never will generate change alone, and that because of this it is crucial to have specific plans and processes for action. The integrated elements on the x-axis is a direct transfer of the number of individual elements revealed in table 2.

5.4 Summary of Analysis

Based on the analysis of the empirical findings to be able to answer to the two research questions, and thereby the purpose of this thesis, the author has revealed that it varies greatly between the selected case companies regarding how many and which sustainable elements that are integrated. The elements have been analyzed and linked to the relevant parts of the business model canvas. This analysis is presented in the first part, with a table summarizing the results. The sustainable elements have mainly been linked to three of the nine building blocks of the framework used for the analysis. Through this section, the author reveals that there is a lack of theory and empirical findings regarding why the integrated elements for the six case companies are only related to some parts of the business model. This finding highlights the importance of further research to reveal why the elements are substantially related to only three parts of the business model. Information about this may help to set guidelines for other companies, related to whether they should start with the same areas of the business model, or if it would be more successful and profitable to start with other parts of the business model.

It is revealed that neither the empirical findings, the theory nor the analysis address why the companies have chosen to integrate these specific elements, how they have been integrated or to which extent they actually are integrated. In part two of the analysis, it is revealed that even though the companies can not be evaluated based on the degree of integration, they can still be categorized. The four categories presented are based on the relation between the company's holistic focus and strategic plans for sustainable development and the number of integrated elements. The number of integrated elements are evaluated not to be used as a tangible measure of the extent of actual integration. However, it is used to categorize the companies in relation to each other, to see if strategic plans and actual sustainability efforts are interrelated.

6. Discussion

6.1 Introduction

This section is divided into three parts. The intent of the first part is to discuss the analysis to see if it answers to the research questions and the overall purpose of this thesis. For the second part, the goal is to discuss the main results of the analysis in light of existing theory and the challenges presented in the introduction. At the end of this section, a summary of the discussion is presented.

6.2 Fulfilling the Purpose

The aim of this part of the section is to discuss the results of the analysis and to see if it corresponds to the two proposed RQs, and further to the overall purpose of this master's thesis.

RQ 1: To which parts of the business model are the integration of sustainable elements mainly related?

This first RQ concerns to which parts of the company's business model the integrated sustainable elements mainly are related. Through the empirical findings, the author revealed that the included case companies have integrated sustainable elements ranging from general waste management, change to renewable energy sources, transparency throughout the supply chain, local participation, collaboration in clusters, reuse of recycled materials and use of eco-friendly materials. These elements are examples of what the companies have integrated. The business model canvas was used as a framework of analysis for linking the integrated elements to the nine building blocks, reflecting the various parts of a business model. Through this analysis, several commonalities have been revealed.

The author found that the majority of the sustainable elements mainly were related to only three parts of the business model; the key activities, key resources and key partnerships. Even though the case companies are working with integration of different elements, they can still be assembled to mainly respond to these three building blocks. As some of the researchers argue (Boons et al., 2012; Hogevoeld and Svensson, 2012), there is a need for combining several elements in the business model for the company to be sustainable, because it is the total effect of their actions that matters. However, no one is addressing which or how many elements that need to be combined. The change towards sustainability is a process and not a one-time event; the sustainable elements cannot be integrated at once. This requires the companies to work continuously with improvements.

The process of change towards sustainability does not seem to be alike for all the case companies. One reason might be that the companies currently are at various stages of this process related to how many sustainable elements they have integrated, and what their focus and strategic plans for sustainable development are. One common feature for all the companies is that the process is going in a forward direction, even though it is at various speed. Some of the companies are pointing at the importance that the surrounding society has to facilitate the process of sustainable development. One example of this is that Hexagon Ragasco thinks that there has to be political regulations regarding this process. In addition, Elkem highlights the importance of economical initiatives from external sources to be important for driving the process even further. On the other side, some of the companies seem relatively unaffected by the surrounding conditions, like Plasto, who would rather be involved in specifying how this process should take place. Norsk Gjenvinning is together with politicians and other companies helping to set guidelines for the process towards sustainable development. The process can be related to the various levels of a company, e.g. including the company's relation to the society, or just internal processes related to direct changes at the business model level where integration of one individual element related to one building block can result in integration of elements related to other building blocks, and thereby in the long term result in changes for the whole business model.

