



**UNIVERSITY OF GOTHENBURG**  
**SCHOOL OF BUSINESS, ECONOMICS AND LAW**

Master Degree Project in Innovation and Industrial Management

## **Shifting Towards Circular Economy**

A case study of the Office Furniture Industry

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# Abstract

**Background** The awareness of the exploitation of resources in a way where the world will not be able to sustainably continue to provide for has grown over the last decades. In turn this has given rise to the concept of circular economy and the idea of how to maximise utilisation of raw materials and products.

**Contribution** This thesis aims to look into how the ideas of circular economy can effect the business models of producers in the office furniture industry and what opportunities and barriers there are for moving towards more circular models. The practical contribution consists of the mapped effects and impacts of circular economy in the Business model canvas.

**Methodology** The research is conducted in a case study manner with ten semi-structured interviews with actors within the industry. The empirical findings were analysed in a cross-case analysis. Then the empirical and theoretical findings were compared in a case-theory analysis.

**Findings** Our conclusions suggest four main findings. Firstly, to extend the life of the products and to better take care of material waste after usage, sales of function through rental models are suggested. Secondly, the products should be designed for remanufacture, repair, reuse and recycle. Thirdly, there is a need of capacity by the producers to handle the return flow; the logistics and how to integrate the reuse of material in the current processes. Finally, the mindset of customers, where there today is a need of owning products in comparison to having the function of the product.

**Recommendations** The authors recommend the producers to move towards circular models and suggest that some steps could be taken today. Firstly, developing the design of the furniture in consideration to choice of material and reuse. Secondly, make strategic partnerships with actors which in the long run can help the transition to a full circular business model and finally, give the customers the right incentives to make conscious decisions. The authors believe that with these steps the sales of function also will come more natural.

**Key words:** Circular Economy, Business model, Business model canvas, Office furniture, Sustainability

# Contents

Acknowledgments.....	3
Abstract.....	4
1. Introduction.....	8
1.1. Background.....	8
1.1.1. Circular Economy.....	8
1.1.2. Business Models.....	10
1.1.3. The Office Furniture Industry.....	10
1.2. Purpose and Research Question.....	11
1.3. Limitations.....	11
1.4. Contributions.....	12
1.5. Thesis Outline.....	13
2. Methodology.....	14
2.1. Research Design.....	14
2.2. Case Study.....	15
2.3. Planning and Preparation.....	16
2.3.1. Semi-structured Interviews.....	16
2.3.2. Interview Guide.....	16
2.3.3. Interviewees.....	17
2.4. Data Collection.....	18
2.4.1. Secondary Data.....	18
2.4.2. Conducting Interviews.....	19
2.4.3. Recording and Transcription.....	21
2.5. Data Analysis.....	22
2.6. Quality of Research Design.....	23
2.6.1. Validity and Reliability in Qualitative Research.....	23
3. Literature Review.....	26
3.1. Circular Economy.....	26
3.1.1. Concept Definition.....	26
3.1.2. Benefits of Circular Economy.....	27
3.1.3. Limitations of Circular economy.....	29
3.2. Business Model.....	30

3.2.1.	Business Models for Circular Economy .....	32
3.2.2.	The Business Model Canvas .....	34
3.2.3.	Limitations of the Business Model Canvas .....	38
3.3.	Summarised Effects of Circular Economy .....	38
4.	Empirical Findings .....	43
4.1.	Interview E1 .....	43
4.2.	Interview E2 .....	44
4.3.	Interview E3 .....	46
4.4.	Interview E4 .....	47
4.5.	Interview E5 .....	49
4.6.	Interview P1 .....	50
4.7.	Interview P2 .....	52
4.8.	Interview P3 .....	53
4.9.	Interview C1 .....	54
4.10.	Interview A1 .....	56
5.	Analysis .....	58
5.1.	Cross-Case Analysis .....	58
5.2.	Case-Theory Analysis .....	65
6.	Conclusions .....	73
6.1.	Recommendations .....	74
6.2.	Future Research .....	76
7.	References .....	78
7.1.	Articles .....	78
7.2.	Books .....	79
7.3.	Electronic sources .....	80
8.	Appendix .....	82
	Appendix A: Interview guide .....	82
	Appendix B: Summarised canvas from interview .....	87
	Appendix C: Info Sheet .....	123

## Figures

Figure 1 Thesis outline.....	13
Figure 2 Research outline .....	16
Figure 3 The five circular business models .....	32
Figure 4 The Business model canvas.....	34
Figure 5: Summary of key findings .....	73
Figure 6: Summarised recommendations.....	74

## Tables

Table 1 Selected interviewees.....	18
Table 2 Summarised Theory Canvas .....	39
Table 3 Summarised Canvas for E1.....	43
Table 4 Summarised Canvas for E2.....	45
Table 5 Summarised Canvas for E3.....	46
Table 6 Summarised Canvas for E4.....	48
Table 7 Summarised Canvas for E5.....	49
Table 8 Summarised Canvas for P1 .....	51
Table 9 Summarised Canvas for P2.....	52
Table 10 Summarised Canvas for P3.....	54
Table 11 Summarised Canvas for C1 .....	55
Table 12 Summarised Cross-Case Canvas .....	64
Table 13 Summarised Case-Theory Canvas.....	65

# 1. Introduction

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*This chapter introduces circular economy together with the Business model canvas. Moreover, it problematise today's linear economy and touches upon the swedish furniture industry. Lastly the chapter presents the purpose, research questions and the limitations of the thesis.*

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## 1.1. Background

The awareness that business need to change in order to retract society from its current unsustainable path has strongly increased in recent years. The concept of sustainability has been defined in various ways and tend to have different meanings to different people. Sustainable development was first defined by the Brundtland Commission in 1987 as “...development which meets the needs of current generations without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987). At its core, sustainability is simply the ability to endure or survive. Sustainability describes the diversity and productivity over time of biological systems, from an ecological perspective, and the potential for long-term welfare, from a human perspective. The human perspective depends on the wellbeing of the natural world, including the responsible use of natural resources and disposal of waste. The concept of sustainability involves stabilising the disruptive relationship between our planet and humanity (Hawken, 2007). Such an effort is challenging, as the planetary system and the human system are both very complex (Rosen et al, 2012).

### 1.1.1. Circular Economy

The best way to explain what a circular economy is, is to compare it to our current linear economy. In our current linear economic system, resources are extracted from our planet at an ever-increasing pace, and turn them into a product that we mostly dispose after use. From the perspective of an individual or organisation, that seems efficient. However, when looking at such a use-waste model from a global perspective it shows how unsustainable the approach is (MacArthur, 2015). In this linear economy, 80% of what we consume and use is directly discarded after usage (Semples & Hoffmann, 2013) and 99% of the total material flow generated to produce consumer goods ends up in waste disposal within half a year (Hawken, 1999). Such a linear model



will not be able to sustainably deliver to our demands and we are weakening the capacity of the planet to provide resources in the future (MacArthur, 2015). A problem with our existing linear economy is also the abundance of products. This abundance is a by-product of a society focused on consumption where companies' revenues are based on sales together with people's willingness of owning products. The owning of products is a consequence of practical needs but also a social status. This can be seen through the example of owning a car. In order to manufacture a car, a vast amount of resources is needed, both in form of material and energy. Furthermore, it also costs a lot of money, both to buy and to own. Nevertheless, one billion of the cars in use today are being parked and are not used through out a day. By using the existing products in a better way there will not be the same needs to making wholly new ones and the consequence will be a decrease in demand of wholly new products, decrease in the extraction of raw material and resources, and a decrease in the production of waste. Hence, we need to rethink our habits and we need a transition to a more circular model, one that is wider sustainable and operates within our planetary boundaries (Tobias Jansson, 2010).

In order to reach a more sustainable world, a transition from a linear to a circular economy is necessary. Businesses have become aware of the need to change in order to move away from the unsustainable path. Yet, most of the changes made by companies are of an incremental nature. However, a small but growing number of companies have taken on the challenge to truly change and transform the way they conduct business and to become more sustainable by designing their processes in a more circular way (MacArthur, 2015). Circular economy aims to close the material loop between manufacturing and disposal. The idea of the concept is to reduce the use of raw material and the environmental impact, to reuse products and components, and to recycle what cannot directly be used again. A circular economy is one that is waste-free and resilient by design. It is about designing the economy in a way that is restorative of ecosystems, ambitious with its innovation, and impactful for society. It is a bold challenge but one that is achievable and some businesses are getting closer to this ideal (EMAF, 2015).

According to Planning (2015) the managers' perceptions have changed towards a more circular economy during the last couple of years. He presents three main factors; the volatile commodity prices, Information Technology and a shift in consumer behaviour. The increased volatile commodity prices have replenished the need to ensure the resource supply, especially for

corporations in the manufacturing industry and the rising raw material prices makes it more attractive to recover raw materials from users at the end-of-life stage. Secondly, the Information Technology has also enhanced the possibilities for new business models, for example apps for share-economy services. Thirdly, and maybe the most important factor, is the beginning of a shift in consumer behaviour towards a performance-over-ownership mentality. In order to establish an economy model with a focus on the recycling of material flows instead of generating waste, it will require the shift in consumer behaviour to become fundamental (Planning, 2015). While ownership still tends to be of the highest importance to consumers, research show that more consumers tend to realise the downside of ownership. Buying a service and leasing can be advantageous since the manufacturer then has the responsibility over the products, and will stand for the maintenance, reparation and any upgrading throughout the life (Nakajima, 2000).

### **1.1.2. Business Models**

Every company has a business model, whether it is expressed or not (Teece, 2010). A business model defines how the company intend to create, deliver and capture value (Nyström & Williander, 2014). A widely used tool for creating and developing a business model is Osterwalders' Business model canvas, which is a visual chart describing the different aspects on how a company intend to create, deliver and capture value. Today, businesses tend to have a business model focused on creating revenues by having a high marginal per sold unit and many sold units (Nyström & Williander, 2014). To move towards a circular economy, companies will be required to revise their business models and rethink how they deliver value (Regeringen, 2015) but also adapt to the new possibilities of creating and delivering value provided by a circular economy. As mentioned above, the prices of raw material are volatile and a company could revise their business model in order to be able to recover raw material from their products and, hence, become more circular. As customers start to value the function rather than the ownership, it can be a success and key factor for a company to adapt their business model for a share-economy (Nakajima, 2000).

### **1.1.3. The Office Furniture Industry**

The furniture manufacturing has a long tradition in Sweden with success stories like IKEA, and it has developed successful niched markets such as the office furniture industry. However, during the last years the corporations within the office furniture industry have become fewer and larger

(Brege, 2009). One of many sustainability challenges facing the office furniture industry is the amount of waste produced during manufacturing, which is calculated to be doubled year 2030. The office furniture industry must start to look over how to decrease the amount of furniture deposited and how to decouple growth from the use of resources (Hållbarhetsguiden, 2016). The office furniture industry is successful in favorable economic conditions, but also highly cyclical. During the last recession between 2001-2004 the industry lost 40% of its sales in the Swedish market. Therefore, there is a general interest to further investigate the office furniture manufacturers' future strategy development (Brege, 2009).

## **1.2. Purpose and Research Question**

Our purpose is to explore the effects of circular economy on business models with a focus on the office furniture industry. Together with main actors within the industry we aim to build on the new shift towards business models as a key part in the sustainable development of companies. We aim to provide suggestions by answering our research question:

*How will circular economy affect the business models in the office furniture industry?*

## **1.3. Limitations**

This thesis is limited to the office furniture industry and the effects of circular economy on the producers' business models. The Business model canvas is used as a tool and it is limited to the internal structure of the company and its partners. Hence, if firms aim to adapt to a circular economy their whole business model, the external market and industry need to be taken in consideration. Further, our thesis is limited to Swedish office furniture industry not taking the international industry in consideration.

The empirical findings will only be based on interviews, which means that the results are likely to be limited for generic use but with consideration, especially to that we have used experts of circular economy in general, the findings can be used as a guideline for future research. Most of our interviewees were familiar with the concept of circular economy, however, not as many had used the Business model canvas before. These factors are needed to be taken in consideration and have limited our research to in specific isolate the effects of circular economy.

Furthermore, we have limited our thesis to specifically concern circular economy and not sustainability in general. Hence, we will not take other environmental factors into consideration, such as emissions, pollution or toxic substances from production etcetera. MacArthur (2015) proposes three principles for a circular economy but since we are not focusing on environmental factors as those mentioned above, the third factor of “foster system effectiveness by revealing and designing out negative externalities” has not been covered in the collection of empirical data and will neither be considered in the analysis nor conclusions.

Finally, the thesis is limited to possible future business models and not the implementation of them. It is further limited to factors that might affect the business model but no financial effect off them has been calculated.

## **1.4. Contributions**

Our theoretical contribution was aimed to precise the effects of circular economy since little research have been done to see the exact impacts of circular economy on organisations’ business models. However, the theoretical results from our thesis may rather show the impacts in general when a company shifts towards a more sustainable business model because it was difficult to pinpoint the exact effects of a circular economy without the interviewees taking the general sustainability work of their organisation into consideration. The practical contributions of our thesis are the developed and mapped effects and impacts of a circular economy for companies in the office furniture industry.

## 1.5. Thesis Outline

This report will be in the following manner: in section two the methodology will be presented, followed by a literature review in section three. In the fourth section the empirical findings from the interviews are presented. Our analysis will be in the fifth section; in the form of a cross-case analysis and a case-theory analysis. In the sixth section we conclude our findings and give recommendations.

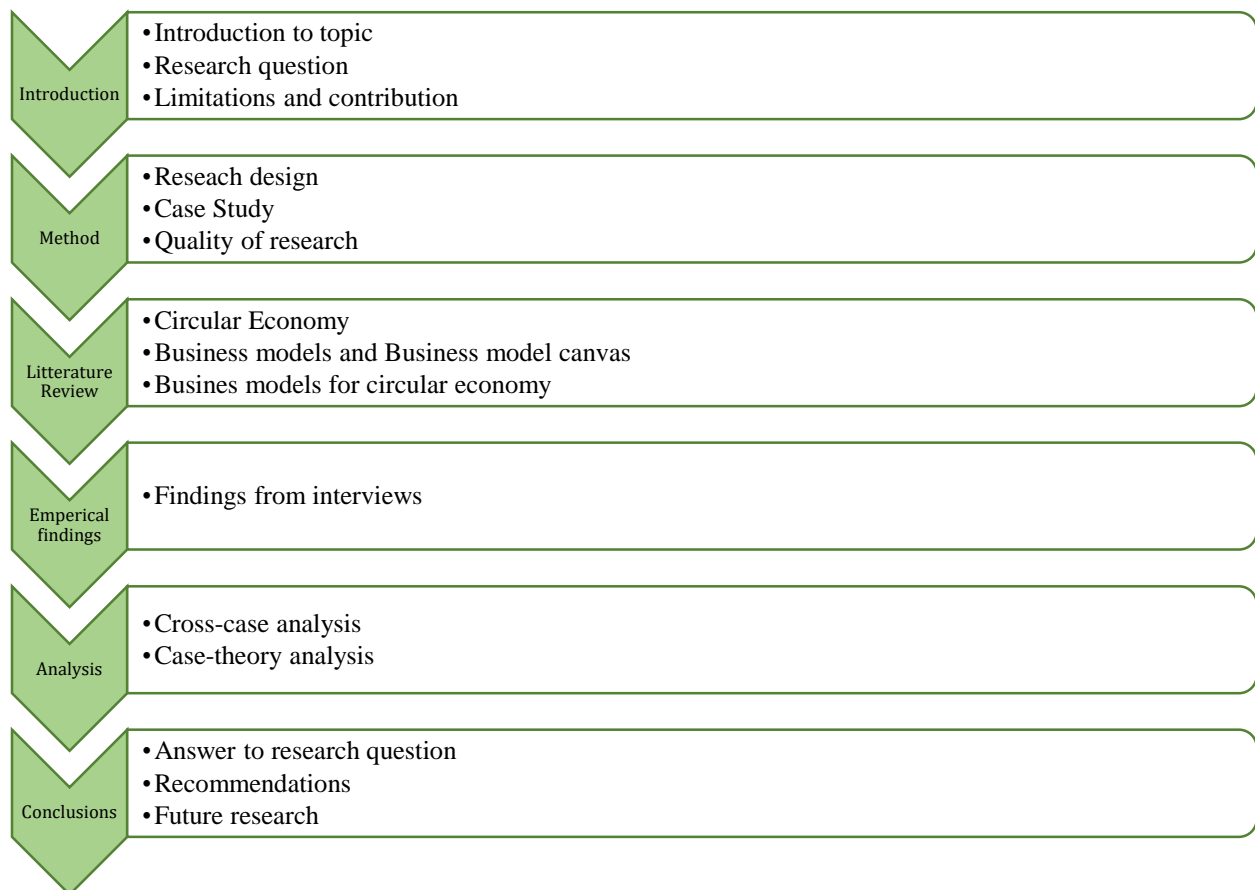


Figure 1 Thesis outline

## 2. Methodology

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*The following chapter is an overview of the research approach for the thesis, including a description and motivation for our choice of method. Furthermore, our structure of gathering empirical data and how we assure validity and reliability throughout the thesis is explained.*

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### 2.1. Research Design

Research design is to ensure that the evidence obtained enable one to answer the research question as unambiguously as possible. The research design is fundamentally affected by whether the research questions is descriptive or explanatory, which in turn affects what type of information is collected. Research design is not related to any particular method of collecting data but rather refers to the structure of an enquiry (De Vaus, 2001).

The research design may be formalised or exploratory. Explorative research design is used to gain familiarity with a phenomenon or to reach new insights of it. The objective of exploratory research design is that one develops hypotheses rather than their testing, whereas the formalised research design has a substantial structure with specific hypotheses to be tested. An exploratory approach in the research involve original field interviews in a limited scale with individuals and parties with a view to secure greater insight to the research question. The results from an exploratory research may not be adequate for decision-making by themselves. However, they may provide significant insight to a given situation (Kothari, 2004).

We have chosen an exploratory approach when conducting our research since circular economy and business models are uncharted territories both in academia and among practitioners. Our aim was to seek a more fundamental understanding of how a circular economy can impact companies' business models and if it can be explained by existing theories. This research is meant to lay a groundwork within circular economy and show how it can affect business models, which could possibly lead to future studies within the field.

## 2.2. Case Study

A case study aims to investigate a real-life phenomenon in its context in depth (Yin, 2009). Yin (2009) further presents four types of case studies, where the difference in a holistic and an embedded type as well as single versus multiple case study is presented. We aim to explore the concept and the future of circular economy in different companies with a single unit view; the effects of circular economy on their business models. Hence, we decided to use a holistic multiple case study.

A case study is claimed to be limited because of its singular nature. Generalising the results and the outcomes only applies to the certain context of the specific study. The multiple design will illuminate the differences in the contexts and consider the aspects of generalising the outcome into other contexts. Researching social settings in general means that the researchers will face personal interpretation, by themselves and by the interviewees. Therefore, data triangulation is used in order to ensure that the interpretation is consistent with the reality. This means that each important finding needs at least three or more confirmations and assurances that the key meaning is not overlooked (Stake, 2006). To consider our findings as important and significant for our research, the findings should have been brought up by two or more interviewees and mentioned in existing theory. However, some recommendations that are included in the thesis are those that we from a personal point of view found particular significant.

Our thesis is conducted in a qualitative and holistic multiple case study manner, where we have evaluated the effects of circular economy on office furniture producers' business models. Yin (2009) defines three steps in the conducting a case study that have also been followed in this report (figure 2). Firstly, "Define and Design", which is represented by the research question, method and literature review. Secondly, "Prepare, Collect and Analyse"; we have gathered the empirical data by semi-structured interviews with five experts in circular economy and business models, three producers of office furniture, a large public organisation as a customer and an auditor. When the data was collected each interview was summarised individually, with the Business model canvas as the main tool. The final step defined by Yin is "Analyse and Conclusion". Our analysis was made in two steps, first a cross-case analysis was conducted with the data from the interviews and conclusions were drawn. In the second step the results from step one was compared with the theory. Finally, conclusions and recommendations were based upon these results.

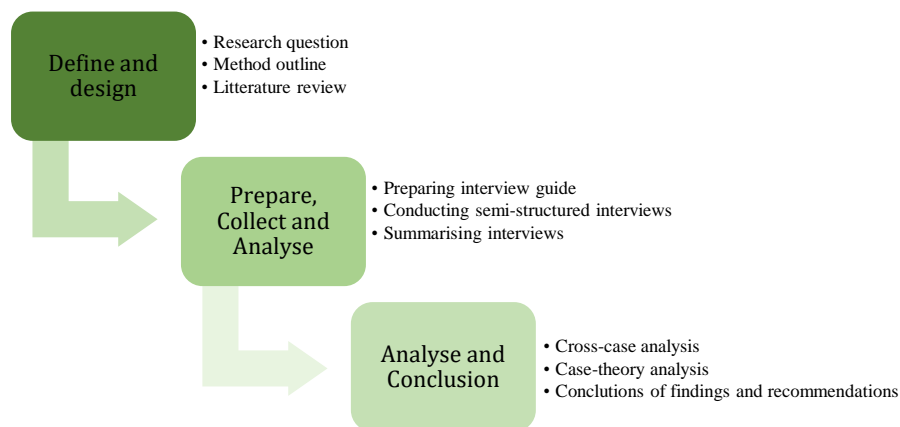


Figure 2 Research outline

## 2.3. Planning and Preparation

### 2.3.1. Semi-structured Interviews

We chose to collect the empirical data through semi-structured interviews. The semi-structured interview is a method commonly used for gathering data in situations like ours; where the purpose is to gather data around the interviewees' experience, motivation and reasoning (Drever, 1995). Semi-structured interviews are a good way to go into the depth of a topic, while keeping the method's replicability of the case in different contexts. It is flexible enough to allow the interviewees the space to elaborate their knowledge, experience and predictions, yet, the structure renders the possibility to compare the data. (Bryman & Bell 2012) Our interviews followed a procedure where we started rather broad by asking open questions about the person, company and circular economy. The questions were then narrowed down and we asked more focused questions about the Business model canvas, going through each segment separately. The questions were not following the exact same order every interview, some questions were added and some questions were removed depending on how the interviewee answered the questions. However, the sections were always in the same order and all the questions in the interview guide were addressed in every interview.