What is also revealed in the analysis is that most of the companies have integrated sustainability related to all three dimensions of sustainability: The social, environmental and economical. Nevertheless, the social dimension does not match with the existing framework for business models because the BMC as a framework of analysis does not take this dimension into account. Therefore, the social dimension identified in the data cannot be directly linked to the existing building blocks of the business model. This is an important weakness of today's theory of sustainable business models. However, many authors (Jørgensen and Pedersen, 2015; Birkin et al., 2007) highlight the importance of the social dimension to also be a part of the business model, even though no one is presenting any specific proposals or frameworks which can facilitate this integration. This correlates with the research done by Wells (2013), arguing that the mainstream literature on business models neglect the relationship to the environment and to the wider society in which the business model is operated. Nor is there any specific part of the business model describing the environmental dimension of sustainability. Many of the integrated sustainable elements are, however, directly or indirectly related to the environmental dimension. E.g. switching to renewable energy sources, reduction of emissions and use of eco-friendly materials creates and delivers value for the environment in addition to result in economic profitability for the company.

The results of the analysis regarding the relation between the sustainable elements and their corresponding building blocks show that these elements mainly are linked to the key activities, key resources and key partnerships, representing how the company creates value. This is on the basis of the chosen definition of the business model by Osterwalder and Pigneur (2010). For the sustainable business model, Jørgensen and Pedersen (2015) state that the company's social and environmental effects have to be an integral part of the company's way of creating, delivering and capturing value. As presented above, the case companies have integrated elements related to all the three dimensions of sustainability, reflecting the chosen definition of the sustainable business model. The main part of the elements related to the environmental dimension is linked to the existing building blocks key activities, key resources and key partnerships. These elements are resulting in reduction of the company's negative impact on the environment. The social dimension can, however, as presented above not be related to the existing building blocks. Still, because this dimension has a positive impact on the surrounding society, e.g. through increased focus on safe working conditions and secure human rights, it contributes to creating value for the company. These two dimensions of sustainability also contribute to deliver value to e.g. the employees and the ecosystems.

RQ 2: What is the relation between plans for sustainable development and actual integration of sustainability?

According to Norström et al. (2014) ambitious goals regarding sustainable development will never generate change alone. For this reason, the authors state that it is crucial to have specific plans and processes for action. They underpin this by proposing that firms need to implement sustainable elements and sustainable decision-making at all levels of their firm. Related to this, the second part of the analysis contributes to shed light on the importance of making strategic plans together with actual integration of sustainable elements.

As revealed through the analysis, it is not enough to only have a holistic view on sustainability, and strategic plans have to be rooted in the business model to result in actual integration of sustainability. The categorization of the companies gives an overview of a potential relationship between the six case companies' plans for sustainable development and actual integration of sustainable elements. It is revealed that all the case companies are working continuously with sustainability improvements, thus in a varying degree regarding types and numbers of elements.

Regarding integration of sustainability, it can be challenging to distinguish to which extent the various elements are integrated only based on the results of the analysis. Some of the researchers (Bocken et al, 2013; Bocken, 2014; Beltramello et al., 2013; Wells, 2013 and Boons et al., 2012) describe a sustainable business model to be a model incorporating a triple bottom line approach with a strong focus on

sustainability. They are presenting these models to among other things include green product- and process based models, waste regeneration systems, circular value systems and alternative energy-based systems. However, none of the them are addressing to which degree these elements or actions have to be integrated for the business model to be defined as sustainable.

The case companies' focus and strategic plans are seen in relation to the number of integrated elements. This is due to the fact that the extent of integration of the elements could be challenging to measure. As described in the analysis, the empirical findings do not provide enough in depth information regarding the extent of the integrated elements. The amount of integrated elements are therefore only used to give an idea of where the companies stand in relation to actual integration of sustainability.

Based on this relation, the companies are put into one of the four categories: Early integrators, limited integrators, partly integrators and fully integrators. The categorization shows a relationship between plans and action, whilst providing an overview of the different companies in relation to each other. According to Clinton and Whisnant (2014), many companies claim that sustainability is "part of their DNA", but the fact is that for some companies, sustainability is held outside the company's core strategy, which is directly and fundamentally linked to the business model. This applies particularly to the company categorized as an early integrator, having some sustainable elements related to the social dimension integrated as CSR and not as a part of the business model.