### 2.3.2. Interview Guide

An interview guide is suggested to be used to help the interviewer making sure that the interviews will have a similar approach and that all the themes are mentioned to all interviewees (Bryman &



Bell 2012; Yin, 2009). We have created two main interview guides, one for the different actors within the office furniture industry (Appendix A.1) and one for the experts (Appendix A.2). The interview guides were structured in the manner of a main question and then follow-up questions or comments to help us as interviewers.

The interview guides have questions regarding each topic that we wanted to cover during the interview for gaining primary data for the thesis. Hence, it is important for the transferability of our thesis that all the topics are covered during each interview and in a coherent way to give all the interviewees the same preconditions (Bryman & Bell 2012). Before the interview we sent over an information sheet (Appendix C) with a short introduction of our thesis, our contacts, definitions of circular economy and the Business model canvas. We did this to save some time during the interview and beforehand ensuring that the interviewees had understood our definition of the concept of circular economy as well as had got a basic understanding of the Business model canvas. The Business model canvas was used as a tool for gathering information about how the industry might change due to the adoption of a circular economy. We believe that using the model gave both us and the interviewees a good structure to follow in order to capture as many factors as possible when it came to adaptations and changes in a company's business model.

### **2.3.3. Interviewees**

We differentiated the interviewees by dividing them in to four groups: The producers, The experts, The customer and The auditor. Due to the office furniture industry being mainly dominated by large actors we decided that the minimum target would be at least two office furniture companies. We hoped to get an interview with a recycling company, which is considered as an important actor, but we did not manage to get one. Furthermore, we decided that we would interview a few experts within the area of circular economy and business models, and also an auditor and a customer. The aim with these groups was to get a different perspective of the industry, than from the producers themselves, and of the two concepts, circular economy and Business model canvas. The interviewees seen as Experts in our thesis were chosen because of their knowledge, practical contribution and experience within the area of circular economy. We had the opportunity to interview a specialist who has worked with circular economy many years and who also holds lectures on the topic. Two of the experts were researchers, who both are working within a state owned institute with lot of experience conducting research on sustainability and life-cycle analysis.

Despite, they not were experts in the area of the office furniture industry in particular, they provided insightful knowledge on how circular economy can be applied in the industry. The consultants had long experience working with circular economy. One of them have for many years followed the development of circular economy in different industries and been part in developing possible business models for circular economy and the other had a specific focus on what toxic that is put in out products. Hence, the interviewees could provide knowledge and information about how the concept is developing and why.

Due to the wish of some to be anonymous we decided to make all of our interviewees anonymous, hence, they will only be referred to by their coding name. However, a small description of the interviewees has been made consisting of what type of actor in the value chain they are and their title within their companies.

<b>Title</b>	<b>Date of meeting</b>	<b>Type of meeting</b>	<b>Type of actor</b>	<b>Code</b>
Specialist in Circular economy	2016-03-31	Video call	Expert	E1
Management consultant	2016-04-11	Face-to-face	Expert	E2
Researcher	2016-04-15	Face-to-face	Expert	E3
Researcher	2016-04-19	Video call	Expert	E4
Ecotoxicologist and consultant	2016-04-13	Video call	Expert	E5
Manager Sustainable Asset	2016-03-16	Video call	Producer	P1
Managing Director	2016-04-06	Face-to-face	Producer	P2
Customer Quality Manager	2016-04-15	Phone	Producer	P3
Process leader	2016-04-12	Face-to-face	Customer	C1
Auditor	2016-04-26	Video call	Auditor	A1

*Table 1 Selected interviewees*

## **2.4. Data Collection**

### **2.4.1. Secondary Data**

Our secondary data was foremost collected in the beginning of the thesis process as a way to gain a solid knowledge and understanding of the subjects through which more detailed analysis could be done. Academic articles, literature and other scientific reports have been systematically collected from well-known databases such as Emerald, Scopus and Google Scholar. Searching for adequate information and data, certain keywords have been used, such as “Business model

canvas”, “Circular Economy”, “Circular Business Models” and “Office Furniture Industry + Circular + Business Models”. When choosing academic articles, we looked at numbers of citations and year of publication. In our thesis, the work of Ellen MacArthur Foundation has been used, which one might argue this is not an academic source. However, one should also acknowledge that the concept of circular economy is rather unexplored within academia and Ellen MacArthur Foundation is up to date the organisation who has conducted the most research and is one of the leading actors in the development and spreading of circular economy. When it came to providing up-to-date information about the concept we saw that organisations, such as Ellen MacArthur Foundation, could provide us with insightful data. The same goes for the use of Accenture’s dissertation as a part of our theoretical framework for circular economy. Accenture has for a long time done research and worked with circular economy and did provide us with knowledge and experience of how the concept is developed in the field of business models. We have been aware of that the information coming from organisations rather than from the academic world could be somewhat biased. We have taken this into consideration and have been even more critical to such data and information before using it in our thesis.

#### **2.4.2. Conducting Interviews**

For most of the interviews both of us were attending. We saw this as a strength since both of us could attain the knowledge directly and none of us needed to get it second-hand. It also meant that we both were able to ask follow-up questions during the interviews. As both of us heard the same answers and information it also lowered the risk for misconceptions or bias depending on who held the interview. However, one of us was always the lead interviewer and asked the main questions while the other was more focused on documentation. Being two interviewers against one interviewee can make the interviewee feel intimidated by the situation (Drever, 1995). Due to this, we clearly explained the reasons behind our decision so that the interviewee felt comfortable in the situation. However, for some interviews exceptions were made due to convenience of time for the interviewee and both of us were not able to attend.

We started the interviews by asking the interviewee if we could record the session and if we could use their name or if they preferred to be anonymous. However, as some preferred to be anonymous we made the decision to make all the results anonymous. Then we explained the outline of the interview, introduced ourselves and our project. We followed up by asking general questions about

the interviewee and their company. According to Bryman and Bell (2012) it is good to begin with “easy” questions so that the interviewee feels comfortable and the interviewer gains their trust. Then we asked question regarding the company's current situation and business model. The larger part of the interview was focused on their perception of the future, and for this part we used the Business model canvas as a tool. We made it clear for all interviewees that our interest was of the producing company's business model, no matter what actor we were interviewing, to make sure we got coherent and comparable results. We finished the interview by with asking if the interviewee wanted to add something and then explained the following-up procedure.

None of the interviews were conducted in English due to the interviewees all being native Swedish speakers and it is assumed that it is more comfortable to expressing oneself in his/her mother tongue. The interviews were fully transcribed in Swedish and then the findings in the Business model canvas were translated and summarised in English together with other important observations and citations from the interviewee. Conducting the interview in Swedish, transcribe it in Swedish and then translate to English may raise potential language and translation problems associated with collecting data in another language and then translating the data into another language, such as when the interviewee use words for which there is no equivalent in English (Bryman & Bell, 2012). However, as all translated summarises was sent out to the interviewees for confirmation, we reduced the risks with misconception by translation.

The summarised findings (Appendix B) were used as underlying data for our empirical findings. Four of our interviews were conducted face-to-face, five of our interviews were conducted over video call (four via Skype and one via Facetime) and one was done over the phone. The advantages with conducting the interviews over video call compared with a phone interview was that a video call interview allowed us the opportunity to zoom in on body language and nonverbal communication as well. However, in one case it was not possible to use video call and then the interview was fully conducted over the phone. Even though we were not able to see the expression and use of body language, the interview gave us useful information and the interviewee said that he or she felt confident answering the questions without seeing us either.

### 2.4.3. Recording and Transcription

It is common for qualitative researchers to record and transcribe their interviews. The procedure is important in order to make a detailed analysis but also to ensure that the interviewees' answers are captured in their own terminology and if one is only taking notes it is difficult to pay detailed attention to specific language (Bryman & Bell, 2012). We have chosen to record and fully transcribe the interviews since it entails detailed attention to language, allows a more thorough examination of what the interviewees said and permit repeated examination of the answers given during the interviews. Not only were we interested in what the interviewees said but also in the way they said it, an opportunity offered by recording our interviews. Furthermore, it helps to counter accusations that our analysis is influenced by our values or biases since recording and transcribing open up the data to scrutiny by others (Bryman & Bell, 2012). We choose to record the interviews on multiple devices in order to avoid any technical problems which could affect our planned transcription. The recordings were saved at two computers as well as at a digitalised storage on the Internet.

By transcribing the interviews, it makes the analysis of the results an ongoing activity (Bryman & bell, 2012). Bryman & Bell (2012) argue there are good grounds for making the analysis an ongoing activity since it allows the researcher to be aware of emerging themes that might be of interest to ask about in a more direct way in other interviews. We aimed at transcribing the conducted interviews as soon as possible after the interview and it was mostly done the same day as the interviews were conducted. We calculated to allow five hours for transcription for every hour of speech, which was also recommended by Bryman & Bell (2012). The transcriptions were made through [otranscribe.com](http://otranscribe.com), a free web app to facilitate the transcribing of recorded interviews. The transcriptions were also complemented by the notes taken during the interview. These notes gave a more instant reaction to what we experienced during the interviews and gave us data to compare with the transcription. By complementing the transcriptions with the notes, we could also easily see what we saw as the most important parts during the interviews and also sometimes raised follow-up questions or the need for clarification from the interviewee. From the transcriptions we made a Business model canvas for every interviewee, where the most important aspects towards a circular economy were summarised in each section of the model. The summarised Business model canvas together with important observations and citations as well as the full transcription were

sent to the interviewees to strengthen the reliability of our findings. The interviewees then had the possibility to clarify, add or remove information from the interview that they might have felt did not reflect their opinions.

## **2.5. Data Analysis**

The data analysis was made in two parts, one cross-case analysis and one case-theory analysis. The cross-case analysis was made in the following manner: after all interviews and confirmations from the interviewees of their summarised canvases, the analysis of the data was started by coding the information. The decision of not starting the coding in parallel to the interviews was due to the semi-structured interviews rendering fairly open answers, which we deemed a potential risk to create bias in the result, since it would have been possible to unintentionally steer the interviewees in a certain direction if patterns occurred. Hence, as we did not start with the coding until all interviews were done we could be completely open to their similarities and differences. Through the process we went back to the summaries, and if needed to the transcriptions to make sure that the observations that were grouped actually had the same meaning. Some groups were easier to identify since the exact wording had been used from the interviewees while other groups were rephrased to fit the meaning of the interviewees' statements.

We used the Business model canvas as a foundation for our coding and along with doing a separate canvas for each interview we also made a summarised canvas to represent all the interviewees' responses. The categories emerged during this process and to ensure the external validation we counted how many of the interviewees that confirmed each category. This categorisation Drever (1995) mention is highly important to be valid, hence, the categories are mainly based on the researcher's interpretation. To mitigate a researcher's bias, we have been very cautious with taking out the categories and in detail discussed them and their interpretations.

The case-theory analysis was conducted in a manner of comparing the empirical findings with the theoretical findings. The theoretical findings have been fitted into the Business model canvas as we did with the summarised canvas from the empirical findings. Since that there is no or very limited previous theory within this area that has explicitly used the Business model canvas as a tool for looking at the effects of circular economy, the theory we used had to be fitted into the Business model canvas as we saw was the most appropriate way to categorise them within the nine

different blocks of the model. The purpose of placing a distinct theory in each category in the model has been carefully reviewed to ensure that the theory is fitted as appropriately to the model as possible.

The analysis was grounded in the similarities and differences of the theory and of the empirical findings. Some findings were similar but discussed in different segments of the Business model canvas while other things were very similar in every way. We have chosen not to focus on all the empirical findings in the analysis but instead we focused upon those aspects we found were particularly interesting and aspects that were brought up several times by more than one or two interviewees and therefore were seen as an important finding for the thesis.

## **2.6. Quality of Research Design**

### **2.6.1. Validity and Reliability in Qualitative Research**

Validity and reliability are both key aspects of all research. Accurate attention to these two aspects can make the difference between poor and good research, and can help to assure that the study's findings are accepted as credible and trustworthy. This is vital in a qualitative study, where subjectivity can cloud the interpretation of the data and where research findings often tend to be questioned. The methods used in a qualitative research is more subjective compared to a quantitative research and phenomena are viewed in their social context and holistically. Therefore, qualitative studies need to be sensitive to the different issues of validity and reliability (Brink, 1993). In our study we have tried to be attuned to the multiple factors that may pose risks to the validity and reliability of our findings, we have planned and implemented various strategies into each stage of our research project to avoid or weaken these factors as explained below.

#### Validity

Validity referring to identifying correct measures for the concept being studied. To construct validity throughout this research we have tried to make sure to use multiple sources of evidence, establish a chain of evidence and have interviewees review the case study report, which has mainly been done during the data collection. When conducting the interviews, we aimed to guarantee the degree of authenticity (Yin, 2009). The main question of validity in interviews is whether the interviewees were given any cause to unconsciously or consciously construct a biased version of

their experiences which does or does not correspond with their views (Flick, 2009). We have used respondent validation by providing the interviewees with the transcription and a summary of their interviews, so the interviewees in this study can provide an account for our findings. Respondent validation ensures that there is a correspondence between the findings and the perspectives of the interviewees (Bryman & Bell, 2011). By having the interviewees reading the transcription of the interview we aimed to ensure that there were no systematic deformations or deceptions in the research as a result of the interview situations.

A common concern within case studies is the ability to generalise from the case study findings. However, case studies are generalizable to theoretical propositions and to universes or populations since the aim with a case study is to expand and generalise theories and to not extrapolate probabilities. As mentioned in the delimitations, this thesis has a national scope and is not taking any wider international factors and aspects in consideration, hence, one can believe that the findings may only be applicable at a national and local level. Case studies rely on analytical generalisation, in which the investigators are striving to generalise a particular set of results to some broader theories (Yin, 2009). In our research design we have chosen to use two different theories: circular economy and the Business model canvas, in order to make generalizable findings and recommendations from the different cases.

### Reliability

Reliability is a way to demonstrate that the study can be repeated, meaning that it can be conducted in the same manner rendering the same results. The goal with reliability is for another researcher to do the same study again, not by replicating the same results, and the use of reliability in our research is to minimise any errors and biases (Yin, 2009). Our case study research procedures have been well documented and thereby enhanced the replicability by using interview guides and a case study database. The interview guides served as guidance for us carrying out the data collection as it kept us targeted on the topic of the case study. We have also used an electronic case study database as a way of organising and documenting the data collected in form of notes, documents, narratives and tabular materials. By having a case study base for every case study we strived to develop a formal and presentable database so that other investigators can be able to review the evidence directly and not be limited only to our written case study report (Yin, 2009).



### Triangulation

Triangulation is typically a strategy or a test for improving the validity and reliability of research or evaluation of findings. Triangulation facilitates the validation of information or data through cross-verification from two or more sources. Using a single source is by some believed to not adequately shed light on a phenomenon and by using more sources it can facilitate to create a deeper understanding (Bogdan & Biklen, 2006). In our thesis triangulation has been used as a way of confirming: one set of options confirms a hypothesis generated by another set of options. Furthermore, we have used triangulation as a way of ensuring the validity of our thesis by seeking cross verification of potential findings from more than two sources. The different sources have, for example, been two independent interviewees' opinions and a theoretical finding or two theoretical standpoints and one opinion from an interviewee. However, some recommendations that are included in the thesis are those that we from a personal view found particular significant. The findings, underlying these recommendations, may have been mentioned only in the theory or only by one interviewee. Even though, those findings do not have three or more confirmations and therefore deviate from the concept of triangulation, we believe those findings should not be overlooked as they represent important aspects of the thesis and the final result.

## 3. Literature Review

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*This chapter elaborates the theories related to the research question. The literature fields of circular economy and the Business model canvas are presented. In the end the Business model canvas is used as a tool and interpretations by the authors of the theory is made.*

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### 3.1. Circular Economy

There is a fundamental need for an alternative model for today's take-make-use-dispose-model, which has led to the discussion about a circular economy (Semples & Hoffmann, 2013). According to the Ellen MacArthur Foundation (EMAF) (EMAF, 2015), circular economy aims to design away waste by reusing, remanufacturing or fully recycling goods. In today's linear economy, 80% of what we consume and use is directly discarded after usage (Semples & Hoffmann, 2013) and 99% of the total material flow generated to produce consumer goods ends up in waste disposal within half a year (Hawken, 1999). This imperfect product design is caused mainly by misaligned profit-share along the supply chain. Hence, if profits of improvement towards circular flow only occurs in the end-of-use phase, the incitements for designing for remanufacturing or recycling is low. This is commonly seen in consumer goods, they are designed for disposal and new sale opportunities which give profits further up the supply chain (Planning, 2015).

At the end of 2015, The European Commission decided to adapt a Circular Economy Package which aims to make an easier transition to a more effective and sustainable usage of resources for companies and customers. The package includes the whole lifecycle; from production and consumption to waste management and the market for secondary raw materials. The proposal aims to extract maximum value out of raw material and waste by closing the loop with greater recycling and reuse. It also includes energy savings and reducing emission of Green House Gases (European Commission, 2015).

#### 3.1.1. Concept Definition

The main actors in the discussion of circular economy defines the concept in a few different, but however, similar ways and sometimes in discussion with each other. Circular economy is concept where a distinguish between technical and biological cycles is made and aims to keep materials

and products at their highest utility and value at all times (MacArthur, 2015). McKinsey (2014) means that circular economy aims to eradicate waste throughout the life cycles and the usage of products and components and World Economic Forum (2015) defines circular economy as a new economic model which seeks to decouple economic development from resource consumption. Furthermore, circular economy aims to facilitate effective flows of materials, energy and information so that natural capital can be rebuilt.

Despite slightly different definitions of the concepts, they all take from the three basic principles of circular economy, defined by the EMAF (2015):

**Principle 1: Preserve and enhance natural capital by controlling infinite stocks and balancing renewable resource flows.** The first principle is about dematerialising utility whenever optimal. In the circular economy resources are selected wisely and technologies and processes that use renewable resources are chosen. Natural capital is enhanced by encouraging flows of nutrients within the system and creating the conditions for regeneration.

**Principle 2: Optimise resource yields by circulating products, components, and materials at the highest utility at all times in both technical and biological cycles.** This principle means designing for remanufacturing, refurbishing and recycling in order to keep components and materials circulating and contributing to the economy. Circular systems aim to use tighter inner loops (e.g. maintenance rather than recycling) whenever possible. These circular systems also aim to maximise the number of consecutive cycles and the time spent in each cycle, by optimising reuse and extending product life

**Principle 3: Foster system effectiveness by revealing and designing out negative externalities.** The third principle includes among others to reduce damage to systems and areas such as mobility, food, shelter, education, and managing various externalities such as air, land use, water and noise pollution.

### **3.1.2. Benefits of Circular Economy**

Circular economy provides opportunities for the economy, the environment, the companies and the citizens. The economic opportunities following a circular economy are, among others; improved economic growth, the creation of employment opportunities and increased innovation.

The economic growth would be achieved by a combination of increased revenues from emerging curricular activities and lower cost of production, enabled through more productive utilisation of inputs. These changes in input and output of economic activities affect the economy. An example of such an effect is increased spending and savings resulting from an increase in household income, which in turn results from a greater remuneration to labour. Taken together, these economic effects add up to a positive change in GDP. Following a circular economy development, European GDP could increase to 11% by 2030, compared to 4% in the current development scenario (MacArthur, 2015).

The employment impact of a circular economy is considered to be positive. The impact on employment is attributable to increased spending due to lower prices expected and to the labour-intensity of recycling activities and higher skilled jobs in remanufacturing. Employment is said to correlate with competitiveness and innovation, which should strengthen the circular scenario. The aspiration to provide goods that are circular by design and create reverse logistics networks to support the transition to the circular economy is a powerful spur to new ideas (MacArthur, 2015). However, a circular economy is not well-equipped to act as an innovation driver for developing completely new products, but rather to improve existing ones (Toxopeus et al, 2015). There are several benefits coming from a more innovative economy, including higher rates of technological development, improved materials, energy efficiency and profit opportunities for companies (MacArthur, 2015).

The opportunities for companies provided by a circular economy are new revenue streams, greater security in supply and new demand for business services. Individual businesses could create entirely new profit streams and lower input costs (MacArthur, 2015; Walsh, 2010; Stahel, 2010). The use of a circular economy approach could support improvements. Examples are; the cost of remanufacturing mobile phones could be reduced by 50% if the industry made phones easier to take apart. It could also improved reverse cycle, if incentives were offered to return phones and high-end washing machines that could be accessible for more households if they were leased or rented out instead of sold (MacArthur, 2015). New business models, such as leasing contracts may establish a longer-term relationship with customers, as the number of touch points increases over the product's lifetime. Furthermore, such business models enhance insight for companies into

usage patterns that could potentially lead to improved products, better service, and greater customer satisfaction (MacArthur, 2015; Walsh, 2010; Firnkorn and Müller, 2012).

An approach towards a circular economy would create demand for new business services, such as reverse logistics companies that support and take responsibility for end of life products being recovered back into the system, sharing platforms that facilitate higher utilisation of products and remanufacturing and product refurbishment offering specialised knowledge (MacArthur, 2015).

Besch (2005) and Heese et al. (2005) also showed that circular models can give a differentiation opportunity that can compete with low cost competition. In 2011, Michaud and Llerena proved by experiment, that just because the product is remanufactured it does not mean that the customer wants to pay less if they are given environmental information. The usage of a circular model can also in give the company increased brand protection (Seitz, 2007).