Through the analysis it is revealed that some of the case companies in this thesis are stating that they are focusing on and working with sustainability in ways that are not reflected in their integrated elements. This means that what some of the companies say they want to do, is not related to what they actually do, even though both the number of integrated elements and focus on sustainability are high. In order to understand why some companies are working more with integration of sustainable elements than others, it is important to have in mind that requirements, regulations, trends and restrictions are varying from industry to industry, and from country to country. This can contribute to the differences between the case companies. In addition, as some of the companies argue, to be the first one out in an industry is a risk. Consequently, the companies rely on supporting initiatives from e.g. Enova and Innovation Norway, reducing the risk for the companies through economical support. In addition, collaborative R&D projects, in which some of the companies participate, can contribute to an increased focus on sustainability within an industry and result in sustainable solutions and new technology that would benefit the participating companies and the surrounding society.

The overall purpose of this master's thesis is as presented in the introduction to increase the knowledge about how companies can contribute to sustainable development through creating value related to the three dimensions of sustainability. To reach this purpose, the author wished to reveal which sustainable elements the chosen case companies are working with, which part of the business model they are related to, and what the relation between their focus on sustainability and actual integration is. Through answering to RQ 1 it appears that all the companies are working with various elements, which are integrated to all levels of the companies. Mainly they correspond to three parts of the companies' business models when BMC are used as a framework of analysis. Through answering to RQ 2 it is revealed that the various companies' focus on sustainability and actual integration of sustainability not necessarily are related in a high degree. This might be due to several reasons, but lack of knowledge, initiative programs, regulations and demands from the government seem to influence these decisions for the case companies.

By synthesizing the results of the analysis in relation to the two RQs, the companies can contribute to creating value related to the three dimensions of sustainability by integrating elements related to the economical and social dimension of sustainability, in addition to the economical dimension. However, this synthesise also shows that integration of elements related to the environmental and social dimension contributes to delivering value back to the environment and the societies. Because of this, there is a need for new sustainable business models, which takes all three dimensions of sustainability into account.

The companies can contribute to both create and deliver value related to sustainability. The importance of the relation between making plans and actual integration of sustainability is highlighted above.

6.3 Challenges for the Future

As Lewandowski (2016) proposes, we are depending on a switch from today's linear model to a more circular one to ensure sustainable development for the future. However, as Mentink (2014) states, the circular economy based on circular models does not fundamentally aim for sustainable development. This is because these kind of models not necessarily balance the three dimensions of sustainability, and because fully closed material loops are practically impossible due to technological difficulties and expenses (Mentink, 2014). Still, some of the elements and mindset which the circular economy are based upon might be transferred to a sustainable business model to contribute to sustainable development. Through the analysis, the author reveals that some of the companies already are working with circularity regarding the sustainable elements integrated into their business model. Examples of this are recycling of products, reuse of recycled materials, take-back solutions for products and change for renewable energy sources. Even though it will be impossible for the companies to integrate sustainable elements for a totally closed loop model, recycling and reuse of materials will contribute to a reduction of extraction of raw material from nature and the emission of waste to nature. In addition, working with life extension for increased durability of their products, will enable the products to be used for a longer time. This will contribute to slow down the negative impacts from business, and foster a more sustainable development. However, whether the sustainable elements related to circularity is integrated because they are easy to start with, or if the intention for the company is to work towards the change for a more circular model, is not uncovered in this study.

The main challenge of today regarding business models, is that they do not have a clear sustainable perspective. According to Bocken et al. (2013) it is a necessity that sustainable business should be the new "business as usual" to secure a sustainable development. The reason for this is that the business as usual of today has lead us to where we are now, and that more of the same will accelerate the pace of development and increase the use of resources and the negative impact on the environment even further. Through the analysis, the author reveals that all the case companies admit the importance of a change for sustainable development, and some of them even go as far as admitting that sustainable change is necessary to be part of the competitive situation in the future. Mosher and Smith (2015) propose that integration of sustainability into the business model can help companies prepare for future risks and secure a sustainable future. They present evidence that sustainability can be connected to financial results. The case companies claim that it is impossible at this point to directly measure the economical profitability based on the already integrated elements. However, giving their investments and integrated elements a holistic view, they all agree that it will be profitable for the future. And thus, they admit that integration of sustainability is a necessity for the company to survive in the transition to a more sustainable development of the society. To be able to fulfil this, Clinton and Whisnant (2014) and one of the case companies present that there is a need to unlock or decouple business value from sustainability, meaning that economic growth and use of resources should not necessarily be connected.