### **3.1.3. Limitations of Circular economy**

The research of circular models has found several limitations and challenges for companies to overcome. Firstly, Pearce (2009), points out that the company has restrictions when providing a circular solution due to their type of customers. The company with the following types of customers are suitable for a circular model: need to have a certain product in their process, do not want to reapprove a new one and want to use a discontinued product together with customers who are price sensitive and do not want to use too much new equipment and rather extend the life of the current produce. Lastly, the circular model is restricted to customers who aim to be environmentally friendly (Pearce, 2009).

To be able to use a circular economy model, the company needs to have technological expertise and knowledge so they can restore a used product to their original or better condition. Furthermore, to be able to have a product where remanufacturing can be made it might include the need to redesign the original product to enable this (Berchicci & Bodewes, 2005). Furthermore, for a product to be able to be remanufactured some features of the product needs to be true; the core of the product can be used in the restored product, the fail is in its function, preferably factory builds in comparison to field assembled, stable process technology and product technology and that the added value of the returned components is higher than the market value and original cost (Andreu, 1995).

Considering that the producer will get the product back to be able to remanufacture it has shown to be problematic to calculate the predictability and reliability of the return flow which in turn complicates the capacity planning (Pearce, 2009; Seitz, 2007; Besch, 2005; Ravi and Shankar, 2005; King et al., 2006; Östlin et al., 2008). Two suggestions to mitigate this are keeping a close relationship with the customers and/or to keep the ownership of the product (Sundin et al., 2009; Östlin et al., 2008).

If the producer chose to offer the customer to rent the product the producer will have a financial risk (the capital will be tied up as an asset for the producer, but the customer will be the user of it) to mitigate these risks contracts over several years might be suggested (Mont et al. 2006; Besch, 2005) but this might lower the attractiveness for some customers (Besch, 2005).

Research by Guiltinan (2009) and Michaud and Llerena (2011) show that there is a risk for the circular economy model to cannibalise the sales of the companies with completely newly produced products. However, there is a challenge for circular models that they are unable to respond to fashion changes. Hence, the model might face problems at markets where the attractiveness of the product is based on the aesthetic attributes of the product (Mont et al., 2006).

On the other end of the supply chain, the collaboration with the suppliers needs to be good, the change of model might be challenging for the suppliers to support due to that their business models also need to be compatible with the producer's model (Mont et al., 2006; Rizzi et al., 2013; Wise and Baumgartner, 1999).

Finally, Kuo et al. (2010) and Stahel (2010) points out the lack of regulations supporting circular models. Today labour is heavily taxed while raw material is not, hence, the incentives for using labour for remanufacturing instead of purchasing raw material is low.

### **3.2. Business Model**

Every company has a business model (whether it is expressed or not) and it has always been an essential part of trading and economical behaviour. However, the concept did not become a commonly used concept until the mid-1990s. And yet, there is no common consensus about the definition of the concept. (Teece, 2010; Fiel, 2013; Zott, Amitt & Massa, 2011).

Chesbrough and Rosenbloom defined business model as (Chesbrough, 2010, p. 355):

*“Articulates the value proposition, identifies a market segment and specify the revenue generation mechanism, defines the structure of the value chain required to create and distribute the offering and complementary assets needed to support position in the chain, details the revenue mechanism(s) by which the firm will be paid for the offering, estimates the cost structure and profit potential, describes the position of the firm within the value network linking suppliers and customers, formulates the competitive strategy by which the innovating firm will gain and hold advantage over rivals.”*

In 2010 Teece (p. 179) defined the concept as:

*“A business model articulates the logic, the data and other evidence that support a value proposition for the customer, and a viable structure of revenues and costs for the enterprise delivering that value”.*

And Fielt (p. 86, 2013) concluded from analysing studies regarding business models as:

*“... a business model can be defined as the value logic of an organization in terms of how it creates and captures customer value and can be concisely represented by an interrelated set of elements that address the customer, value proposition, organizational architecture and economics dimensions.”*

As mentioned, there is no exact accepted definition. However, what can be concluded is that the business model plays a central role to explain and analyse the performance of a company (Zott, Amitt & Massa, 2011). Teece (2010) further describes the model as conceptual rather than financial. The model is used to make assumptions about customers, the behaviour of revenue and cost streams, how the customer needs changes and the competitors' likely responses. Furthermore, for the business model to be a competitive advantage for the company, it needs to be more than a good way of doing business. It also needs to, in some respect be hard to imitate and really be focused on meeting the needs of the customers (Teece, 2010).

Fielt (2013) suggests that a good framework to map out the business model should include four dimensions that together will answer “Who? What? Why? and How?” the customer value is captured. Through addressing the customer, the value proposition (central part), the organisational

architecture (firm and network level) and the economics of the firm (including non-financial considerations).

Many executives assume that creating a new and more sustainable business model entails only rethinking the customer value proposition and figuring out how to deliver a new business model. However, it has been shown that successful models include novel ways of capturing value and delivering services in tandem with other corporations. In order to develop a new business model, the exploration of alternatives to current ways of doing business as well as creating an understanding how companies can meet customers' needs differently is required (Nidumolu et al, 2009).

### 3.2.1. Business Models for Circular Economy

Accenture (2014) has identified five underlying business models in its analysis of more than 120 case studies of companies. The identified business models have their own characteristics and can be used either singly or in combination to help companies towards the transition to a more circular business model. The five business models are Circular Supply, Resource Recovery, Product Life Extension, Sharing Platforms and Product as a Service. They will be shortly described and illustrated in figure 3 below.

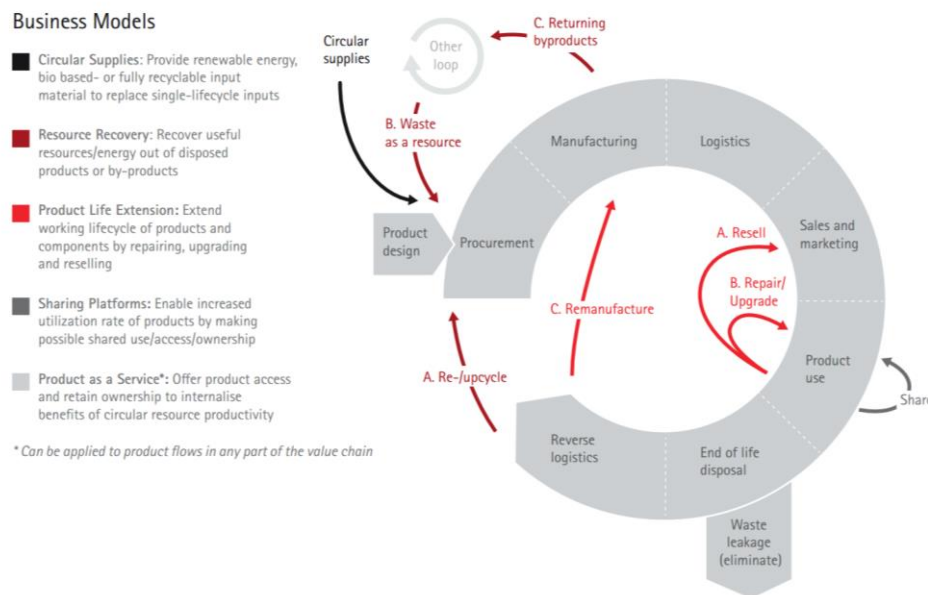


Figure 3 The five circular business models  
Source: Accenture, 2014, p. 12



Circular Supply is a business model based on supplying fully renewable, recyclable or biodegradable resources that underpin circular production and consumption systems. With this business model companies are able to replace their linear resource approaches and phase out the use of scarce resources, while at the same time cutting waste and removing inefficiencies. Accenture argues that this model is best suited for companies dealing with scarce commodities or ones with a larger environmental footprint (Accenture, 2014).

The Resource Recovery business model leverages new technologies and capabilities to recover resource outputs at a level of value equivalent to that of the initial investment. The Resource Recovery business model enables companies to eliminate material leakage and to maximise economic value of product return flows. The model is a good fit for companies that produce large volumes of by-product or where waste material from the company's products can be reprocessed and reclaimed cost effectively (Accenture, 2014).

The business model, which is focused on Product Life Extension, allows companies to extend the lifecycle of their products and assets. A value that otherwise would be lost through wasted materials are instead improved or maintained by repairing, upgrading or remanufacturing. Through this, additional revenue is generated thanks to the extended usage of products. By using this model, companies can ensure that their products stay economically useful for as long as possible. This can be done through product upgrading in a more targeted way. For example, when an outdated component is replaced instead of the entire product. The Product Life Extension business model is suitable for capital-intensive business-to-business segments and business-to-consumer companies in markets where pre-owned products are common or whose new releases of a product generates only partial additional performance benefits over the previous version (Accenture, 2014).

The business model of a Sharing Platform promotes a platform for collaboration among users of the products. The model aims to maximise utilisation and could benefit those companies whose products and assets have a low utilisation or ownership rate (Accenture, 2014).

The last business model is the one of Product as a Service, which provides an alternative to the traditional "buy and own". One or many customers through a rent or pay-for-use arrangement use the products of a company. The usage of this business model gives incentives to companies to

focus on greater product durability and upgradability, making them shift from volume to performance. The risk of cannibalisation through product longevity, reusability and sharing is reduced, and instead these factors are seen as drivers of revenues and reduced costs. This business model is applicable to those companies which products' cost of operation share is high and is better skilled in relation to their customers in managing maintenance of products (Accenture, 2014).

### 3.2.2. The Business Model Canvas

The Business model canvas is a concept that allows one to describe the business model of an organisation. The concept of Business model canvas allows one to easily describe or manipulate a business model to create new strategic alternatives (Osterwalder & Pigneur, 2010).

#### The Nine Building Blocks

The model is described through nine building blocks that show the logic of how a company intends to make money. The nine different blocks cover the four main areas of a business: customers, offer, infrastructure and financial viability. The Business model canvas can be seen as a blueprint for a strategy to be implemented through organisational processes, structures, and systems (figure 4) (Osterwalder & Pigneur, 2010)

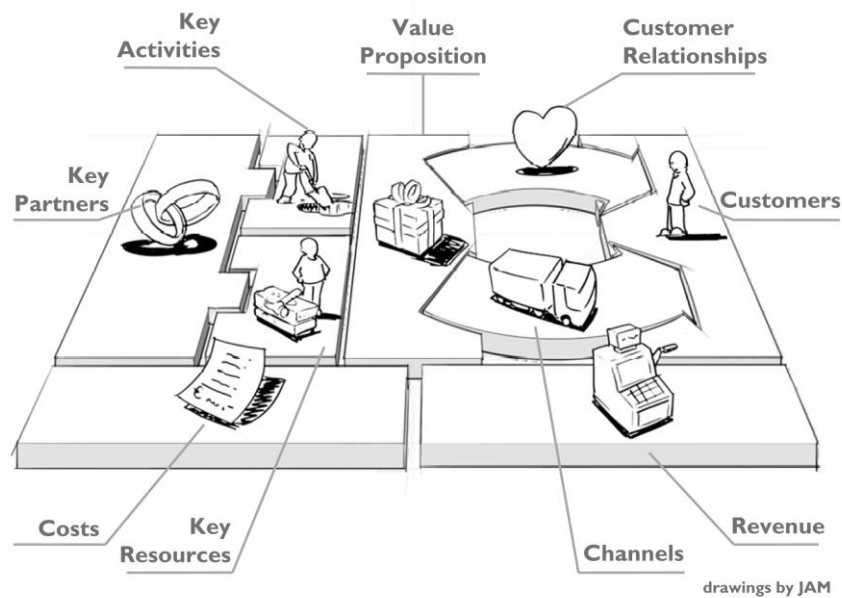


Figure 4 The Business model canvas  
Source: Osterwalder & Pigneur (2010)

### Value Proposition

This building block describes the different products and services that create value for a specific customer segment (Osterwalder & Pigneur, 2010).

The value proposition solves a customer problem or satisfies a need and, therefore, the value proposition is the reason why customers turn to one company over another. Each value proposition of a company consists of selected products or services that accommodate the requirements of a customer segment. In this sense, the value proposition is a bundle of benefits that a company offers customers. There are different elements that can contribute to customer value creation, such as newness, performance, design, price, accessibility, usability and customisation (Osterwalder & Pigneur, 2010).

### Customer Relationships

This building block describes the types of relationships a company chooses to establish with specific customer segments (Osterwalder & Pigneur, 2010).

It is important for a company to clarify the type of relationship it wants to establish with each customer segment. The relationships can range from personal to automated and can be driven by various motivations: customer retention, customer acquisition, and boosting sales. The customer relationships deeply influence the overall customer experience. One can distinguish between various categories of customer relationships. The relationships can vary from those based on human interaction, such as personal assistance, to co-creation where the company creates value together with the customer (Osterwalder & Pigneur, 2010).

### Channels

Channels describes how a company communicates with and reaches its customers to deliver a value proposition (Osterwalder & Pigneur, 2010).

A company's interface with customers is compromised by communication, distribution and sales channels. Channels play an important role in the customer experience and serve several functions, including raising awareness about a company's products and services, allowing purchases of specific products and services, and delivering a value proposition to customers. A company must find the right mix of channels of how customers want to be reached in order to bring a value

proposition to market. One can choose between reaching customers through the organisation's own channels, partner channels or through a mix of both (Osterwalder & Pigneur, 2010).

### Customer Segments

The Customer Segment Building Block defines the various groups of people or organisations a business aims to reach and serve (Osterwalder & Pigneur, 2010).

Customers include the heart of any business model since without customers no enterprise can survive. To satisfy customers, a company can group them into segments with common needs, common behaviours or other attributes. A BM can define one or several customer segments. However, an organisation must decide upon which segments to serve and which segments to ignore. After this decision is made, a BM can be designed around the understanding of specific customer needs (Osterwalder & Pigneur, 2010).

### Revenue Streams

The building block of revenue streams represents the cash a company generates from each customer segment after the costs have been subtracted from the revenues. In order for a company to generate one or more revenue streams from its customers, it must ask itself the question; For what value is each customer segment willing to pay? In general, a business model can involve two types of revenue streams:

1. Transaction revenues, as the result from one-time customer payments
2. Recurring revenues, as the result from ongoing payments to deliver a value proposition or to provide post-purchase support (Osterwalder & Pigneur, 2010)

The most common revenue stream derives from selling ownership of a physical product. Other types of revenue streams are usage fees, subscription fees and leasing. Furthermore, each revenue stream can have different pricing mechanisms and which type of pricing mechanism that the company chooses may make a big difference in terms of revenues generated. The two main types of pricing mechanism are fixed and dynamic pricing. The first one refers to predefined prices based on static variables and the latter one refers to prices which change based on market conditions (Osterwalder & Pigneur, 2010).

### Key Partners

The building block of key partnerships refers to the network of partners and suppliers that make the business model work. Partnerships are becoming a cornerstone of many business models and companies can create alliances to optimise their business model, for risk reduction, or to acquire resources. There are four different types of partnerships a company can take part in:

1. Strategic alliances, where alliances are created between non-competing companies
2. Coopetition, strategic partnerships between competitors
3. Joint ventures, partnerships with the intention to create new businesses
4. Buyer-supplier relationships to assure reliable supplies (Osterwalder & Pigneur, 2010).

### Key Activities

The key activities describe the most important things an enterprise must do to make its business model work. The key activities are those actions that must operate successfully. Key activities can be categorised as production, problem solving and network related activities (Osterwalder & Pigneur, 2010).

### Key Resources

The building block of key resources describes the most important assets which are required to make a business model work (Osterwalder & Pigneur, 2010).

Every business model requires key resources, since these resources allow a company to create and offer value proposition, reach markets, create and maintain relationships with customers and earn revenues. Depending on the business model, different key resources are needed and the key resources can vary from physical, financial, intellectual to human. Key resources can be owned by the company or leased or acquired from key partners (Osterwalder & Pigneur, 2010).

### Cost Structure

The cost structure in BMC describes all costs incurred while operating a specified business model. All the other parts of BMC mentioned above all incur costs. Some BMs are more cost-driven than others and some enterprises have built business models entirely around low cost structures. However, costs should be minimised in every BM. There are two broad classes of business model cost structures: cost-driven and value-driven (but many business models fall in between these two). The cost-driven approach focuses on minimising costs whenever possible and aiming at having

the leanest possible cost structure, using low price value propositions, automation, and outsourcing. A value-driven cost structure focuses on value creation and is less concerned with the costs of a particular business model design. A business model with value-driven cost structure is characterised by premium value propositions and a high degree of personalised service (Osterwalder & Pigneur, 2010).

### **3.2.3. Limitations of the Business Model Canvas**

The simple visual structure of the Business model canvas makes the use of it appealing but also the mapping and innovating on business systems make it valuable. As a consequence, the Business model canvas is being rapidly adopted. However, there is a lack of academic research concerning the Business model canvas and the use of it when developing business plans (Ching & Fauvel, 2013). Kraaijenbrink (2012) proposes three shortcomings of the Business model canvas. Firstly, the model excludes an organisation's strategic purpose and assumes that generating revenue is the goal of any business and other purposes should not be part of the business model. Making revenues is important, but it is not the ultimate goal of all organisations. A second shortcoming of the model is that it excludes a notion of competition and purely focuses on a company's internal money-making logic. The Business model canvas ignores that any business models must be defined in relation to competitors since competition is an essential factor of the business model. Companies can make a deliberate choice with whom to compete with and this in turn affects the other parts of the business model and this is especially true for the value proposition since the customers will always compare one company's value proposition to those of the competitors. The third shortcoming of the Business model canvas presented by Kraaijenbrink (2012) is that the nine different elements are not defined at the same level of abstraction. Some of the elements are on a higher level of abstraction, which results in that some of the elements of the Business model canvas receive more emphasis relative to other parts and this makes the Business model canvas imbalanced.

## **3.3. Summarised Effects of Circular Economy**

The illustration of a Business model canvas below summarises the potential effects that a circular economy can have on a company's business model interpreted by the authors.

<p><b>Key Partners</b></p> <p>Suppliers (Mont et al., 2006; Rizzi et al., 2013; Wise and Baumgartner, 1999)</p> <p>Symbioses within the industry (Accenture, 2014)</p>	<p><b>Key Activities</b></p> <p>Design for Remanufacture, Repair, Reuse and Recycle (Design for Re-...) (Berlicci &amp; Bodeves, 2005, EMAF, 2015; Andreu, 1995)</p> <p>Keep the ownership of the product (Sundin et al., 2009; Östlin et al., 2008)</p>	<p><b>Value Proposition</b></p> <p>Product as a service (Accenture, 2014)</p> <p>Features for upgrading (Accenture, 2014)</p> <p>Sustainability (MacArthur, 2015; Michaud &amp; Llerena, 2011)</p> <p>High utilization through sharing platforms (Accenture, 2014)</p> <p>Next life responsibility (MacArthur, 2015)</p>	<p><b>Customer Relationship</b></p> <p>Close relations (Sundin et al., 2009; Östlin et al., 2008; Walsh, 2010)</p> <p>Personal relations (Sundin et al., 2009; Östlin et al., 2008)</p> <p>Long term - over the whole lifetime of the product (MacArthur, 2015)</p> <p>Understanding and Knowledge (MacArthur, 2015; Finkorn &amp; Müller, 2012)</p>	<p><b>Customer Segments</b></p> <p>Needs special product (Pearce 2009)</p> <p>Low willingness to re-approve new products (Pearce, 2009)</p> <p>Price Sensitive &amp; not want new EQ rather extend life of current EQ (Pearce, 2009)</p> <p>Environmental friendly (Pearce, 2009)</p> <p>Not fashion sensitive (Mont et al., 2006)</p> <p>Customer behaviour: shift from ownership to performance (Planning, 2015)</p>
<p><b>Cost Structure</b></p> <p>Taxes and regulation (Kuo et al. 2010; Stahel, 2010)</p> <p>Volatile raw material prices (Planning, 2015)</p> <p>Tied up capital (Mont et al. 2006; Besch, 2005)</p> <p>Lower production cost: Higher utilization of input (MacArthur, 2015; Wlsh, 2010; Stahle, 2010)</p>		<p><b>Revenue Stream</b></p> <p>Product as a service/pay for use (Accenture, 2014)</p> <p>Long term contracts (Mont et al. 2006; Besch 2005)</p> <p>Sale of product (Accenture, 2014)</p> <p>Extended usage through multiple life cycles: Return flow, Next life sale (Accenture, 2014)</p>		
<p><b>Key Resources</b></p> <p>Information Technology (Planning, 2015)</p> <p>Circular supplies (Accenture, 2014)</p> <p>Technical expertise of remaking (Berlicci &amp; Bodeves, 2005)</p> <p>Capacity planning of take back (Pearce, 2009; Seitz, 2007; Besch, 2005; Ravi and Shankar, 2005; King et al., 2006; Östlin et al., 2008)</p>		<p><b>Channels</b></p> <p>Information Technology (Planning, 2015)</p> <p>Revers logistics (MacArthur, 2015)</p>		

Table 2 Summarised Theory Canvas

### Value Proposition

The value proposition in a circular business model can either be through allowing the customer to rent or/and contract a product (product as a service) (Mont et al. 2006; Besch, 2005) or through sale and then have incentives for the customer to return the product. The company can also provide features that can be upgraded and platforms to share the product to add value for the customer (Accenture, 2014) as well as offer next life responsibility (MacArthur, 2015). Finally, a sustainable and environmental friendly value can be delivered to the customers (MacArthur, 2015; Michaud & Llerena, 2011).

### Customer Relationships

To get a circular economy model to work well, the relationship with the customer is preferred to be close and in some respect personal (Sundin et al., 2009; Östlin et al., 2008). This also enables a two-way communication, throughout the life cycle of the product, which contributes to the producer's knowledge better understanding of the customers (MacArthur, 2015; Finkorn & Müller, 2012) and can help the company to improve their products (MacArthur, 2015).

### Channels

Planning (2015) points out the importance of the development of information technology. Companies today have advanced platforms for communication with the customers. For example, it can be in the form of simple contact with customer service, commercial platforms to reach out to new customers, show transparency or setting up platforms for customers to reach each other or companies in collaborations with the producer, such as repairing firms. Further, MacArthur (2015) points out that the physical logistics will be an important factor, especially with a return flow. Despite return flow might increase the transport it can also make it more efficient with less empty return trucks.

### Customer Segments

The customer behaviour in a circular economy is by Planning (2015) highlighted as in need of change, from that the customer values ownership to value the performance of the product. According to Pearce (2009) the customer should fall into one of the following groups to be in a target segment of a producing company: (1) require a special product (2) not willing to reapprove new equipment, (3) customers that are price sensitive and prefer long term quality investments or (4) customers that value environmental friendly products. Group 1 and 2 attractiveness for circular



models can be explained by the fact that they are not fashion sensitive, which if otherwise, the customer is fashion sensitive, is a challenge when reusing material and products; it is likely to be hard to use old material and at the same time be leading in fashion. As circular economy tries to utilise the material to its maximum capacity it can also be assumed that the quality is higher, hence, group 3 is suitable. Group 4 is good for the simple reason that circular model is considered more environmental friendly than normal linear models. (Mont et al., 2006).

### Revenue Streams

A shift towards renting products rather than buying products is viewed as a business model that will become all the more common, especially since companies can keep the ownership of their products and ease the process of calculating return flow (Accenture, 2014). However, it should be kept in mind that some customers will consider products tied up in contracts to be less attractive (Mont et al., 2006; Besch, 2005). Another way is to increase the incentives for the customers to return their products. This will give the company a return flow of usable products/parts and renders opportunities to next life sale (Accenture, 2014).

### Key Partnerships

Accenture (2014) raise the importance of creating collaboration and symbioses within the industry in order to succeed with a circular business model. Hence, one company's waste can contribute to another's raw material. Mont et al. (2006), Rizzi et al. (2013) and Wise and Baumgartner (1999), point out that the collaboration with suppliers needs to be good. This is because of the challenge of suppliers to support the producer's new business model and they might need to review their own business model as well to be compatible with the producer.

### Key Activities

A key activity for a circular business model is to design the products to enable remanufacture, repair, reuse and recycle. The company should wisely choose materials and make sure that assembly and disassembly is simple (Berchicci and Bodews, 2015; EMAF, 2015; Andreu, 1995). A firm should also wisely select resources and invest in technologies that can use renewable resources. By doing this, the company can optimise resource yields in order to keep materials and components circulating and contributing to the economy (EMAF, 2015). With rental models it means that the company is keeping the ownership of the material, which further can affect the

importance for the companies to improve their design, hence, the longer and the better they can utilise the material the more income it will generate (Sundin et al., 2009; Östling et al., 2008).

### Key Resources

The linear resource approach needs to be replaced by the usage of resources that are fully renewable, recyclable or biodegradable, which enhances circular production and consumption systems. This will phase out the use of scarce resources while at the same time cutting waste and removing inefficiencies (Accenture, 2014). Berchicci and Bodews (2015) also acknowledge that this requires the technical expertise by the employees. Further, with return flow the companies will face challenges in capacity planning, hence, there might not be a certainty in what condition or when the products will be returned (Pearce, 2009; Seitz, 2007; Besch, 2005; Ravi and Shankar, 2005; King et al., 2006; Östlin et al., 2008). The companies will also have information technology as an important resource for effective processes internally and they enable contact externally to both suppliers and customers (Planning, 2015).

### Cost Structure

Kuo et al. (2010) and Stahel (2010) argue for a lack of regulation supporting circular economy, which will affect companies cost structure. Labour incurs heavy taxation, while raw material does not. This could lead to continued purchasing of raw material instead of using labour for remanufacturing or recycling. However, as seen over the last couple of years, the raw material prices have been very volatile which can be a driver for companies to move towards reusing their own material since this will not be affected by the fluctuations (Planning, 2015). Reusing material and obtaining a higher utilisation of it might, according to MacArthur (2015), lower the production cost for the producers. Mont et al. (2006) and Bech (2005) acknowledge however, that with suggested rental models it will still mean that the companies will make the same investments in production as before but the revenue streams will not be the same as with sales models. The revenue streams will be slower (rental contracts paid with fees per month/year) and to break even will take longer time, hence, the producer will have more capital tied up in assets.

## 4. Empirical Findings

*In this chapter we will return to our theoretical framework of the Business model canvas and used to present our empirical findings. The findings for each interviewee are presented and summarised. Full explanations to canvases can be found in order in Appendix B.*

### 4.1. Interview E1

**Type:** Expert

The more traditional aspects of sustainability contain a lot of “do not”, while circular economy rather look at how to maximise value. The expert means that circular economy is a vision about an economical system, which is designed to recreate value time after time. However, it is considered that there is a general confusion about the meaning of the concepts of circular economy, and different actors have different explanations. The expert respondent further points out that maybe it is not the question of having a bad lifestyle, but rather that the way we have designed our products, material and business models in an unwise way. This also means that we are able to redesign them and in particular, the interviewee believes, that entrepreneurship and innovation can lead that change.

<b>Key Partners</b> Might need a change	<b>Key Activities</b> Ability to design for re-... Ability to design for disassembly	<b>Value Proposition</b> Brand reputation Rent of function > Increased quality and robustness Share-economy features	<b>Customer Relationship</b>	<b>Customer Segments</b> Long way to change in customer behaviour > What incitements does the customer need to make the “effort”?
	<b>Key Resources</b> Own the own marital flow		<b>Channels</b>	
<b>Cost Structure</b> High start costs: Bulk costs Reducing company's effects of fluctuations of the raw material prices. (Prices are hard to forecast)		<b>Revenue Stream</b> Rent: Slower streams of income		

*Most important parts of the canvas to change*

Table 3 Summarised Canvas for E1

The most important part in the Business model canvas to change when shifting to a circular economy is to rethink the value proposition. Prerequisites for circular business models are customers to change in their behaviours and that every company is attentive to what their customers are asking for. This also means for the producer to be attentive to incitements for the customers to facilitate the company’s circular business model. The interviewee mentions that for a producing company the most important activities needed for a circular business model are to

have the ability to design the products so that they can be reused, repaired and recycled. The most common business model for companies in a circular economy is likely to be a rental model. This also puts greater emphasis on the quality of the products and the robustness as the more times the company can rent out the product the more revenues they will earn. The downside with a renting model as the one of a circular business model is that such a model is likely to have large starting costs and investments. Also the revenue streams will change to be slower and that it will take several rounds of renting to cover up for the initial costs of the renting business model.

## 4.2. Interview E2

**Type:** Expert

The expert believes that there are three drivers of a circular economy; resource effectiveness, technology and globalisation. A circular economy is a good way of looking at value creation in a new way since it gives a new perspective on the costs of the resources during the time they create value versus the costs of having them in the economy. However, there is a Catch-22 in shifting towards a circular economy; in order for you to cut the costs for the consumer the producer will have to invest in development of the product, which in turn is a cost the producer need to cover up with the price of the product. Therefore, companies need to make this shift a few steps at a time and the expert says that it will be circular advantages for those companies that are able to shift their business models towards a more circular one. It is considered that the companies must lead the change towards a circular economy and see the long-term benefits and not only focus on the short-term investments needed.

<b>Key Partners</b> Recycle companies as producers of raw material Producers of raw material Industrial symbioses  Partnerships where waste can be traded between companies as resources	<b>Key Activities</b> Design for re-... Strategic decisions about products Sell the waste from production as a raw material for other companies	<b>Value Proposition</b> Value sold: Utilization of the product Sell less products, but the products will be complemented with services, which will give higher margins.  Economic incitement will decide what products will be sold. Will be hard to sell products based on the choice of material.	<b>Customer Relationship</b> Closer relationships Relations with office hotels	<b>Customer Segments</b> Customers will be asking for flexibility and ability to share and mix "Office Hotels"  New segments due to new value propositions
	<b>Key Resources</b> Human capital: important to take care of the capabilities in the companies Technology Circular capabilities: plan for the future as well as make sense here and now		<b>Channels</b> Will remain the same, will not be affected by a circular economy	
<b>Cost Structure</b> Lower costs for production sites, whereas the costs for sale, service, maintenance and take back is likely to increase		<b>Revenue Stream</b> Second hand Rent Take-back opportunities (e.g Sportson). Will work as long as the product has a short life cycle Leasing		

*Most important parts of the canvas to change*

Table 4 Summarised Canvas for E2

The most significant change in a circular economy for companies will be in the value proposition. The expert believes that companies are likely to sell fewer products, in favour of renting, which can affect the revenues of the company. However, the expert sees a solution in having services provided as a complement to the products sold. With this new way of providing value to customers the firm will get new customer segments to serve. Key resources that will be important for companies are to have circular capabilities such as technology and the usage of circular inputs. For this and to keep updated on how the concept of circular economy develops within the industry, the human capital in the companies becomes very important. Different partners and collaboration will be needed in a circular economy and industrial symbioses where companies can trade their waste as a raw material to another company is considered as a good collaboration. However, the importance of making sense here and now is highlighted. By that the interviewee meant that companies cannot make investments today that will yield returns in fifteen years, since such time horizon is in general too long for companies. Companies need to be able to invest today, make revenues today and at the same time create the flexible capabilities needed to move towards a more circular business model.

### 4.3. Interview E3

**Type:** Expert

The expert says that circular economy is especially important since we use resources faster than the Earth can provide us with. Circular economy is needed to create a flow of resources back into companies' production systems which makes the companies less dependent of raw material. Furthermore, circular economy is a concept, which makes more people think about sustainability and facilitates for the discussion of new business models. A circular economy will provide the largest benefits for the environment but the benefits will also be for those companies who dare to think in new patterns and make changes in their business models. According to the interviewee it is naive to believe that everyone wins in a circular economy or in a circular business model. Not every actor within the value chain will win on the shift. There is a problem in how the revenues are shared, some will have a bigger part of it and some will have less, and there might be a problem for actors to accept less revenue. However, it is common that companies do not want to reveal where they make their profits but it is necessary in order to improve the system as whole of a circular economy, instead of every company trying to improve only their system.

<b>Key Partners</b> Distributors Suppliers Disposal companies Customers	<b>Key Activities</b> Design for Re-... Choice of material and information about products Cooperation within recycle activities Remanufacturing  <b>Key Resources</b> Design Competence Material Understand the lifecycle and the cost of life cycle	<b>Value Proposition</b> Rent Longer life of the products Supporting function: enable for customers to repair products themselves through kits Second hand Rethink what a firm make money on	<b>Customer Relationship</b> Depends on the producer and what the customer is used to New models might create skepticism Educative  <b>Channels</b> Distribution New thinking required	<b>Customer Segments</b> A shift in mindset; customer and society
<b>Cost Structure</b> Higher cost for raw material per product Knowledge and competence Logistics Exchange of information Less revenues due to less products sold Waste and disposal fees The ability to reuse will decrease costs		<b>Revenue Stream</b> Keep the resources in the system Higher rest value of the product Challenge: not everyone will benefit from a circular business model		

*Most important parts of the canvas to change*

Table 5 Summarised Canvas for E3

As a shift in mind-set is considered to take place within the society and among the customers, it will facilitate for a circular economy to take place. One will start to revalue and rethink the owning of products and what status is. Companies will need to change their value proposition in a circular

economy since products is likely to have a longer lifetime and customers will focus more on the utility of products. Rent is a prospering business model, but the interviewee hopes not see that as the only option but also for companies to leverage the value proposition and the products by offering services such as “repair and rebuild and help to find a second-hand market. Companies might be able to serve as a support function for reparation but also provide kits for the customer to “do it yourself”. As the sale of products decrease with circular business models, it will be more important for companies to keep the revenue streams from services of the products. Hence, there is a risk that the companies might produce their products so the customer will be dependent on just that companies’ parts or services and creating a lock-in system. Key activities for companies will be the abilities to design and produce for redesign, remanufacturing and recycling. Another key activity will be the knowledge about materials and how to choose material wisely in order to make the most out of it when remanufacturing or recycling. The production of a company is likely to change in order to facilitate for remanufacturing when shifting to a circular economy. Traceability of the products will be another important aspect for the companies. This would enable the company to trace the physical location of the products but there are also possibilities to keep track of who the producer is. The traceability is also important when it comes to the material of a product. If a company knows exactly what the product is made of, it is likely that such information will increase the disposal value and make it easier to recycle.

#### **4.4. Interview E4**

**Type:** Expert

The interviewee says that circular economy must be the long-term solution for the economy’s use of resources. However, the interviewee is rather sceptic of how politicians and other debaters always are seeking for new ways of engaging people with the issue of sustainability and that circular economy has become a popular concept to use in such a manner. There will be a problem if circular economy is only for show, people use it wrongly and forget its fundamentals. For example, circular economy cannot and should not drive away the focus from the CO<sub>2</sub>-logic since both of them need to interact. Basically, circular economy is a good concept but one that needs to be complemented with something else in order to work. The driving factors towards a circular economy will be the public sector’s choices, regulations of public procurement, sharing-

opportunities through Internet of Things and utilisation of resources. However, if it is supposed to be a broader development towards a circular economy or circular society, a different pricing of resources will be needed. In general, the interviewee is positive towards circular business models within the office furniture industry since sharing of offices are already in place today so the interviewee does not see any reasons for sharing of furniture not to work.

<b>Key Partners</b> Retailers (Entrepreneurs) Logistics: Storage & repair	<b>Key Activities</b> Sensors: Tracking & quality (Re-make)	<b>Value Proposition</b> Interior solutions: Price sensitivity Service (retailer stores) Repair Upgrade	<b>Customer Relationship</b> Service delivery → Moving forward in the value chain	<b>Customer Segments</b> Encourage to service purchase Change in trash culture/habits for purchases Regulations for public procurement need to change
	<b>Key Resources</b> (IT abilities, IoT) Competences and capabilities for remake > <i>Automatisation</i>		<b>Channels</b> Marketing Share-economy Show room	
<b>Cost Structure</b> More expensive material: Shadow price Remaking		<b>Revenue Stream</b> Less products, more interior (Remake) Repair Producer responsibility		

*Most important parts of the canvas to change*

Table 6 Summarised Canvas for E4

In order to switch towards circular business models, it is important to encourage the customers to purchase services rather than products. The value a firm offers in a circular economy will shift towards providing services and functions but the expert does not see this as a huge step for the companies to take. The expert also says that the public procurement regulations need to change in order to make the purchases of services easier. The expert believes that we have a culture today of throwing away things we consider to be out of style or not any more useable and this mentality needs to change. The customer relationship will have the biggest changes in a circular economy since the customer will have requirements of what they demand and that will change what the companies offer. In other words, the customer will drive the change towards a circular economy. In a circular economy, the interviewee sees the retailers as the biggest channel and that the customer most likely will visit their department stores to look at different solutions. More of the producers should also put effort in having their own showrooms since such selling points already are in place today but have the possibilities to be utilised better. Hence, it is believed that more full furnishing solutions will be asked for by the customers rather than separate products and showrooms would make this process easier. However, the expert is somewhat sceptic that customers would value to buy furniture that is remanufactured, which is a problem to overcome. Remanufacturing



will become a key resource for companies but it requires investments to re-learn and adapt production but also build new physical structure.

## 4.5. Interview E5

**Type:** Expert

The expert believes there are several aspects that are important with the concept of circular economy. Circular economy provides clearness on what to focus on and it is easier to connect to a firm’s sustainability work than traditional Corporate Social Responsibility work. Circular economy is an economy following the rules of the nature and waste should not even need to exist. Everything that exists or being used should be designed to be used as functions without creating waste. The concept of circular economy is not to be used as marketing or to impress customers, but rather as a driving factor for companies to get their resources back and cut costs. The expert considers circular economy as a win-win situation and says that it is interesting with circular economy since the concept has a social and a corporate perspective that are linked. It is mentioned that if there is a need within the society, the customers will be there, which means that it is planned for a win-win situation, hence, what is good for society is good for business.

<b>Key Partners</b> Logistic companies Competitors Industrial symbioses Sub-suppliers	<b>Key Activities</b> Design for re-... Cooperate with other actors and competitors, and within the product lifecycle Keeping track of chemicals and material used Outsourcing Standardization of parts and materials used <hr/> <b>Key Resources</b> Adequate employees able to communicate Common platforms to share information Material bank, disposal bank Knowledge about products’ lifecycles	<b>Value Proposition</b> From selling volume to selling function Sell intelligent solutions rather than moral Focus on reliability and responsibility Delivery of the function rather than the product	<b>Customer Relationship</b> Close cooperation Agile sessions and processes with suppliers and other actors <hr/> <b>Channels</b> Joint distribution	<b>Customer Segments</b> Certain resistance against change Will cut costs by putting more responsibility on suppliers Mind shift: buying intelligent solutions rather than new products
<b>Cost Structure</b> Costs from recycling and make use of old material Products easy to take apart and put together again will bring less costs Increasing costs for raw material the most significant one		<b>Revenue Stream</b> Take back Rent Maintenance, repair, service of parts Disposal value		

*Most important parts of the canvas to change*

Table 7 Summarised Canvas for E5

With a new generation there will be a shift in mind-set and what is considered as a value in a product will change. The mind-shift will change in such a way as when one buys new products all the time it is seen as abundance. The most general way to move towards a circular economy is to go from selling volume to sell a function. When you sell a function you also add a value for the

customer in form of service and reliability. Companies will focus more on renting, since it is the easiest way to get their products back. When delivering a value, it is also mentioned that what really attracts people to a circular economy is when companies sell products with intelligent solutions rather than products that will enhance one's moral. However, the interviewee mentions that it is likely to be resistance in this transition from owning to having the function of a product. An important key resource for a company will be to have human capital in form of adequate employees, which have the ability to communicate about circular economy, since a shift towards such a business model will put more emphasis on communication and cooperation. As for example, the interviewee believes that we will see more of joint distribution with competitors. If two companies have transporst to the same area, it should not be a problem to collaborate and together cut cost. The biggest win in a circular economy will be for the companies that design products that are easy disassembly, recycle, upgrade and have a certain degree of modularity. By keeping track of the materials used in the products, it will enhance the second-hand value and disposal value, so having the knowledge of what the products consist of will have a huge economic consequence.

## 4.6. Interview P1

**Type:** Producer

To move towards circular economy is not a matter if what we want to, but that it will be a need to do so. However, the interviewee says that there are barriers. It is considered that producers today do not have the capacity or are brave enough. Hence, the willingness to sacrifice today's profit are low since many producers are already today struggling with margins. It is mentioned that there is a view of the producer being branded, as they will only deliver furniture. Instead, the interviewee talked about the possibility of rebranding and to provide solutions as well, to show that there is an opportunity for the customer to demand more than just the product itself. The solutions include; rent, repair, refurbish service, second-hand and etcetera. Moreover, the interviewee said that it is unlikely that any shift towards using their own recycled material in production will come from them, but it rather needs to be a demand from the customer or perhaps that it should be forced by law. Continuing, the interviewee sees that there is a need for innovations and new types of material that can be produced from the furniture they have today. It requires them to both take care of the resources they have in the system but also to reduce the use of virgin raw material. It is also

mentioned that we need to revise our perception of “garbage”. “Garbage” should be considered resources for something new rather than as waste.

<b>Key Partners</b> Recycle companies as producers of raw material Producers of raw material Designers Logistics companies Collaboration of Non-profit second-hand Research	<b>Key Activities</b> Design for re-... Prolong the use of virgin material	<b>Value Proposition</b> Owning will stay at the producers > <i>Incentives for the producers to have high quality and long lasting products</i> Value sold: Utilization of the product Full service and good ways of communication makes the utilization for the customer easy Added feature: When furnitures rented out, procedure could also help with setting up accounts at Eg. "Workaround.se"	<b>Customer Relationship</b> Everything just need to work Delivery of the function rather than the product Growth of intermediaries - one point of contact The producers will be further away from the end customers and have less communications with them	<b>Customer Segments</b> Customers will be similar type: Public institutions and private companies Shift in buyer patterns: from owning to utilization The change needs to come from the customers, the producers themselves won't move towards circular models without demand > <i>However, there is a need for the produces to dare to try</i> Generations shift will ease this process due to shift in mindset
<b>Cost Structure</b> Price pressure effects > <i>Labour and rent costs is high in Sweden moving labour intensive parts of the operations abroad</i> Most producers are buying their raw material/parts from low labour cost countries > <i>Hard to keep simlp jobs in Sweden</i>		<b>Revenue Stream</b> Owning finance companies that enables renting models Rent Producer responsibility; customer pays a bit more that is received back when the used product is returned (hidden rent) Subscription of functions		

*Most important parts of the canvas to change*

Table 8 Summarised Canvas for PI

The most important change is considered to be the value proposition; the interviewee suggests that sales of function will be more dominant. Meaning that a customer for example buys an amount of functions to sit during a time period and pays rent for only what is needed. The purchase includes the chairs, service, upgrades, and ability to change the contract, in this case the chairs and other values the producer provides. The interviewee says that it will be considered as a “hygiene factor”, meaning that the furnishing should “just work” at a company. This is believed to also be incentives for the producer to have high quality and long lasting products. To achieve this, a change in mindset of the customers is needed; to go from owning to having the function. This is believed to be easier with new generations to come. Further, the interviewee sees opportunities for intermediaries to grow, like the service management companies, who today are having the similar value proposition regarding other types of products, for example coffee machines. They could be a one-point contact for the end customers and can possibly manage the office as a whole. Also financial companies, external or owned by the producers, can also be important actors in facilitating renting or contract models. Further, as furniture are robust products, the logistic industry will be important, both in collective transports, but also to provide the ability to take back old or not used furniture to the producer. On the other end of the value chain, the interviewee talked about the importance of prolonging the life of virgin material and that the producers of them as well as recycling

companies can be vital here due to them having the best knowledge of how to best use and take care of the material. It is also important for the producers to design their furniture in a sustainable way by using little mixed materials and designing for easy ways of disassembly. Finally, it is suggested that there are possibilities to combine recycling companies and second-hand sales. Today, many people, due to lack of knowledge throw away good furniture, but if there was a “human filter” at the recycling companies who could decide whether it is possible to repair, refurbish or sell directly it is likely that there will be less material wasted.