Today, companies can use sustainability reporting as a tool in order to internalize and improve their commitment to sustainable development, and to report how they are working with sustainability. These initiatives have received criticism for only helping to ease the conscience of the companies using it, and not for contributing to increased value creation (Wilson, 2013). These reports do not necessarily guarantee that the companies conduct what they report, and might coincide with the companies believing they are working with sustainability, without this resulting in any tangible actions anchored in the business model. This is also an issue for several of the case companies, talking a lot about how important sustainability is, without necessarily implementing changes or sustainable elements. This shows to be consistently for the industry and the politics regarding use of the concept of sustainable development and sustainability. To put an end to the climate issue, the United Nations developed 17 sustainable development goals (SDGs) which almost all nations of the world signed at the Climate Change Conference in Paris last year, promising to reach the goals by 2030. This may, however, be linked to

Nordström et al. (2014) claiming that ambitious goals never will generate change alone. This underpins the importance of putting strategic plans into work, through integration into the business model. One interesting finding in the analysis regarding the relation between plans and action, is that for some of the companies it a lack of correlation between their plans and what they actually do, even though both the number of integrated elements and focus on sustainability are high. There could be many reasons for this, and one might be if there is a lack of communication between those making plans and those integrating the elements of sustainability.

According to Mosher and Smith (2015), no company or industry can truly integrate sustainability, nor be completely successful once it is integrated, unless larger, systemic changes in the society enables it to do so. This highlights the importance of political regulations and incentives which are facilitating sustainable development in the society which the companies are part of. From the empirical findings, the author finds that some of the companies' state that it would be economically beneficial to lie ahead of political regulations, and instead contribute to specifying how the regulations should be controlled from a political perspective. Thus, the question which presents itself if whether some of the companies are on hold, waiting for other companies or politicians to take the lead towards a sustainable development.

As stated in the introduction, the level of sustainability in society depends on the level of sustainability in firms. Because of this, businesses have to integrate sustainability into their business model for a transition towards a more sustainable society (Clinton and Whisnant, 2014). The level of sustainability for firms is challenging to measure, especially when what they are talking about and what they are actually doing is not coherent. Sustainability in the business perspective is about companies creating and delivering value for the three dimensions of sustainability through economical efficiency, social equity and environmental accountability (Hogevold and Svensson, 2012). Thus, the author revealed through the analysis that the existing tools, frameworks and theory of business models, do not correlate with the social dimension of sustainability. The theory of sustainable business models is addressing the importance of the fact that a sustainable business model should be related to all three dimensions. However, it is revealed that there does not exist any concrete frameworks or pathways for how this should be done, or to which parts of the business model these elements can be related. This highlights the importance of development of new types of business models. Because, if the sustainability aspect of a company is not incorporated all the way through the business model, it will not penetrate the company and be reflected through all their actions, which is necessary for sustainable development.

6.4 Summary of the Discussion

Over the past years, several companies have started to integrate sustainable elements and actions into their corporations. This is also applicable for the case companies in this master's thesis. Regarding integration of sustainable development, all the companies have integrated elements related the three dimensions of sustainability; economical, social and environmental. Still, through the analysis, the author revealed that the integrated elements only concern some specific parts of the business model; key activities, key resources and key partnerships. However, today's business model frameworks do not consider the social dimension of sustainability. In addition, the author found that it is not necessarily a connection between the respective companies' plans and focus on sustainability, and what actions they are working with and which elements they are actually integrating into their business models.

Researchers presents a lot of challenges regarding the relation between business, the general society and sustainable development. Some presents a transition towards a more circular model to be the solution, while other addresses that the most important thing is for business to integrate sustainable elements related to all three dimensions of sustainability; the social, environmental and economical. Today's business models do not take into account the social and environmental dimensions in a sufficient degree. This is revealed because it is challenging to correlate particularly the social dimension to the existing framework for business models. Today's business models are largely only related to the economic

dimension, which revolves around the customers and the company itself. Because of this, there is a need to develop new sustainable business models for tomorrow, including all the three dimensions.