## 4.7. Interview P2

### Type: Producer

According to the interviewee, to make a circular economic model work it needs to be driven by the market economy. An economic plan model is doomed to fail or destroy the competitive power in the business. Further, a renting model is discussed and the barriers around it; there is a tradition of buying furniture not renting, and in general today it is more beneficial for the customer to own products rather than rent. Hence, for furniture, it is possible for the company to use them after it is fully depreciated and together with today’s low interest in Sweden it is more beneficial for the customers to invest in purchasing products rather than having liquidity.

<b>Key Partners</b> Suppliers of material > Dialogue to meet demands Retailer stores	<b>Key Activities</b> Short lead times Delivering what’s promised Developing, assembly and selling of a basic assortment for public spaces	<b>Value Proposition</b> A solution for a monthly fee Pay for usage and not responsible with disposal Take care of products after first life cycle Added service: financial plan for customer Service to end user (technical competence)	<b>Customer Relationship</b> Responsible for service to end users (take back or third party) Closer relations Listen to needs and wants	<b>Customer Segments</b> Behaviour change of the end user is far away More beneficial to own
	<b>Key Resources</b> Competences to provide customer with financing models Ability to invest in take back procedures		<b>Channels</b> More intermediary and “new” types of actors Financial companies as intermediary > Not locked to one producer Web Pages: the ability to look from “home” Retailer stores	
<b>Cost Structure</b> Willingness to take the cost instead of asset with depreciation Mature industry: price pressure → increased use of recycled material Cheaper to use recycled material Regulations of take back			<b>Revenue Stream</b> Sale vs. Rent Producer Responsibility: Higher price for end user (Complement retailers next life sales)	

*Most important parts of the canvas to change*

Table 9 Summarised Canvas for P2

The value proposition is assumed to be the greatest change to a circular model and renting models are suggested where the products and services are provided in return for a monthly fee. The

financial service as such is considered to be provided best by financial companies but the technical service during the renting time and the responsibility after the renting period would be provided by the producer or a partner to the producer. However, the interviewee said that traditionally, there is some hesitation for customers to use financial companies since that it is considered as if a third party is making money on their transaction with the producer. Further, traditional partners, like retailer stores, will still be an important sales and marketing channel. A growing channel is believed to be through Internet where the customer can look and decide what to purchase. The interviewee further stated that the decision phase is important for the customer. What is needed and what the customer wants in terms of design are included in the decision phase, however, the price will also always be a vital factor. Further, to be able to choose “clean” material and use suppliers that can provide parts that meet the market's demand for sustainability and regulations are important, and the producer respondent pointed out the importance of developing together with the suppliers. To enable take back from the customers it will require investments in matter of capacity and manpower. It is considered to be hard for the producers to reuse parts of the furniture and it is rather more likely that recycling will play a bigger role and that the producers can use the recycled material. Finally, it was mentioned that it is in general cheaper to use recycled material and to move in a direction of using recycled materials more will be a natural step for a company in mature industries, such as the office furniture, where the price pressure is high.

## 4.8. Interview P3

**Type:** Producer

The interviewee stated that since a few years back the thoughts of circular economy have shifted from recycling to more focus on the ability to use material, parts or products more than one time. However, the interviewee still acknowledged barriers in form of the habits of people in producing organisations. The respondent believes that organisations are not completely willing to make the required investments in production to fully change to a circular model. The uncertainties regarding environmental regulations were also mentioned as a problem for example, one cannot be sure that a table produced with the environmental standards of 2016 will live up to the environmental standards in ten years, which can make it impossible to reuse or recycle at that time as the environmental standards might have changed.

<b>Key Partners</b> Sustainable sub-contractors Branch organisation: Trä och möbelförbundet	<b>Key Activities</b> Product development Traceability Logistics Ergonomics Ability to give the customer choices <b>Key Resources</b> IT: documentation Adjusted production line Lobbying	<b>Value Proposition</b> Sales of function > Workspaces, Mobile service, Upgradings, Moving Re-make	<b>Customer Relationship</b> Close on local level with retailers Knowledge about the customer > Documentation systems <b>Channels</b> Logistics > Collective, Return, Mobile service Sales organisation > New provision models Marketing arguments	<b>Customer Segments</b> Dare to buy "functions" Price sensitivity Willingness to chose
<b>Cost Structure</b> Material, Logistics and storage Bulk cost which takes long to get back in sales (taxes)		<b>Revenue Stream</b> Sales → Sales of function Sale → Re-make		

*Most important parts of the canvas to change*

Table 10 Summarised Canvas for P3

The most important value offered to the customers is expected to be the sales of functions. Within the concept of function both the actual function of the workstation, such as chairs and tables, matters but it is likely to also include services on them, such as the ability to upgrade and when needed, help with physical moving. Here it is important that the customers dare to take a step out of their traditional purchasing processes and consider renting models, because the interviewee mentioned that it is in general the price that is the determining factor in purchases. Since these types of contracts are new the customer might be hesitant to accept that a service and a renting cost will not exceed the value of a fixed purchasing price. The interviewee said that with the ownership staying with the producers, the producers would be more concerned about their conditions and whereabouts. Tracking chips and documentation of all furniture is suggested and it also believed that this will give the producer incentives to create high quality and long lasting products which are designed to easily be repaired, upgraded and recycled. Furthermore, the logistic industry will be an important player, both for collective transport to the customer, but also for return flows. However, the interviewee says that the more that can be made on site and the less that needs to be transported are better. Finally, regarding the sales of function and the rental income, it is acknowledged that the producers will still be in need of purchasing the raw materials in bulk costs and then it might take years to break even.

## 4.9. Interview C1

**Type:** Customer

The interviewee said that everything in our society is created after a linear model and companies will need to transform and gain the resources to enable a circular model. In order for this to happen,

there is a need of belief in circular economy and that it will be beneficial for the producer. However, it is believed that there will be a group of some brave companies, some customers and some researchers, that will take the lead. Further, the Västra Götaland Region provides great opportunities for companies who are willing to start to change, by being a proactive region where the furniture industry is important in political questions.

<b>Key Partners</b> Branch collaboration > "Trä & Möbelförbundet", <i>Other branches for inspiration</i> Researchers Customers Insurance companies Craftsmen	<b>Key Activities</b> Design for Re-... > <i>Product development, Moduling</i> Take care of current furniture Reengineering, quality? Verifying, marking and tracing	<b>Value Proposition</b> Rent Service > <i>Quality, Ability to upgrade and repair (on place), Service for longer product life, "Clean" furniture</i> Product vs. full solution Take back	<b>Customer Relationship</b> Relations to new actors? Industry symbiosis	<b>Customer Segments</b> Change in public procurement
<b>Cost Structure</b>	<b>Key Resources</b> Transition from linear models Take back		<b>Channels</b> Share-economy platforms Collective transport	
			<b>Revenue Stream</b> Producer responsibility	

*Most important part of the canvas to change: What does the producer offer?*

Table 11 Summarised Canvas for CI

As the interviewee works at a large public organisation it was discussed that there are some limitations of the public procurement that might create problems for renting models due to the lengths of contracts. Furthermore, it is also considered that it could be hard with renting models for products with low value and long life-time, as the case with furniture. In general, the price will be vital in the purchasing process and in specific for furniture it is believed that not many customers are “good” purchasers since the purchases are done so seldom. However, it is mentioned that the offer to them as customers will still be the most important change, and services and the quality of the product would be features that may be worth paying extra for. Examples of this could be: the product is modular and easy to upgrade and repaired, preferably mobile at the customer’s office. It could also be service for longer product life such as cleaning and maintenance. Futhermore, “clean” furniture, meaning as little chemicals as possible, and the producer offers to take back the products when they should be disposed could be other values for the customers. Further, it is considered that it is important for a shift to happen so that the industry collaborates, both between producers but also with customers and other important actors. Finally, it is pointed out that it is vital in the process for the producers that they design to enable reuse, remanufacturing and recycling as well as putting in efforts in product development.

## 4.10. Interview A1

**Type:** Auditor

*This interview has been conducted in a slightly different way. The canvas has not been used and the focus has been on how circular models will function from the book keeping and audit point of view.*

The interviewee stated that circular economy is a very interesting and well-functioning business model where the sustainable thoughts have changed from only considering; “Where the products is from and what is made of?” to also considering: “What will happen after it is used?” The interviewee said that circular models, like renting or producer responsibility (with cash back at return), will not pose any problems for bookkeeping. There are models for this in other industries and for other products, so it is only to transfer it to the new setting. However, there have been some negative point of views, but they have mostly come from the economic department since it might incur an extra workload for them when integrating circular business models. But, for the company as a whole, it might be a need. The interviewee believes that there is a chance that companies will not be allowed to sell their products in the future if they do not promise to take the responsibility to take back the products after usage.

The interviewee’s definition of circular economy is that all products and waste should find its place. The respondents further stated that there is a lot of examples of companies that have found waste and created value. It is vital for the companies to look over their whole value chain and consider every business opportunity and the ones who do not is likely to run out of business. Further, the concept of urban mining was discussed in regards to reusing. It can be metals, plastic and other materials that are extracted from dumper sites or simply making better use of old things, such as take care of old, disassembled telephone towers and the metal from them is sold as a resource.

It was further discussed whether it is good to be a first mover and the interviewee said that there is a need for pioneers who dare to go in front and maybe make mistakes so that others can follow and succeed. It is also believed that the companies’ stakeholders will be the drivers of change to a circular economy and sustainable business models. Today, customers and employees are the most important stakeholders. Media (journalists and social media) is also important, in particular for



large companies, and the interviewee have also seen that investors have started to make demands of sustainable business.

The drive towards a circular economy and new business models for companies are different; start-ups driven by young people are good at having sustainable thinking and actions from start. Family companies that have lived for 100-150 years and have long term perspectives to survive also are in the forefront. However, listed companies are not as good, as they need to show results of their investments fast, which might not be possible with a circular business model. Furthermore, the food and beverage industry and the clothing industries have high demands on them. The worst, to the interviewee's knowledge, is the IT industry, since they do not take any responsibility outside of their own company. It is considered to be a cultural problem in the industry and only their customers' demands could change this.

In the short run, the companies and the customers will have a win-win situation from a circular economy. In the long run, a circular economy will help out future generations, the interviewee said, either this generation can use all the resources will or this generation can allow future generations to live as good as us. Finally, other things to take in consideration are the digitalisation and Internet of Things. It is known that products in the future will communicate more and "tell" if it does not work accordingly. This gives incitements to modularity in products for the producers in order to create a possibility to just replace a small part instead of the whole product. In the end both the producer and the customer will benefit from it and the customer will choose the supplier that is best and have the most complete service mind.

## 5. Analysis

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*In this section we will present our analysis of the collected data and the theoretical framework for our thesis. It will start with a cross-case analysis between the different cases in the thesis and its results. This is followed by a case-theory analysis where we analyse and present the results of the cases and the theory used. The analysis in the cross-case analysis is presented in the framework of the Business model canvas covering all the nine blocks, whereas the case-theory analysis presents the most important factors in the Business model canvas.*

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### 5.1. Cross-Case Analysis

#### Value Proposition

Our results show that most interviewees believe that the value proposition; the offer the producer gives to its customers, will be the most vital change to move towards a circular economy. Most interviewees see the opportunity of selling a function instead of products to their customers. The functions in this case are for example the ability to sit and work, hence, selling the functions include that the producers provide what is needed for the function “to work” over the agreed time. This can mean that the producers will help with repair or replace parts, to provide extra function or reduce function if the customers’ requirements are changed. Furthermore, it is included that the producer takes care of the product providing the function, in this case the furniture, when the customers do not have the need anymore.

Even if producers sell products, it has been suggested that they could complement the products with selling service features such as those mentioned above. Selling service features as a complement could mean an extra income for the producer and the more service provided to the products, the more money they could earn. Hence, this might decrease the incitements to make good quality products, due to that good quality products will need less service. However, the opposite is true for the functional sales model. The producers will have high incitements to make products with high quality so the products need as little service as possible since the service is included in the price. If any service is needed it is beneficial for the producer if it is easy to repair or replace parts of the products as it will decrease the costs for the producers.

Several of the interviewees points out that even though the customer might have the willingness to purchase sustainable furniture, the price has shown to be the most important decision factor in the end. However, a product with a higher quality and longer lifecycle is believed to potentially affect the customer to consider other factors than just the price. Other factors mentioned which could affect the customers' decisions are if the producers would offer more than just the product; they can offer full furnishing of an office, added features like helping with financial plans, sell repair kits to the customer or help them with share economy platforms for second hand or renting out office spaces. Finally, making the efforts to be circular could result in good brand reputation for the producer and attract the customers to make business with them.

### Customer Relationship

Due to the belief of growing functional sales as a value proposition, the interviewees consider the customer relationship to be closer to the customer than today. Hence, there will be a need to have a continuous contact with the customers in order for the producers to have knowledge of the customers' requirements and thereby can provide the right services when needed. Further, it is discussed that the customer relationships will be dependent on what role the producer will take. Today, some producers have less direct contact with the end-user and use intermediaries. The role of intermediaries is believed to grow in a future circular economy. However, it will be a question of the ability of the intermediaries, do they have the competences to provide services on the furniture or will that still be the role for the producer to take? Depending on the intermediary, this might push the producer even further away from the end-user if the intermediary both have the contact with the customers and the service of the product.

### Channels

It is believed that transportation will increase in importance with functional sales since the producers will need to be able to provide services or solve the customers' problems fast. The transports also include the ability to deliver collectively, to handle return flow and deliver spare parts. It has been suggested that transportational collaborations between producers are likely to be beneficial. For example, several producers might deliver to offices within the same area, which can be optimised with transportational collaborations among the producers. The producers, the customers and the environment would all gain on such collaborations. It has also been mentioned

that the producers should, as much as possible, try to make the services at the location of end-user, foremost to reduce the costs and avoid transportation of furniture back and forth.

The most important sales channels are likely to be the more traditional sales organisations, retailer stores and the Internet, which may indicate no bigger change in a circular economy. In specific, one interviewee mentions the importance of show rooms, due to the customers' requests of buying full solutions and not only single furniture. Finally, it is possible that it will be a growth in the share economy platforms and second hand, which the producers have a possibility to be responsible for and develop further.

### Customer Segments

Most interviewees have talked about the importance of a shift in the customers' mindset to enable the predominant suggested business model of functional sales. The customers' needs to "dare" not owning the products and rather start trusting the renting models provided by functional sales. However, issues regarding this have been raised. Customers tend to be very price sensitive, which could be a determining factor in end if the renting the furniture are seen as more expensive than buying them and having the ownership. In general, today it is more beneficial to own an asset than to rent it. Furthermore, a financial plan in a renting model where a third party gains from the transaction is in general not preferred.

Some of the interviewees believed that there is a natural mindshift of renting and sales of function taking place within the society, while others believe that the producers need to be more proactive for it to happen. In the office furniture industry, we need to consider that the customer is a company, which over a long period of time has learned certain purchasing processes. It is likely that the company requires to reconsider how they purchase and budget for furniture to adopt to circular economy. This can especially be considered as a problem since furniture are durable goods and the knowledge of the customer, or willingness to care, might be limited due to that the furniture should just enable the customers "real" work. During the interviews we have also had discussions regarding whether it will be possible with functional sales in the public sector. As far as our research goes, we see that there are limitations and may even be impossible with today's regulations for public procurement.

### Revenue Streams

As most of our interviewees have suggested functional sales, the revenue streams from such a business model are considered through rental. However, regarding limitations in the producers' organisations today as well as the customers' purchasing processes, it is believed that it still is a long way to go and what is considered as "normal" sales, where the customer buys the ownership of the product, will still be dominant for years to come. Other suggestions of revenue streams have been services like repair, selling full interior solutions, second-hand sales and when taking back furniture there is value to be gained from disposal. The value gained from disposal can also create incitements for the producer to have less mixed materials, more modularity and greater knowledge of exact material of the products. Having information from production and clean materials will increase the rest value as it will be easier to dispose. Further, if the producers themselves do not want to take back their furniture, several interviewees have mentioned that there might be a form of "producer responsibility" forced on them by regulation which will force the producers to take action towards having products with higher disposal value. As previously discussed regarding incitements of making furniture with higher quality, it has been pointed out that it is likely meaning selling less products but is balanced by better quality furniture that is likely to be more expensive per unit.

### Key Partners

The interviewees have discussed several different actors to be important in a circular economy. To enable a shift toward more circular models, collaborations outside the own company have been considered as important. This is due to the big investments in productions and customer influences but also onto a large scale to actually make a change moving towards a circular business model. Further, the suppliers have also been discussed as important key partners since most of the producers "only" assemble the parts of the furniture, hence, it is important to find suppliers that can meet environmental, policy and customer requirements. It is also believed that this will be a relationship rather than purchases on the spot market. The suppliers of raw material, as well as recycling companies, are believed to become more and more important when materials used in products are being taken back to the producers in order for them to reuse it as new material in their processes again. Furthermore, recycling companies are believed to likely start selling more recycled material to companies. As a few interviewees have in similar wording put it: "*Today's*

*waste is the raw material of the future*". Finally, as discussed under Channels, the transport will have an increasing importance, hence, a good logistics partner is assumed to be essential.

### Key Activities

One of the most important starting points to become more circular that most interviewees have mentioned is to design the furniture so that they easily can be remanufactured, repaired, reused and recycled. Many mention that this means that the producer should choose as clean material as possible as well as materials that are environmental friendly (preferably are 100 percent recyclable) and that their furniture should be modular so parts easily could be replaced and disassembled for recycling. To ease this, many interviewees have mentioned traceability of the products both for knowing the physical location of the furniture but also to enable to track who is the producer of the furniture and what materials are used. Suggestively, each furniture having a RFID-chip (radio-frequency identification) built in that contains this information.

### Key resources

Today, all businesses are adjusted to linear models, hence, most of the interviewees acknowledged that the producers need to invest to enable circular business models. The capabilities to take the furniture are needed, for the process itself, the physical space and human capital. Further, when the furniture are back at the company, it is likely that they require other product lines in comparison to the product lines working with virgin raw material. To facilitate this, it is mentioned that development of technical expertise and more human capital is likely to be required all this is also in turn likely to require a developed internal IT infrastructure.

### Cost structure

The cost structure has been divided into two categories; things that might drive up the cost and things that might reduce the cost. Some interviewees have acknowledged that cleaner materials with higher quality are likely to be more expensive. However, it is assumed that it on the other hand will be used less material due to longer life cycles. As of today, many producers are purchasing the parts from lower cost countries, but the repair of furniture will likely in a circular economy model be in Sweden, meaning increasing labour costs for the companies. It is also discussed that there might come regulations and fees increasing the costs for the producers, the exact type of this has not been speculated in. Furthermore, with the renting models, the producers still need to make the full investments to produce the furniture but it might take years to break

even. Finally, to reduce the production cost the interviewees have mentioned that recycled materials tend to be cheaper as well as with longer product life, easier repairs and re-usage of whole products or parts will likely lower the production cost.

<b>Key Partners</b>		<b>Key Activities</b>		<b>Value Proposition</b>		<b>Customer Relationship</b>		<b>Customer Segments</b>	
	<u>Count</u>		<u>Count</u>		<u>Count</u>		<u>Count</u>		<u>Count</u>
Industrial symbiosis/Branch collaborations	P3, E2, E5, C1	Designe for Re-	P1, P2, P3, E1, E2, E3, E5, C1	Sales of function	P1, P2, P3, E1, E2, E3, E5, C1, A1	Closer realtionships	P2, P3, E2, E5	Shifting mindset	P1, E3, E5
Recycle/d raw material producers	P1, E3, A1	Traceability	P3, E3, E4, E5, C1	Services	P1, P2, P3, E2, E4, C1, A1	Sevice and function delivery	P1, P2, E4, A1	Hopes of shifting mindset	P1, P3, E4
Retailers	P2, E3, E4	Choice of materials	E2, E3, E5	Price	P3, E1, E2, E4	Knowledge of customers	P2, P3, E3	Resistance of behaviour change	P2, E1, E5
Logistics	P2, E3, E5	Customer demands	P2, P3, C1	Added features	P1, P2, E3	New Relations	E2, C1	Flexibility and Choices	P3, E2
Researchers	P1, C1	Logistics	P2, P3	Quality	E1, E3, E5	Intermediaries	P1	Price	P2, P3
Sub-suppliers	P2, E5			Next life responsibility	P2, P3, C1	Agile Sessions	E5	Public Procurment change	E4, C1
Customers	E3, C1			Brand reputation	E1, E5			New Segments	E2
Supporting actors (Repair, Remake ect)	P3, E4	<b>Key Resources</b>		Fumishing	E4, C1	<b>Chanel</b>		No new segements	P1
Designers	P1		<u>Count</u>	Share economy	E1, E3		<u>Count</u>		
Second hand	P1	Take back and remake production	P2, P3, E1, E4, C1, A1			Transport	P1, P3, E5, C1		
Insurance companies	C1	IT	P3, E2, E3, E4, E5, A1			Sales Chanel	P2, P3, E4		
Sustainable sub-suppliers	P3	Human capital	P1, P2, E2, E3, E5			Intermediaries	P2, E3		
Supplier structure to partner structure	E2	Material	E3, E5			No CE effect	E1, E2		
		Lifecycle Knowledge	E3, E5			Platforms/Share economy	E4, C1		
		Lobbying	P3			Digital communication	P1		
						Innovative thinking	E3		
						Marketning	E4		
						Mobile service	P3		
<b>Cost Structure</b>					<b>Revenue Steram</b>				
<u>Drivers</u>					<u>Count</u>				
Materials				P1, E3, E4	Rent				P1, E1, E2, E5, A1
Regulations & Fees				P2, E3, E4	Producers responsibility				P1, P2, E4, C1, A1
Logistics				P3, E3	Take back				E2, E3, E5
Bulk costs				P3, E1	Value of disposal				E2, E3, E5
Labour Cost				P1, E3	Sales --> Rent/remake				P2, P3
Remanufacturing				P3	Second hand				P2, E2
					Services				E4, E5
<u>Reducers</u>					<u>Count</u>				
Recycled materials				P2, E1, E3	Less products sold				E3, E4
Production				E2, E5	Transpericy				E3
					Interiors sales				E4

Table 12 Summarised Cross-Case Canvas



## 5.2. Case-Theory Analysis

Key Partners		Count	Note	Key Activities		Count	Note	Value Proposition		Count	Note	Customer Relationship		Count	Note	Customer Segments		Count	Note
Industrial symbiosis/Branch collaborations	P3, E2, E5, C1		5.1	Design for Re-	P1, P2, P3, E1, E2, E3, E5, C1		6.1	Sales of function	P1, P2, P3, E1, E2, E3, E5, C1, A1		1.1	Closer relationships	P2, P3, E2, E5		3.1	Price	P2, P3		2.1
Symbioses within the industry	Accenture, 2014		5.1	Choice of materials	E2, E3, E5		6.1	Product as a service	Accenture, 2014		1.1	Close relations	Staudin et al., 2009; Östlin et al., 2008; Walsh, 2010		3.1	Price Sensitive & not want new EQ rather extend life of current EQ	Peetre 2009		2.1
Sub-suppliers	P2, E5		5.2	Design for Re-...	Borghesi & Bodewes, 2005; EMAF, 2015; Anders, 1991		6.1	Next life responsibility	P2, P3, C1		6.1	Knowledge of customers	P2, P3, E3		3.1	Shifting mindset	P1, E3, E5		2.1
Sustainable sub-suppliers	P3		5.2	Traceability	P3, E3, E4, E5, C1		6.1	Next life responsibility	MacArthur, 2015		6.1	Understanding and Knowledge	MacArthur, 2015; Finkem & Müller, 2012		3.1	Hopes of shifting mindset	P1, P3, E4		2.1
Supplier structure to partner structure	E2		5.2	Customer demands	P2, P3, C1		5.2	Share-economy	E1, E3		1.2	Personal relations	Staudin et al., 2009; Östlin et al., 2008		3.1	Resistance of behaviour change	P3, E1, E5		2.1
Suppliers	Mont et al., 2006; Rams et al., 2013; Wise and Baumgartner, 1999		5.2	Logistics	P2, P3		4.1	High utilization through sharing platforms	Accenture, 2014		1.2	Long term - over the whole lifetime of the product	MacArthur, 2015		3.1	Customer behaviour: shift from ownership to performance	Planning, 2015		2.1
Recycled/raw material producers	P1, E3, A1		5.2	Keep the ownership of the product	Staudin et al., 2009; Östlin et al., 2008		6.1	Services	P1, P2, P3, E2, E4, C1, A1		1.1	Sevice and function delivery	P1, P2, E4, A1		1.1	Flexibility and Choices	P3, E2		
Retailers	P2, E3, E4							Features for upgrading	Accenture, 2014		1.1	New Relations	E2, C1		3.1	Low willingness to re-approve new products	Peetre 2009		
Logistics	P2, E3, E5		4.1					Brand reputation	E1, E5			Intermediaries	P1		3.1	Not fashion sensitive	Mont et al., 2006		
Researchers	P1, C1							Sustainability	MacArthur, 2015; Michael & Lopez, 2011			Agile Sessions	E5			Public Procurement change	E4, C1		1.1
Customers	E3, C1							Price	P3, E1, E2, E4		2.1	Channels				New Segments	E2		
Supporting actors (Repair, Remake ect)	P3, E4			<b>Key Resources</b>				Added features	P1, P2, E3			Transport	P1, P3, E5, C1		4.1	No new segments	P1		
Designers	P1			Take back and remake production	P2, P3, E1, E4, C1, A1		6.1	Quality	E1, E3, E5			Revers logistics	MacArthur, 2015		4.1	Needs special product	Peetre 2009		
Second hand	P1			Technical expertise of remaking	Borghesi & Bodewes, 2005		6.1	Furnishing	E4, C1			Sales Channels	P2, P3, E4			Environmental friendly	Peetre 2009		
Insurance companies	C1			IT	P3, E3, E4, E5, A1							Intermediaries	P2, E3		3.1				
				Information Technology	Planning, 2015							No effect of CE	E1, E2						
				Human capital	P1, P2, E2, E3, E5							Platforms/Share economy	E4, C1		1.2				
				Material	E3, E5							Digital communication	P1						
				Lifecycle Knowledge	E3, E5							Innovative thinking	E3						
				Lobbying	P3							Marketing	E4						
				Circular supplies	Accenture, 2014		6.1					Mobile service	P3						
				Capacity planning of take back	Peetre, 2009; Sainz, 2007; Borch, 2005; Ravi and Shankar, 2005; King et al., 2006; Östlin et al., 2008		6.1					Information Technology	Planning, 2015						
<b>Cost Structure</b>		<b>Count</b>	<b>Note</b>	<b>Revenue Stream</b>		<b>Count</b>	<b>Note</b>												
<b>Drivers</b>				Rent															
Regulations & Fees	P2, E3, E4		7.3	Product as a service/pay for use															
Taxes and regulation	Kim et al. 2010; Stahle, 2010		7.3	Sales --> Rent/remake															
Bulk costs	P3, E1		7.2	Sale of product															
Tied up capital	Mont et al. 2006; Borch, 2005		7.2	Second hand															
Materials	P1, E3, E4		7.1	Extended usage through multiple life cycles: Return flow, Next life sale															
Logistics	P3, E3		4.1	Producers responsibility															
Labour Cost	P1, E3			Take back															
Remanufacturing	P3		6.1	Value of disposal															
<b>Reducers</b>				Services															
Production	E2, E5		7.1	Less products sold															
Lower production cost: Higher utilization of input	MacArthur, 2015; Walsh, 2010; Stahle, 2010		7.1	Transpericy															
Recycled materials	P2, E1, E3			Interiors sales															
Volatile raw material prices	Planning, 2015			Long term contracts															

Green= Empirical findings, Blue=Theory, Gray=Empirical findings and theory Orange=Discussions regarding the theme in both empirical findings and theory.

Table 13 Summarised Case-Theory Canvas

*In the summarised canvas for the case-theory analysis all the findings from cases and theory are found, however, only the key findings will be discussed in the analysis. Each note in the canvas represents under which section the finding is discussed.*

*If the reader wants to further explore any specific finding, the reader is advised to review the theory and/or the empirical findings. Further information of empirical findings can be reviewed in Appendix B.*

## **Value Proposition**

### **1.1 Sales of Function/Product as Service**

Both the theory (Accenture, 2014) and almost all of our interviewees have been talking about functional sales of selling the product as a service as a possible business model. Hence, it is a likely business model for the producers of office furniture, alternatively for their retailers. A question we have come across in our research is how these models would work in public procurements. Due to the length of the functional sales is likely being longer than the four years the public procurement contracts are. Hence, what happens if the same producer does not get the next contract, do all furniture in the public organisation need to be replaced? This problem goes beyond our scope and we have in this thesis only acknowledged the challenge.

The suggested revenue stream for this model is rental contracts (Accenture, 2014) which is also confirmed by the empirical findings. In these cases, the producers get back their products and can either keep renting it out to other customers, sell the furniture to another customer as second-hand, reuse parts or materials or get the value of disposal/recycling of the product, hence, they can continue to get revenues from a product despite one customer having considered it to have reached the end of its life cycle. Leasing contracts have also been discussed, however, it is not considered as beneficial for the producer since in general means that the customer in the end buys out the product and the product (and material) will not circulate back to the producer.

Another aspect to product as service that was found in the interviews was the possibility for the producer to still sell products to the customers but complement the product with any service of it, like cleaning and maintenance. This can be seen both as a potential value proposition and/or a revenue stream for the office furniture producer. The service on sold products to increase the

customer value of the product not been discussed as much in the theory, however, Accenture (2014) suggests that the producers can offer features for upgrade to extend the products life.

### 1.2 Sharing platforms

Accenture (2014) suggests that a sharing platform is a model that aims to maximise the utilisation of products and therefore is beneficial for companies. Our empirical findings also show that it is suggested by several interviewees that sharing platforms would be beneficial for an extended utilisation of products. For our different actors, platforms that have been suggested are between customer platforms or a third-party owning the service which can complement the producers. Hence, even if a sharing platforms not are provided in-house by the producer, it is likely that the producer can benefit from such services any way, for example they could creat partnerships with third-party platforms to provide the service to the customers.

Another type of sharing platform suggested by one of the interviewees is that the customers today might have new and different needs. In particular start-ups and independent consultants are believed to be less dependent of “where” the office is and more interested in the actual usage of the office space. As a result, office hotels, where spaces can be rented for a day or a longer time, are said to likely be growing. Similarly, in another interview it was discussed that the producer could collaborate with such platforms that rent out temporary office spaces and provide them with furniture. So when the producer makes the sale they can help the customer to set up an account so whenever they have an office space over they could rent it out to someone, either long-term or short-term, and through this help the customer to maximise the utilisation of their office furniture.

### 1.3 Sustainability

It is discussed in the theory (MacArthur, 2015) that the companies can offer sustainable value for the customers through circular models. However, as one of our interviewees pointed out, to use sustainability as a sales argument and sell the products on moral reasons for customers is likely to not get through to the big crowd. It is suggested that it is rather better to argue for the smart solutions that the product or function will provide. For example, it is better to use the argument of the simplicity for the customer of functional sales rather than the environmental arguments which plays at utilisation of material and buying for a good cause. On the other hand, the research by Michaud and Llerena (2011) showed that the customers did not nessesarily demand a lower price for remanufactured products if the positive environmental effects of the product were revived.

Hence, it can be assumed that, as a complement to smart solutions, it will not hurt to mention the positive environmental effects. To be in the forefront, in regards to sustainability, one interviewee also mentioned that several companies have gained brand reputation which can be one of the reasons why the customer would choose one company over another.

## **Customer Segment**

### **2.1 Mindset of customer**

Empirical findings point at the need for a shift in mindset among customers and some of the interviewees believe a shift in mind-set will take place voluntarily in society and among customers. Planning (2015) argues that the customer behaviour needs to change from the customer valuing ownership to valuing the performance of the product instead. Empirical findings show that this will take place together with the younger generation as a general shift in valuing the function of the product over the owning. The importance of customers daring to use renting models and rethink the way they purchase was also discussed. However, some interviewees saw a problem, as the price could be the determining factor in the end and customer might believe that renting models are more expensive and that today it is more beneficial to own an asset rather than to rent it. Furthermore, one interviewee said that the customers say that they are willing to approve and value remanufactured furniture instead of complete “new ones”, but has experienced that in the end this might not be the case.

## **Customer Relationships**

### **3.1 Relations to customers**

To get a circular economy model to work, the relationship with the customer is preferred to be close (Sundin et al., 2009; Östlin et al., 2008), which is also strengthened by the interviews whereas almost half of the respondents highlighted that the relationship to the customer will be closer in a circular business model. Advantages from a close relationship with the customers were mentioned in the empirical findings as the possibility to gain knowledge of the customers, their buying patterns and demands. MacArthur (2015) believes that the relationship with customers will span over the whole lifetime of a product. The length of relationships has not been covered in detail in the empirical findings. However, as companies will be responsible for the quality and the function of the products when offering sales of function, the relationship between the customer and the

producer will be close and continuously as long the service is provided and will end first when the service is no longer needed.

On the other hand, it has during the interviews been discussed that there possibly will be a growth of intermediaries. As many producers today do not own their own sales channels and then, if these are the actors taking on rental models, the relations between the producer and the end customer will be more distant. However, it is dependent on what type the intermediary is. If the intermediary is in the distribution channel and then acts as a financial institution who “only” know about the financial plans, the producer can still be the provider of the service. But if the intermediary is an actor with knowledge about the product, they can also have the service responsibility and the producer will have a more distant relation to the customer. Intermediaries can also be a third party if the customer purchases a product and uses the intermediary to provide any service needed for the product, including those at the end of the lifecycle, such as disposal or recycling.

## **Channels**

### **4.1 Logistics**

Logistics and transportation have been mentioned in several areas in the empirical business model canvas for a circular economy. For the office industry the logistics company is an important partner due to the robust products and the importance of them are likely to grow within a circular model. As products will be possible to upgrade or downgrade and companies will take back products, it puts large emphasis on how to solve the logistics. This have been discussed in some way by all interviewees since they agree that there with a circular model will come with more transportation and this must be handled efficiently in order to not increase emissions, as one interviewee said; it is important that the concept of circular business work together with other environmental issues, such as the emissions of carbon dioxide. The importance of the logistics is also strengthening by the theory by MacArthur (2015), where reverse logistic is discussed and the possibility to enhance the efficiency.

## **Key Partners**

### **5.1 Industrial Symbiosis**

Accenture (2014) raises the importance of creating collaboration and symbioses within the industry in order to succeed with a more circular business model. Collaboration and creating

industrial symbioses were also mentioned by several interviewees. However, the interviewees highlight the importance of also creating such collaboration also outside one's industry. As new business opportunities may arise from a circular business model, such as selling waste as a resource to other companies or producers, creating symbioses and collaboration within and outside will increase in importance.

## 5.2 Suppliers

Both the theory and the empirical findings have pointed out the importance of the suppliers in a circular business model. If a company wants to change their business model to a circular one, the suppliers will need to be compatible with this (Mont et al., 2006; Rizzi et al., 2013; Wise & Baumgartner 1999). For example, if the products should be taken back, maybe it is better to send the parts all the way back to the producer's supplier, hence, it means that the supplier also need to have a functioning take back system. From several intervivities it was alos suggested that recycling companies might takt this role as well. To take back the used material for the customers, refine it and "return" the recycled material to the producers. Raw material producer was also a suggestion to take care of their specific material, since they have the expertice knowledge.

If the products do not go all the way back but the product stays at the producer, the suppliers need to adjust to the situation that their sales go down due to the fact that the producer can reuse the products and materials in their own systems and will not buy as much from the supplier. The empirical findings also suggest that it is vital for a good relationship with the suppliers. It is suggested that business models in a circular economy are likely to make the suppliers partners to the producing companies, in comparison to purchasing supply on the spot market. Further, since most producers in the industry are "only" assembling parts, they are in need of having a good relation with their suppliers. Hence, if demand from customers or regulations are changing, the producers should have an adequate communication with their suppliers to meet the new demands.

## **Key Activities**

### 6.1 Design for Re-...

Having products that are designed for reuse, repairing, remanufacturing and recycling is one important starting point for a circular business model mentioned by most of the interviewees. Furthermore, the interviewees also highlighted the importance of choosing clean materials as well

as materials that are possible to recycle. This is also supported in theory by many authors who argue that companies should design for Re-activities and by doing so keep materials circulating in their models (Accenture, 2014; Berchicci & Bodews, 2005; EMAF, 2015; Andreu 1995). What have also been mentioned is the issue of recycling older products where the materials may not live up to the environmental standards of today and this gives low increments for the producer to recycle these products since it will be difficult to use the material in reproduction. This is an aspect which we have not found mentioned in the theoretical findings. Other valuable aspects from the empirical findings are the ones of rest value and value of the product at disposal. The value of the product is likely to be higher if information about the product's material is available. Such information will enhance the recycling process since it becomes clear what each product is made of, how it should be taken care of and enable to more easily use the materials in reproduction.

The take back of products is another important finding from the interviews, which is also supported by several authors (for example; MacArthur, 2015; Accenture, 2014) Due to the scarcity of resources it will become even more important for the producers to get their products back to them after usage in order to get the resources back for recycling, remanufacturing and/or reproduction in their systems. To ease this process, traceability of the products has been suggested and by each product having a chip the producer will know the physical location of the furniture and what materials each product consists of. The take back system will also be a value provided to the customer as they do not need to take responsibility for disposal or next life sales.

A challenge raised in the theory is to calculate the predictability and the reliability of the return flow of products, which in turn will complicate the capacity planning for production (Pearce, 2009; Seitz, 2007; Besch, 2005; Ravi and Shankar, 2005; King et al., 2006; Östlin et al., 2008). Such an issue has not been raised among the interviewees, however, we believe this is an important factor to take into consideration when shifting to a more circular business model.

## **Cost Structure**

### **7.1 Reduction of production cost**

It is shown that there is a possibility to lower the production costs with a circular business model due to higher utilisation of the input (MacArthur, 2015; Walsh, 2010; Stahel, 2010). This is also confirmed in the empirical research of this thesis, interviewees have mentioned that if they can

reuse parts in their production it means that they need to purchase less raw material and also mentioned that recycled materials are in general cheaper, which gives good incitements to use reused materials and products in production. Further, it has also been discussed that if the products will be more utilised, it will require higher quality materials to be used, which likely also mean more expensive material. However, this is believed to be balanced up in the long run since the quantity will go down and it is likely that using high quality materials will be a cost-saving action.

## 7.2 Bulk cost/Tied up capital

If a company decides to use a rental model, challenges regarding the time to cover up the investment cost is raised as an issue by Mont et al. (2006), Besch (2005) and also acknowledged in the empirical findings. This means that the producer with such a model will still have the same investments in production as with a sales model, but the rental revenue stream will be distributed over time and the producer needs to consider if they can cover up for the investment until the break-even point. A renting model also means that the producer takes a financial risk due to the ownership of the asset remaining at the producer, albeit the customer utilising it. Mont et al. (2006) and Besch (2005) suggest to use long-term contracts to reduce this risk and make sure for the producer to cover up the cost. In the empirical findings, solutions to this challenge have not been discussed in particular, however, it has been discussed that rentals are assumed to be over a longer time. One producer did discuss that the general rule will likely be that if the customer requires a shorter contract time, the price per month will be higher, which can be assumed to be linked to these challenges of cover up investment.

## 7.3 Regulations

It has been discussed in the interviews that there is a possibility that there will be regulations forcing the producers to be able to take back their products. These kinds of producer responsibilities are seen in other industries and it are considered likely to spread as more policies are moving towards environmental responsibility. This type of regulations has not in specific been discussed in the theory, but regulations controlling taxes on raw material that would give the producers incitements for taking back their material has been highlighted.



## 6. Conclusions

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*The following chapter presents the conclusions that have been drawn from the empirical material and the theoretical framework. Furthermore, the research question of the thesis is revisited, recommendations are given and suggestions for further research.*

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Our aim has been to find out how circular economy will affect the business models of the office furniture industry. This has guided our questions to be focused on how producers in the industry could adjust to a circular economy through changes in their business models; what are the incitements and what barriers are there? The information and thoughts from our interviewees together with existing theory have given us insights on what needs to be changed and developed in a company's business model to meet a circular economy.

### Research Question

*How will circular economy affect the business models in the office furniture industry?*

Our key findings are shown in the figure below.

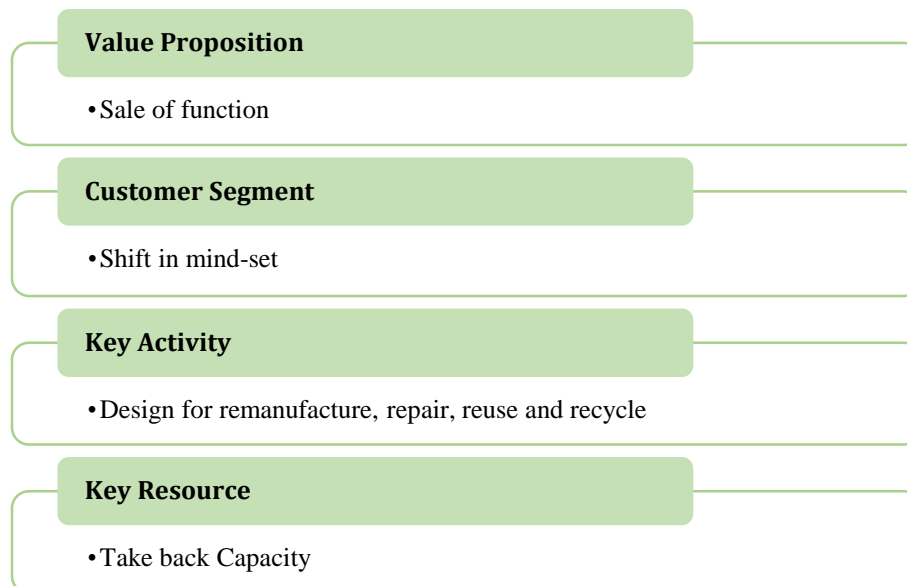


Figure 5: Summary of key findings

The findings show that circular economy will affect the business models in the office furniture industry in the value proposition, as it will change towards sales of function. This means that the customer will buy the function rather than the product and the producer will keep the ownership of the product and the material. As we today are used to ownership of products the mind-set of the customers need to be shifted towards rather having the function than ownership. Hence, the producers might need to give the customers incentives to help push this change. To enable this, it is vital for the producers to change their business model in other areas as well. Producers will need to have the ability to design for remanufacture, repair, reuse and recycle, which also includes to make smart choices of materials. Furthermore, the producers need to develop the capacity and systems for taking back the products and materials into their systems.