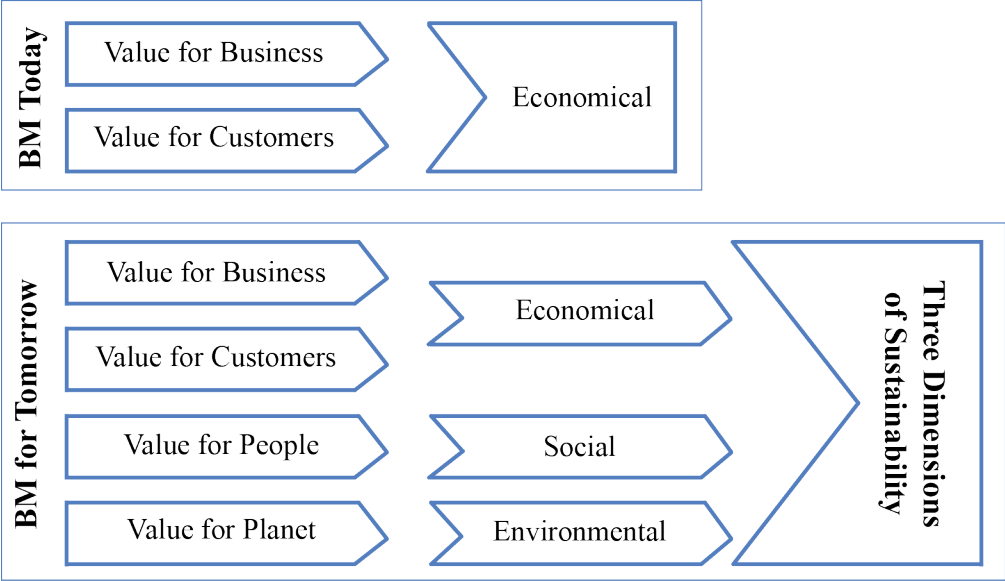


Figure 7: Illustration of today’s business model and the business model for tomorrow.

7. Conclusion

It is becoming obvious that there is a need for new and sustainable business models in order to secure a sustainable development for the future. However, the business models of today are mainly designed without taking the three dimensions of sustainability into account. This means that very few companies have integrated sustainability into their business model in such a way that it facilitates social and environmental value in addition to financial returns.

In this thesis, the author has investigated how the selected case companies are working with sustainability at the business model level. The author has examined which sustainable elements the companies have integrated, to which parts of the business model these elements are related, and what the relation is between focus on sustainability and actual integration. To answer the proposed research questions, the author has collected relevant theory and empirical data from documentation and interviews with six selected goods-producing companies.

As this study has illustrated, the companies have integrated various sustainable elements into their business models. These elements varies regarding to which extent they are integrated and regarding what types of elements they have integrated. The business model canvas was used as a framework of analysis for linking the integrated elements to the nine building blocks, reflecting the various parts of a business model. The integrated elements for the selected case companies are mainly related to three of the building blocks. These three main building blocks are the key resources, key activities and key partnerships. The most consistent elements related to these three are waste management; reuse and recycling, cooperation among companies; R&D and sharing of knowledge, reduction of material footprint; supply chains and choice of materials and use of energy; reduction in use, change to renewable sources and energy recovery. By looking at which elements they have integrated, it appears that the companies are both improving their sustainability internally, and externally in cooperation with others. As a conclusion, the integrated elements could possibly receive more attention or priority when starting to integrate sustainability into the business model.

The importance that the business models take all three dimensions of sustainability into account to secure sustainable development have been pursued through literature. However, this study shows through an analysis of the empirical findings, that it is still uncertain to which extent the sustainable elements have to be integrated, how many and what kind of elements that have to be integrated for a company to contribute to a sustainable development, and what the optimal ratio of elements related to the three dimensions of sustainability are.

Throughout this study, it is revealed that to only have strategic plans and goals regarding sustainability will not foster sustainable development. Plans need to be related to actions resulting in integration of sustainable elements into a company's business model. The study does however not reveal how the sustainable focus and strategic plans of a company impact the actual degree and extent of integration of the elements. The importance here is to bear in mind that the relation between plans and actual integration can be influenced by both internal and external forces. The analysis shows that some companies rely on support and regulations from the politicians and the surrounding system, while some companies want to be forefront and contribute to develop regulations and increase the general focus on sustainability among the industry and the opinion of the society.