## 6.1. Recommendations

Probably it will take time before we have a fully functional circular economy and an industry and a society adapted to it. Today's market forces need to be "reprogrammed" and adapted in order to find equivalent, or better, earning opportunities in the circular economy. As discussed in theory (Planning, 2015) and by some interviewees, the profit-share needs to be aligned along the whole supply chain and not only in the end-of-use-phase and the shift is likely to take place when the circular economy is more profitable than current linear economy.

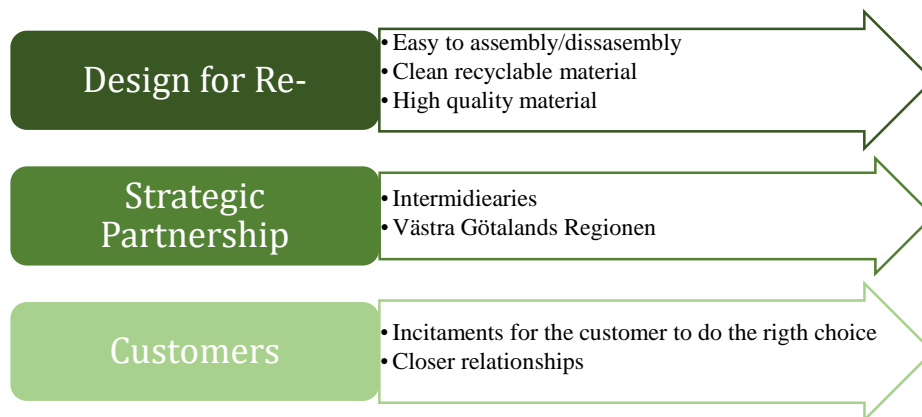


Figure 6: Summarised recommendations

However, we see a great opportunity for responsibility to be taken by both the producers and the customers to start the reprogramming. As mentioned in our answer to the research question, a vital move for the producers is how they design their products and what material they use. We want to

encourage the producers to take this step; to choose wisely and use clean materials which can be reused and recycled (in other ways than for heat), to make sure that the disassembly process is simple and to take the after-life of their products in to consideration. Suggested from several interviewees is to have tracking chips in the furniture that contains information of the product, what type of material, who is the producer etcetera and we believe this is a technology that should be reflected on.

During the time of this thesis we have noticed limitations from the producer's side to have functional tack back systems. Here we see great opportunities for strategically partnerships with actors that can take part in closing the loops of a circular value chain. Suggestively, it could be craftsmen who could reconstruct or re-engineer the products, recycling and raw material companies that can take care of the used material and refine the material or intermediaries that can provide the end customer with rental solutions and second-hand sales. We believe that the producers will benefit from taking the first step so that they in the long run can have a good partnership and hopefully gradually can integrate use of return flow in their production.

One of, what we consider to be the most important findings, in the theory is the challenges of capacity planning with circular business models. It is hard to calculate how much and in what condition the returned products will be. In a linear economy, parts and raw materials is ordered after what should be produced, but the idea of circular economy is that some, or preferably all, of this will be replaced by the return flow. Hence, we believe that, as discussed above, creating strategical partnerships will make the move towards a circular economy smoother and can alleviate the producers from not having to make all the investments themselves in the beginning. We also see that the Västra Götaland region in particular offers great opportunities for producer to utilise this since the furniture industry is being prioritised by the policies and there are opportunities to connect with actors that can become important partners. The partnerships also go along with the suggestions of industrial symbioses, which can be the utilisation of the different types of actors within the industry, but also to look outside of the industry borders. Is it possible for any other company to use the waste from your production?

Finally, the customers' mind-set has been discussed in one way or another by all interviewees and the theory. And as we always can hope for more informed and responsible purchases it is reasonable to believe that the producers (or their partners) need to give incitements where

purchases supporting circular models is preferred by the customer. Further, as our analysis show the relationship to the customers is likely to increase in importance and therefore we recommend to take steps towards a closer producer-customer relationship.

## **6.2. Future Research**

During our research we have come across several important aspects that circular economy will have an effect on. Future research could focus upon how to isolate the effects of circular economy on a company's business model since in this thesis the separation of circular economy and sustainability has neither been clear in research nor among practitioners. We propose future research to build on the findings of this thesis; to investigate if they are impacted by other external changes, and to look at specific projects of circular economy and how they may affect the business model of a company. Furthermore, a deeper investigation whether or not circular economy is a good concept or if it needs to be further developed in order to find a more united definition of the concept is suggested.

Moreover, we would recommend research with in the field of public procurement with emphasis on circular economy. As mentioned in our findings, we have not been able to look deep into of this issue, but throughout the thesis we have found great opportunities for the public sector to drive the change towards circular economy but also that public sectors may face challenges to adequately change their procurement processes towards sales of function. As functional sales are considered to be a growing business model in the furniture industry, but also in general, it is vital that such business models also will work with public organisations as customers.

As mentioned in the limitations we do neither focus on the actual implementation of a circular business model nor the financial implications. However, some important key resources that have been mentioned for a company to have for a circular model to be implemented are human capital, technical expertise and IT infrastructures. Hence, future research could build upon this and consider how to implement a circular business model, what more key resources that is needed and the cost and revenues of a circular business model. Furthermore, the theory is questioning whether if the Business model canvas is the most appropriate model to use when developing business model because of its limitations, such as excluding competition. For future research one may look at different models for a circular economy which are taking these external factors into consideration.

Another possibility in future research is to include the third principle from MacArthur (2015), “foster system effectiveness by revealing and designing out negative externalities”. As discussed in our limitation we did not put any emphasis on this principle, however, we believe it could be interesting to investigate how this principle can be adopted by organisations in a circular economy.

Finally, we also suggest that areas for future research could be in exploring the social effects of circular economy. Both in respect for the society as a whole, but also the fact that we have discovered that the circular processes are likely to need more labour. Some of the job opportunities that have been discussed can be suitable for low skilled labour and since the unemployment, especially among low-skilled labour, is a growing problem in our society we find it as an interesting aspect that potentially could be further investigated.

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## 8. Appendix

### Appendix A: Interview guide

#### Appendix A.1; General interview guide for producers and customers

*P = questions for producer*

*C=questions for customer*

First of all, we would like to thank you for **taking the time** to meet us and we would like to start with asking for **permission to record** this and if we can **use your name and company name in our thesis**?

As known, the world has **limited resources** and companies will need to consider **new business models**, both to follow regulations and to be able to compete in the future. The aim for our thesis is to, with consideration of circular economy, and the shift to more circular business models, analyse the current situation in the industry, consider the future business models and their opportunities and barriers.

You were before the interview provided with a **leaflet** of the concept of circular economy but to make sure that we have the same starting point we will emphasise that this interview is regarding **Circular economy in specific and not sustainable in general**. Hence, in this study we **do not** consider emission reduction or sustainable activities in supporting activities. We focus on the opportunities for **producing companies to improve their business model** towards circular economy. Therefore, you also received a **business model canvas** in advance, which the interview will be grounded on.

#### General (5 min)

1. Is it ok that we record this interview?
2. Is it ok that we use your name and company in our thesis?
3. We prefer a company wide perspective, does that work for you?
4. Can you start with telling us your name, your position within the company?
5. How long have you been working for the company?

#### Current situation (10 min)

1. P: How do you make your furniture today?
  - a. Assembly? Sub-contracts?
  - b. Sales?
  - c: How does your purchase process look today?  
What aspects are you considering? What are the most important ones?
2. What is your perspective of Circular Economy? What is that for your company?

- a. Have you any processes that involves circular economy in any way?
- b. Do your company have interests in moving toward a more circular business model?  
If yes/no, why?
- c. How do you think your company can take advantage of a circular economy?
- d. For example, through waste management, modularity, collaboration etcetera

**Future perception** (30 min)

1. How do you think the future of the industry will look like?
2. What potential future factors of a circular economy impacting the industry do you see?
  - a. How will CE affect the company and how you do business?
    - i. How does the processes change etcetera?
    - ii. Political, economical, social, technological, ecological?
      - How do you think regulations will change in your industry in respect to raw material use?
      - Any other regulations you expect?
3. For circular economy;
  - a. Where do you see the greatest **opportunities** for your/the producing company if moving over to a circular economy model?
  - b. Where do you see the greatest **barriers** for your/the producing company if moving over to a circular economy model?
    - i. P: What would hinder you to use Reuse, Remanufactured and/or Recycled material?
    - ii. C: What hinders do you see to use suppliers that uses more circular models?
    - iii. P: What would be needed for you to use Reuse, Remanufacture and/or Recycled material?
    - iv. C: What would be needed to overcome these hinders?

**Business Model Canvas** (15min)

4. Where in the Business Model Canvas do you see the changes that will take place for the producers when moving towards a circular economy?
  - a. What will the big changes be?
  - b. What will be needed to change in order to adapt to a circular economy?
5. **Customer segments**
  - a. P: Who will the customers be?
    - i. C: What changes do you think you will need to do?
    - ii. Behaviour? Type? Ethics?
6. **Customer relationship**
  - a. P: How will you reach them and how will your relation be with them?
  - b. C: What relations do you prefer to the producers?
  - c. Close/distance, personal/digital, long/short-term?

7. **Channels**

- a. P: How do you reach out and communicate?
- b. C: How do you prefer to have your contact?
- c. What channels do you believe will be the most valuable in the future?  
Digitisation etcetera
- d. How do you deliver/receive your products?
- e. Do you think the way you deliver/receive would change in a circular economy?

## **8. Value Proposition**

- a. P: What value proposition will you deliver?
- b. C: What is the value you are looking for?
- c. What elements will you have/want that contribute to value creation for your customers/you? E.g newness, performance, design, price, accessibility, usability and customisation
- d. Service or product?
  - i. Do you think it would be possible to have a leasing/renting model to make sure to keep ownership of the material?
    - o Would you be interested in keeping the ownership of your products?  
If yes/no, why?
    - o What would make it possible/hinder it?

## **9. Revenue Streams**

- a. P: What will your income come from?
- b. C: How would you prefer to pay for your furniture?
  - i. What type?
  - ii. Contracts? Sale and return, Next life sale

*The following questions are foremost to be asked to the producers but will briefly be asked to the customers as well.*

## **10. Key partners**

- a. Who will be your most important partners?
- b. How will these relationships look like? Price vs. Relations, Joint ventures/ strategic alliances/ coopetition/ buyer-supplier relationships - Sub-contractors
  - i. Recycle companies? Remanufacturers? Second -hand?

## **11. Key Activities**

- a. Do you consider to design to reduce negative externalities? Economic/sustainable
  - i. Do you consider “how to” dispose the products in the design phase?
- b. Do you think it is possible for you to reuse the whole or parts of your furniture?
  - i. If Yes/No, Why?
- c. Are they modular?
  - i. Do you think modularity would change the value of the furniture?

## **12. Key Resources**

- a. Do you use renewable, recyclable or biodegradable materials which enhance a circular production and consumption system?
  - i. If yes/no, why? Advantages and disadvantages.
  - ii. What is needed for you to do so?
- b. Other resources you see that is not directly connected to the production? Such as information technology etcetera

### **13. Cost Structure**

- a. Do you think it will be increased taxation on raw material? How would that affect your business? Would that be an incitement for using more Reused/ Recycled/ Remanufactured materials in your products?
- b. Do you think it would be possible to value and plan for recycled material coming from your products?

### **Finish** (5 min)

1. Who will be the leading actor?
2. This were the questions we had, do you have anything you want to add?
3. Can we contact you if we need to clear out something after the interview?
4. After transcription we will send it over with a summary of the interview to make sure we have understood you correct, is that ok?

**Thank you!**

## **Appendix A.2; Interview with Experts**

*A= specific extra questions for auditor. The questions regarding the Business model canvas were not covered in as depth as in the other interviews.*

### **General** (5 min)

1. Is it ok that we record this interview?
2. Is it ok that we use your name and company in our thesis?
3. We prefer a company wide perspective, does that work for you?
4. Can you start with telling us your name, your position within the company?
5. How long have you been working for the company?

### **Circular Economy**

1. Who are you and what are you doing?
2. A: As an auditor, what is your perspective on Circular Economy?
  - a. A: What opportunities/barriers do you see?
  - b. A: Renting models and some kind of producer responsibility (take back) have been recurring suggestions in our research?
3. Why is Circular Economy important?
4. What is your definition of Circular Economy?
5. How do you think that companies are responding to the initiatives of Circular Economy?
  - a. A: Do you see any changes in the audit as companies start to work more with sustainability etcetera?
6. What are the gains of Circular Economy and for whom?
7. When do you think the transition to Circular Economy will be? Who needs to take the lead?
  - a. Companies? Consumers? Suppliers? Researchers?
8. Reuse, repair, recycle - Which of these three aspects do you think is the best in a perspective of circular economy?

### **The Business Models Canvas**

1. Looking at the Business Model Canvas, where do you think the greatest changes will be in the transition towards Circular Economy? Which will these changes be?
  - a. What external factors will be vital?
2. Go through the Business Model Canvas in similar way as with the producers
3. Do you want to add something to the Business Model Canvas?

### **Finish**

1. This were the questions we had, do you have anything you want to add?
2. Can we contact you if we need to clear out something after the interview?
3. After transcription we will send it over with a summary of the interview to make sure we have understood you correct, is that ok?

**Thank you!**

## Appendix B: Summarised canvas from interview

### Appendix: B.1

**Code:** E1

**Type:** Expert

**Meeting:** Skype 2016-03-31, 16.00-16.30

<b>Key Partners</b> Might need a change	<b>Key Activities</b> Ability to design for re-... Ability to design for disassembly	<b>Value Proposition</b> Brand reputation Rent of function > Increased quality and robustness Share-economy features	<b>Customer Relationship</b>	<b>Customer Segments</b> Long way to change in customer behaviour > What incitements does the customer need to make the "effort"?
	<b>Key Resources</b> Own the own marital flow		<b>Channels</b>	
<b>Cost Structure</b> High start costs: Bulk costs Reducing company's effects of fluctuations of the raw material prices. (Prices are hard to forecast)		<b>Revenue Stream</b> Rent: Slower streams of income		

*Most important parts of the canvas to change*

### Customer Segments

The interviewee notes that there is a big challenge ahead with the change of customer behaviour. Yet, to enable circular business models for producers it is a need. Here he says that every company needs to look at their specific product and determine what incitements the customer will require to give back the product to the company, "properly" recycle, give it privately a next life through C2C sales or either share the access of the product to others to enhance the utility.

### Customer Relationships and Channels

These sections are not in specific covered more than that the interviewee shortly mentions that for example, changing towards rental models, these segments probably will not change in any particular way in comparison to the "traditional" sales models.

### Value Proposition

The interviewee believes that this part of the canvas will have the greatest change. Companies will tweak their offers to the customers. In general, this is what he experienced during his workshops. That people catch up on, to make a new more circular offer and from that the offer will affect the other segments of the canvas. The interviewee points out that some kind of rental model is the most common suggestions. Further the interviewee says rental models forces the producers to better quality and robustness of the products, hence, the products need to be able to be used a lot and be able to repair when needed. Finally, the interviewee also mentions the benefits of share

economy features, like Blocket.se, that enables the C2C market and longer lifecycles for the products.

### Key Partners

With new models companies might need to find new partners to support their business.

### Key Activities

The interviewee mentions that the most important activities a producing company needs for a circular model is to have the ability to design their products so they can be reused, repaired and recycled. To ease these processes, it is also important to design the products so they are easy to disassembly. The interviewee mentions a designer couple “Färg & Blanche” that has created a technique where furniture is put together with stitches of yarn. This eliminates the use of glue and screws so when the furniture should be disassembled the stitches are simply cut open and the different materials can easily be separated.

### Key Resources

With a circular model where the company takes back their old furniture it also gives them the opportunity to use this as raw material in their new products. Due to the fluctuations in raw material prices this is beneficial, hence, the company owns its own material flow.

### Cost structure

With rental models, the interviewee points out that the cost structure will change. Hence, the company will have a large starting cost when purchasing the raw material or products that are going to be rented out. The interviewee mentions the company Sporthyra as an example. They have a rental model for all different types of sport equipment and as an example; at the start they need to buy in a large stock of skis, but they will not be in need of buying new once in a long time due to they only rent them out in contrast to selling them. This also forces the company to buy skis with as good quality as possible, due to the longer and the more they can rent them out before purchasing new once, the more they will earn on each pair of skis. As mentioned in the section about Key Resources the rental or return model, if the company is a producing company, they also reduce the effects of the fluctuating raw material prices when the company rather can use material from their old products.



### Revenue streams

With the suggested rental model described in the cost structure, it of course also affects the revenue stream. In contrast to selling the skies and gaining the revenue right away the company will have slower streams and it will take several rounds of rental to cover up for the cost of the initial purchase. So, as mentioned above, the more times the rental company can rent out the skies after breaking even, the more revenues they will earn.

### **Other observations from the interview and quotes**

- “The Cradle to Cradle perspective rather speaks about the we have a design problem. We have designed our products, our material, business models and social systems in a fairly unwise way. And maybe it is not the questions if we having a bad lifestyle, maybe the problem is that we not have design the technology we use in a efficient way. This also means that we can redesign them, in a circular manner which connects to our eco-system and a better life.”
- The more traditional sustainability thoughts are dominated of “do not” while the circular economy rather looking in to maximise the positive.
- “Circular economy is a vision about an economical system which is designed to recreate value time after time. ... This is what makes the circular economy so attractive; connect business value with environmental value.”
- Many companies are positive to circular economy but many companies also have a long way to a transition towards circular economy. What you can see is that smaller companies have it easier to transition themselves towards circular economy and new companies starting with the foundation of circular economy really has great possibilities.
- Brave companies, like Filippa K and Houdini, that takes the lead and show new ways of doing things will create interesting development. ... I believe in entrepreneurship and the power of innovation and willingness to change what is bad.
- I got a feeling that companies are just waiting for a higher power to come with directives, laws and policies to follow. ... Companies are ahead of the policies and are asking for new and clear regulations.
- In the circular economy the smaller loop and the more turns a material can take the better. Hence, Reuse is the best way to go, but it often also goes hand in hand with repair.

(Referring to “The model” of circular economy and question of what is the “best” of: Repair, Reuse and Recycle)

- One thing that we are facing is the confusion of the different definitions of the concept of circular economy. Some define it as a business model that should rent or lease products. I mean that this is one way, another is “normal” recycling. I got the feeling that we talk less about the biological side of the model and “forget” business models which uses biodegradable material or models where you take care of the waste and create biogas. Which I think is important.
- The shift in customer behaviour is one of the big challenges and for each product we need to see to that specific product what circular solution would be the best.

**Appendix: B.2**

**Code:** E2

**Type:** Expert

**Meeting:** 2016-04-11, 11.00-12.00

<p><b>Key Partners</b> Recycle companies as producers of raw material Producers of raw material Industrial symbioses Partnerships where waste can be traded between companies as resources</p>	<p><b>Key Activities</b> Design for re-... Strategic decisions about products Sell the waste from production as a raw material for other companies</p> <p><b>Key Resources</b> Human capital: important to take care of the capabilities in the companies Technology Circular capabilities: plan for the future as well as make sense here and now</p>	<p><b>Value Proposition</b> Value sold: Utilization of the product Sell less products, but the products will be complemented with services, which will give higher margins. Economic incitement will decide what products will be sold. Will be hard to sell products based on the choice of material.</p>	<p><b>Customer Relationship</b> Closer relationships Relations with office hotels</p> <p><b>Channels</b> Will remain the same, will not be affected by a circular economy</p>	<p><b>Customer Segments</b> Customers will be asking for flexibility and ability to share and mix "Office Hotels" New segments due to new value propositions</p>
<p><b>Cost Structure</b> Lower costs for production sites, whereas the costs for sale, service, maintenance and take back is likely to increase</p>		<p><b>Revenue Stream</b> Second hand Rent Take-back opportunities (e.g Sportson). Will work as long as the product has a short life cycle Leasing</p>		

*Most important parts of the canvas to change*

Customer Segments

Itis believe there will be new customers due to new value propositions offered in a circular economy. Furthermore, more segments will be reached through new ways of delivering value. The interviewee mentions “Sportson” as an example where the company has created a new segment by having a take back clause with their customers. When one buys a new bike, they will get a 50%

discount on a new bike if they return the bike within two years. Sportson will get the customer back but will also get the bike back, which can be repaired and resold as a second hand bike. The customer, which might have sold the bike on Blocket, can instead just leave the bike at Sportson when buying a new one. Customers are likely to also be asking for more flexibility within the office furniture industry since the different forms of start-ups are increasing, which do not have the same need of being in the same office space all the time. This will also create new customers for the different forms of office hotels and "Airbnb" for companies.

### Customer Relationships

In the future there will be new forms of relationships. The producer of furniture will be more involved in the design of the office, which will create the need of not only talking to the purchase director but also to human relationship in order to ensure to deliver what they want, e.g. meet ergonomic standards for all persons at the company. There will also be new relationships with the different office hotels.

### Channels

The interviewee believes that it is difficult to have any future perspective on whether or not the channels will change or be better than any other. The channels are likely to remain the same, or at least not in specific be affected by a circular economy.

### Value Proposition

The Value proposition is believed to be the most important and the most significant change in the business model for producing companies. In B2B it will be difficult to sell a product based on the material used, it will be economic incitements that decide what a customer will buy. The three most proponent models for delivering value in a circular economy will be leasing, second hand markets and higher utilisation of products.

### Key Partners

Different partners will be needed in a circular economy. Office furniture are bulky items so one problem to solve through partners is the storage and transportation. A shift will be from a supplier-structure to a partner-structure. Further, industrial symbioses where companies can trade their waste as a raw material to another company is considered as a good collaboration. This partnership

is rather complicated and complex, but in the manufacturing industry it will be an important capability in order to reach more efficiency.