One single company is part of an industry, being part of its surrounding society, which again is a part of the global system. Today's climate crisis is caused by an unbalance in the world's ecosystems through the risk of extracting nature completely for rare raw materials and destroying the ecosystems through discharging more waste and emissions than nature can deal with. To stop further destruction and to slow the progression, one has to take the industry's enormous global influence into consideration. As Bocken et al. (2013) state, sustainable business has to be the new business as usual in order to prevent the negative changes becoming irreversible. A solution to this might be development of new sustainable business models, which takes all three dimensions of sustainability into consideration. The increasing

awareness and attention around sustainable development and the circular economy trigger a demand for new and sustainable business models.

7.2 Implications for Managers

The direct implications for managers from this study revolve around the role they play for integration of sustainability into the firm's business model. Managers should recognize their functions related to how sustainability is worked with in general in the company and which functions they have regarding integration of specific elements. They should also try to uncover their role related to in which degree they need to facilitate internal sustainable initiatives from employees, and to which degree they need to facilitate for external sustainability initiatives from politicians and the industry they are a part of. Related to this, knowledge and general experience must be acquired, and a sustainable culture within the company might contribute to more focus and actual work with sustainability.

The managers should also go through strategic plans and work on how they should put these plans into actions, so that the plans will result in integration of sustainable elements into the business model. It might also be important for managers to reveal which sustainable elements that would be most beneficial for their company to work with, for as the findings in this study shows, it varies greatly among the companies which elements they are working with.

7.2 Future Research

This thesis suggests a number of areas for future research. Further research can investigate the order to which the sustainable elements has been integrated. One advantage could be to possibly reveal whether there are similarities among several companies in terms of what kind of elements that are integrated first, and if there are similarities in the following integration. Such a study can contribute to create a suggested pathway of integration for newcomers wanting to start the integration of sustainability into their business models.

The author has through this study revealed that it is challenging to measure to which extent the various sustainable elements are integrated. Further research could aim to reveal the degree of integration for the various elements, to more clearly distinguish between the companies. Through this one might also be able to say something about the integration being successful or not. It would be of interest to identify barriers for integration, and identify factors of success as the basis for the companies to succeed.

An interesting topic for further research is to investigate why the companies mainly have integrated sustainable elements related only to specific parts of the business model, and which factors influencing these choices. One might also be able to reveal if the choice of elements is influenced by internal forces from within the company, or from external forces.

For the future, it would be of interest to measure to which extent integration of sustainability is related to the company's economical performance. If one can prove a positive relation between integrated sustainability and increased performance, this might provide motivation for companies to focus more on how to integrate sustainability into their business models.

Lastly it would be of interest to uncover what kind of companies that have effectively integrated elements related to all three dimensions of sustainability into their business models, and how this is done. This might serve as inspiration to create a step-by-step framework for other practitioners wanting to successfully integrate sustainability in the future.

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9. Appendix

9.1 Appendix 1: Interview Guide

The Questions to Be Answered

How is your company's business model today? (Construction, channels, focus, value creation, customer segmentation, partners, income model, resources, implementation, etc.)

Is the business model constantly changing? If so, why?

Have you ever discovered problems with the business model you have chosen in your company? Why and how?

Which sustainable elements have you already implemented?

Which of these are circular?

Which of these are socially responsible?

Why did you choose to include these elements?

How do these elements affect the following?

1. Customers
2. Sales numbers
3. Profitability
4. Competitors
5. Partners
6. International growth

What worked well?

What do you think are the critical success factors that have made these specific efforts successful?

What did not work out well? And why?

What are the barriers for implementing additional efforts? (politics, regulations, access, etc.)

How does your material process work?

What are your regards towards?

1. Upcycling. Recycled material as a resource?
2. Focus on waste reduction?
3. Reuse and circular processes; is it cost effective? (A short economical analysis)
4. Access to reused material if you do not recycle it yourself? Transparency towards partners and manufacturers → Easy to track the source and production processes?
5. Reused material → reduced quality?

Can sustainable business models be perceived as a competitive advantage?

1. Why? How?

Can you tell us a little bit about how you perceive your sustainability initiatives is connected to the company's overall results?

1. Is sustainability a part of your strategy or your business model? What are the pro's and con's here?
2. Do you think that profitability and responsibility is a trade-off or a synergy?
3. How is sustainability and circular processes perceived in the industry your business is working in?