### Key Activities

In order for a circular economy to work companies need to look at it from a strategic perspective and decide which products to sell, what customers to serve and what value to deliver. Another important activity is to invest in design to redesign, recycle and disassembly, which will require new competences and be able to prioritise and think different than before. The ability to design differently is one of the most important aspects in order to reach the full benefit of a circular economy. The design for disassembly shows an alignment between circular economy and linear economy. Disassembly is strongly connected to modularity, which has been around for a very long time since it is a way for companies to cut costs in production, so what already works in a linear economy could potentially be transformed into a circular economy. Another activity pointed out as important is to take care of the companies' waste, might it be possible to sell to someone else or make use of in other processes? Further, it is mentioned that there is a development of 3D-printing that might in the future be valuable to companies, e.g. enabling printing spare parts.

### Key Resources

The companies will need circular capabilities such as technology, circular inputs in form of the usage of appropriate material and the ability of keeping track of the development within the area. For this also staff competent in the company's processes is important. The importance of making sense here and now is highlighted. By that it is meant that companies cannot make investments today that will yield returns in fifteen years, that time horizon is in general too long for companies. Companies need to be able to invest today, make revenues today and at the same time create the flexible capabilities to move towards a more circular business model.

### Cost structure

The cost structure will change in a circular economy since the consumer will have fewer products but use them more and longer. The costs of production will decrease as a consequence and service, maintenance and sale will increase. It is likely that there will be a shift where the costs of production is less important in relation to resale, take back and related activities.

### Revenue streams

New revenue streams will be created when firms change their value proposition. These new streams that is mentioned is second hand, leasing and rent. Finally, the companies can also gain increase sale or revenues from the returned products, like in the example of Sportson.

### **Other observations from the interview and quotes**

- There are three driver of a circular economy which also make it important for companies; resource effectiveness, technology, globalisation.
- A circular economy is a good way of looking at value creation in a new way since it gives a new perspective on the costs of the resources during the time they create value versus the costs of having them in the economy.
- We have a lot of products that are disposed due to the lifecycle of the design is much shorter than the technical one.
- Every company have an interest in circular economy
- There will be a circular advantage for those companies that can use a technology for a more circular economy. They will be able to deliver a services that the customers are willing to pay for and that have higher margins than just selling products.
- Companies not having the capabilities to shift towards a circular economy will have a difficult time. Companies making the shift too early and fast will also have a difficult time since the market will not be ready.
- There is a moment 22 in shifting towards a circular economy. In order for you to cut the costs for the consumer you will have to develop the product. For that, it requires you to have a product that is either easy to disassembly or cheap to upgrade, which in turn require investments in the development of the product. In order to make those investments you need to have the business model in place. Therefore, companies need to make this shift a few steps at a time.
- If circular economy becomes a compliance from EU it will result in a higher cost for the consumers since the companies are forced to shift towards a more circular business model will in most cases means large direct investments. Instead, if circular economy is driven as a business initiative where one can see the possibility to make money, then it will result in lower costs for the consumers.

- The companies must lead the change towards a circular economy. If companies take the lead they will show it is possible, which make it easier to make regulations enhancing the shift. The customers will not understand what is possible in a circular economy; hence, they will not demand it.

**Appendix: B.3**

**Code:** E3

**Type:** Expert

**Meeting:** Personal, 2016-04-15, 13:00-14:00

<b>Key Partners</b> Distributors Suppliers Disposal companies Customers	<b>Key Activities</b> Design for Re-... Choice of material and information about products Cooperation within recycle activities Remanufacturing  <b>Key Resources</b> Design Competence Material Understand the lifecycle and the cost of life cycle	<b>Value Proposition</b> Rent Longer life of the products Supporting function; enable for customers to repair products themselves through kits Second hand Rethink what a firm make money on	<b>Customer Relationship</b> Depends on the producer and what the customer is used to New models might create skepticism Educative  <b>Channels</b> Distribution New thinking required	<b>Customer Segments</b> A shift in mindset; customer and society
<b>Cost Structure</b> Higher cost for raw material per product Knowledge and competence Logistics Exchange of information Less revenues due to less products sold Waste and disposal fees The ability to reuse will decrease costs		<b>Revenue Stream</b> Keep the resources in the system Higher rest value of the product Challenge: not everyone will benefit from a circular business model		

*Most important parts of the canvas to change*

**Customer Segments**

The expert believes there will be a shift in mindset; both among customer but also in society and that these changes will continue to grow. One will start to revalue and rethink the concept of owning and what is status. There will be actors changing the fundamentals in an industry, such as Spotify did with the music industry and the interviewee think that it is likely that companies will start to question their own mindset when they see how the mind shift changes in other industries. Further, it is mention that this shift needs to be in purchasing companies too, to let go of the “normal” routines such as having a high budget for purchasing but low for the actual process of buying. With a higher use of reuse, it is likely that it will take more time to actually find the furniture that will work both for the interior and quality but the pieces itself might be cheaper than a completely new one.

### Customer Relationships

The relationship towards the customer will depend on and developed after which role the producer is willing to take and what the customer is used to. The interviewee believes that new financial models might create scepticism due to the customer lack of experience and fear of hidden costs. This scepticism among customer is believed to best be overcome by transparency from the producer together with an educative relation, where the benefits can be shown.

### Channels

In general, it is believed that most innovations have been in the distribution channels. It is where new actors has come in and set new rules. This is believed to continue and the larger established companies need to be open for these new ideas and in what way it can help the company. They need to see what value it is for them, and consider if they should integrate forward and do it themselves or find a partner. It is believed that this is the part, which physically could change the most, however, it is mentioned that there is research showing that companies tend to keep to their old distribution channels despite they might not be the best fit when the companies innovate their business.

### Value Proposition

The value proposition will change due to the fact that products will have a longer life cycle and customers will focus more on utility. The challenge for companies will be how to make the furniture stay longer in their system. It is believed that there will be a shift in mindset among companies; how they make money and on what they make money on. Rent is a prospering business model, but the interviewee hopes for not seeing that as the only option. But also for companies to leverage the value proposition and the products by enabling actions of repair, rebuild and help to find a second hand market. Companies might be able to serve as a support function for reparation but also provide kits for the customer to “do it yourself”. There is a risk with renting that companies might make it harder for customer to make the reparation by themselves or by a third party. As the sale of products decrease with a circular business models, it will be more important for companies to keep the revenue streams from services of the products. Hence, the companies might produce their products so the customer will be dependent on just that companies’ parts or service for the products, a lock-in system.

### Key Partners

The different key partners in a circular economy will be distributors and disposal companies. The partnership with disposal companies is built upon the ability for companies to change the design on the product to increase rest value but also for the disposal company to more easily dispose the products. Companies should also focus upon finding customers as good marketing examples to get new customers. Hence, this would get new customers the opportunity to talk to the others, which the new models have worked for and this could lead to less scepticism from the customers.

### Key Activities

One of the key activities for companies will be the ability to design and produce for redesign, remanufacturing and recycling. Another will be knowledge about materials and how to choose wisely in order to make the most out of it when remanufacturing. The production will be likely to change in order to start remanufacture when shifting to a circular economy. Traceability of the products will be another important aspect for the companies. This would enable both the company to trace the physical location of the product but there is also possibilities to keep track of who is the producer, when it is produced and what materials it contains.

### Key Resources

A key resource will be to have the competence about circular economy and how to work with it. Companies will need employees that can see the business and environmental benefits in a life cycle perspective. There must be a wider understanding of the cost over a product's life cycle and not only the cost of purchase. The shift will require larger efforts to ensure the supply of raw material and resources, but also investments to ensure the supply of remanufactured materials. Further, competences on how to forecast and calculate with a return flow that not might be stable is needed. It is also pointed out the importance of design in order to design for redesign. Another key resource is to have adequate information systems, both to keep track of the material used in the products but also to keep track of the products that are at the different customers and when the company expect to get the furniture back. The traceability is also important when it comes to the choice of material. If a company knows exactly what the product is made of, it is likely that such information will increase the rest value in the long run and make it easier to recycle.



### Cost structure

With a circular economy there is likely to come new cost structures such as waste fees, the costs for logistics, sharing of information etcetera. The interviewee sees a higher cost for raw material per product, due to choices of purer and qualitative materials, which makes it even more important to get the product and resources back to the company. A threat for companies to make the shift to a circular business model is the possibility of a decrease in revenues due to less products sold. However, this loss in revenues might could be saved by the need of services for the products sold but it is unsure if that will compensate for the whole sum. With a circular business model there will also be a need for education and knowledge spread within the organisation, which will bear a cost.

### Revenue streams

According to the interviewee it cannot be taken for granted that everyone always wins in a circular economy or in a circular business model. Not every actor within the value chain will win on the shift. There is a problem in how the revenues are shared, some will have a bigger part of it and some will have less, and there might be a problem for actors to accept less revenue. Also in this part of the canvas it could be fruitful with transparency to show where revenues can be made. However, it is usual that companies do not want to reveal where they make their profits but it is necessary in order to improve the system as whole of a circular economy, instead of every company is trying to improve their system only. What can be seen in some cases is that companies are trying to take control over the chain, either owning it themselves or have close collaborations. However, the interviewee still sees opportunities for “new” companies to be innovative and compete with the established companies, especially in the distribution phase. Keeping the companies’ resources within the system in order to reuse or remanufacture them will create other revenue streams. If a company can use clean material and keep track of the material used in the products, the rest value of the product will increase. This also goes hand in hand with the design phase of the production, which really has the potential to enhance the reuse, redesign, remanufacturing of a product. Finally, revenue streams are believed still largely from “normal sales” but also from rental contracts, next life sales and sales of extra services like service kits and repair help.

## Other observations from the interview and quotes

- From the view of resources and the environment, circular economy is a matter of course since we use resources faster than we can get them back in the system.
- Circular economy is a way to create a flow of resources.
- Circular economy is a concept which make an extended group of professionals think about sustainability and not only environmental-geeks. This facilitate for the discussion of new business models.
- The largest winning of a circular economy will hopefully be the Earth and the environment. The economical winnings will be for those who dare to think in new patterns and make changes. Those who are open to change their value chain are those that will have the most to gain from a circular economy.
- Small entrepreneurs are most likely to make she shift first since larger companies is more difficult to change and are likely to face stronger resistance to change.
- The furniture industry is often mentioned in discussions about circular economy due to the seemingly short life of high quality products.
- To be able to reuse and reengineer companies need to consider that the law and policies regarding environment will develop and it is not certain that the things producing today will be able to meet the criteria of the future. It is suggested to minimise these effects to make sure to be proactive and attentive to what new regulations might come . Further, traceability and knowledge of the used material will also be important.

## Appendix: B.4

**Code:** E4

**Type:** Expert

**Meeting:** Skype 2016-04-19, 9.00-10.00

<b>Key Partners</b> Retailers (Entrepreneurs) Logistics: Storage & repair	<b>Key Activities</b> Sensors: Tracking & quality (Re-make)	<b>Value Proposition</b> Interior solutions: Price sensitivity Service (retailer stores) Repair Upgrade	<b>Customer Relationship</b> Service delivery → Moving forward in the value chain	<b>Customer Segments</b> Encourage to service purchase Change in trash culture/habits for purchases Regulations for public procurement need to change
	<b>Key Resources</b> (IT abilities, IoT) Competences and capabilities for remake > <i>Automatisation</i>		<b>Channels</b> Marketing Share-economy Show room	
<b>Cost Structure</b> More expensive material: Shadow price Remaking		<b>Revenue Stream</b> Less products, more interior (Remake) Repair Producer responsibility		

*Most important parts of the canvas to change*

### Customer Segments

To enable circular models is believed that customer should be encouraged to rather purchase service than products and the public procurement regulations needs to be change to make these types of purchases easier. Further, today, we have a culture of throwing away the things we consider to be out of style or not any more usable. To make a circular flow possible this mentality needs to be change. Encouragement of changing the mentality of the customers and systems to take care of it is in need.

### Customer Relationships

The interviewee sees the biggest change in customer relationship when moving towards a circular economy. The buyer will have requirements and that will change what the companies offer. The relation between the producer and the retailer must change as well. The producer might need to move forward in the value chain and be able to deliver the same services as the retailer. Today, most of the producers only engage in the production and there is another actor doing the interior decoration and other supporting services. If we want to maximise the remanufacturing, it would be good for the producer to integrate that activity more with the retailers.

### Channels

Looking at the sharing economy and if such concept really gets a breakthrough, it is considered that it will be a change in the channels used; companies and people will start to buy from each other rather than from retailers or the producers. In a circular economy, the interviewee sees the retailers as the biggest channel and that the customer most likely will visit their department stores to look at different solutions and buy the products. More of the producers should put effort in having their own show rooms since such selling points already are in place but has the possibilities to be utilised better. Hence, it is believed that more full solutions will be asked from the customers rather than separate products and show rooms would make this process easier for the customer.

### Value Proposition

Value proposition will change when shifting towards providing services and functions rather than products, but the interviewee does not see this as a huge step for the companies. Such a value proposition is already in place and provided by the producers' retailers. What companies should focus on is that the customer does not buy the furniture and value the furniture as such but rather the full furnishing. The value of furnishing is already a service but it could be developed further

by integrating remanufactured and reused furniture, as long as it is economically rational to do so. However, this also requires the customers to value furniture that are remanufactured or reused, which they might be hesitant to. It is believed that it would be good if companies could be that wise but in the end it likely to be an economic decision. If companies want to do this in a circular way they must be able to sell remanufactured furniture at a lower cost and point at what the customer could do with the money saved, such as getting the furnishing “for free”. Selling such a value would be functional in all sectors as long as the remanufactured furniture have the same quality as “new” ones. Remanufactured furniture could come with the possibility and service to repair and upgrade.

### Key Partners

A circular economy will require new logistics and it is believed that the solution could lie in creating partnerships. Handling the replacement of furniture in a service-solution will become complex for the logistics. Companies must look at what possibilities they have to keep the furniture in-house, how to solve the delivery and collecting and be able to make the logistics more effective. There is a possibility for storage solutions to develop and that companies might need storage in order to be able to do this. Mobile repair-units might be one solution, but such solutions will be dependent on how the value chain looks like. Logistics, storage, repair and retailers are likely to be future partners. Finally, it is possible for the producer to become partners with a third party, entrepreneurs, that could take care of parts of the value chain which the producer can not. However, these entrepreneurs could also be competitors to the producer if they have their own solutions in-house.

### Key Activities

It is pointed out that the remanufacturing is not an activity that is in place today and it is believed that companies lack the capacity and the expertise. In a circular economy, placing sensors in the furniture will be a key activity for the producers, both to see where the furniture are but also the quality of them. This will enhance and make remanufacturing more attractive and a possible activity for companies to engage in.

### Key Resources

Remanufacturing will be a key resource and will bring a big change but companies are not able to do it yet. Remanufacturing will require companies to re-learn production and build a new physical

structure in order to produce. In order to keep the costs low, companies will also be needed to solve how to make the remanufacturing of furniture automated. One could produce remanufactured furniture by hand, which will create job opportunities, but it is more expensive. Other important resources mentioned are good IT solutions and Internet of Things.

### Cost structure

If circular economy would really breakthrough, then there might be needed to pay taxes on resources, or parts of resources. Another possibility would be the usage of shadow pricing on resources/raw material.

### Revenue streams

If it will be economically rational to remanufacture furniture, companies might be able to create new revenue streams but also through other companies. As said before, the interviewee sees that companies have possibilities start to sell furnishing and not just only the furniture as such. Other revenue streams will be services as repair. Finally, it is mention that in other industries producer responsibility is used and it is possible that it also could be considered in the furniture industry.

## **Other observations from the interview and quotes**

- Circular economy must be the long-term solution for the economy's use of resources
- Politicians and other debaters always seek new ways of engaging people with the old issue of sustainability and this (circular economy) has become a popular concept.
- I believe there are some problems with this concept's popularity, but basically it is a good concept to think about sustainability but it must be complementarity with something else.
- However, there will be a problem if this concept is only for show, and people use it wrong and forget its foundations. If circular economy drives away the CO2-logic, then there will be a problem; the both of the two need to interact.
- The public sector's choices and scale, sharing-opportunities through internet of things and utilisation of resources through IT, those will be the driving trends in this.
- If you mean a broader development towards a circular economy or society, in the end, a different pricing on resources will be needed.
- "Office sharing is used today, so why should not furniture sharing be possible?"

## **Appendix: B.5**

**Code:** E5

**Type:** Expert

**Meeting:** 2016-04-13, 10.00-11.00, Skype

<b>Key Partners</b> Logistic companies Competitors Industrial symbioses Sub-suppliers	<b>Key Activities</b> Design for re-... Cooperate with other actors and competitors, and within the product lifecycle Keeping track of chemicals and material used Outsourcing Standardization of parts and materials used	<b>Value Proposition</b> From selling volume to selling function Sell intelligent solutions rather than moral Focus on reliability and responsibility Delivery of the function rather than the product	<b>Customer Relationship</b> Close cooperation Agile sessions and processes with suppliers and other actors	<b>Customer Segments</b> Certain resistance against change Will cut costs by putting more responsibility on suppliers Mind shift: buying intelligent solutions rather than new products
	<b>Key Resources</b> Adequate employees able to communicate Common platforms to share information Material bank, disposal bank Knowledge about products' lifecycles		<b>Channels</b> Joint distribution	
<b>Cost Structure</b> Costs from recycling and make use of old material Products easy to take apart and put together again will bring less costs Increasing costs for raw material the most significant one		<b>Revenue Stream</b> Take back Rent Maintenance, repair, service of parts Disposal value		

*Most important parts of the canvas to change*

### Customer Segments

There will be a shift in mindset with the new generation and a change in what is seen the value of a product. The mind shift will move towards a perception of flash when one buys new products all the time. There will be more value and pride in having products with intelligent solutions. Further, there might also be beneficial for the customer to have this smart solution due to that it will mean that more of the responsibility would transfer to the producer. However, the interviewee mentions that there is likely to be a resistance in this transition from owning to having the function.

### Customer Relationships

In a circular economy, cooperation will become more important. The interviewee believes that companies will be forced to cooperate. Firms will start to work with agile sessions to enhance different processes such as purchasing. With agile sessions it means that a company do all the processes in an activity in parallel. All the experts will meet together in order to decide upon which factors that are important to make, e.g. purchasing, easier and more relevant. In agile sessions all different experts will be able to raise their opinion and the firm will avoid the risk of slip by any valuable knowledge. Agile sessions will change the way companies work and allowing more open environments and create reliability. The companies will understand the need of working with different competencies rather than just their own. The value is in the understanding of others, their assets and limits since it will facilitate for processes to take place.

### Channels

The interviewee believes that we will see more of joint distribution with competitors. If two companies have common costs, it should not be a problem to cut them together by joint transportation. Further, with increase return flow it can also maximise the utilisation of the logistic, hence, when new furniture are delivered, on the way back the truck can be filled with the furniture that is to be returned.

### Value Proposition

The most general way to shift towards a circular economy is to go from selling volume to sell a function. When you sell a function you also add a value for the customer in form of service and reliability. Companies will focus more on renting, since it is the easiest way to get their products back. However, when using renting as a value proposition there must be meaningful for the customer to do so. In this case, the interviewee talks about providing the possibility to upgrade products and having products with modularity in order to more easily fix broken parts. This also creates a reliability for the customers as the company will take more responsibility for delivering a product with a high quality since the ownership of the product and the maintenance will stay at the company. When delivering value, it is also mentioned that what really attracts people to a circular economy is when companies sell products with intelligent solutions rather than products that will enhance one's moral.

### Key Partners

It is pointed out the need of the cooperation when we shift towards a circular economy. Companies will more or less be forced to cooperate with each other to cut costs and deliver maximal value. Furthermore, it is believed that companies even will start to cooperate with competitors within the industry. This requires for firms to put their own prestige aside in order to reach the full benefit. Another important partner is the logistic company when the value proposition will be built upon the ability to reach the customer with the product, service and take back. This also creates opportunities to cooperate with other actors through joint distribution systems. Sub-suppliers will have a significant role as they can be seen as the central actor in creating high quality parts.

### Key Activities

The biggest win in a circular economy will be for the companies that design products that are easy to take apart, recycle, upgrade and have a certain degree of modularity. Other activities are to

cooperate with competitors and within the product's lifecycle. This can be done through keeping track of the chemicals and materials used in the product, which will enhance the value of second hand and recycling, but also as a selling point to customers. It will be important to know what the products consist of since it will have a huge economic consequence in the end, the interviewee mentions that, among others, Maersk are fully doing this with their sub-suppliers for their ships. Another key activity will be standardising materials used within the industry, which also will facilitate cooperation and recycling. Not only will such activities enhance the value of the product, it will also facilitate for companies to make the lifecycle of the product as optimal as possible. The interviewee also believes that we might see some outsourcing of activities.

### Key Resources

Important key resources in a circular economy will be to have human capital in form of adequate employees, which have the ability to communicate about circular economy, since such a shift put more emphasis on communication and cooperation. Furthermore, it will be valuable for a company to have knowledge about the products' lifecycles; if they do not it will be difficult to make any difference at all. It is discussed a "material bank", which means that agreeing over the different materials which will be the most important to use and a consequence is for the companies to use those materials in their products. The interviewee points out that the three most important components to have in order to sell a function are a material bank, disposal bank and logistic. An important resource is to have common platforms where companies can declare what materials they used in their products. The material used in the beginning will have a huge economic meaning in the end and when companies understand that, they will put more emphasis on creating such information platforms.

### Cost structure

The most significant will be the increasing costs for raw material and the costs for readjust the production for recycling and make use of old material. Products that are easy to take apart and put together again, modularity, will bring the least costs for the companies. Furthermore, the costs of a firm will also decrease when they find adequate suppliers who engage in the needs of the company and when firms start to use more standardised materials and parts this will create a win-win situation between companies and suppliers.



### Revenue streams

New revenue streams will be created through the renting of products and the ability to sell a function. Other revenue streams will consist of maintenance, repair and service of parts. Companies will put more focus on getting their resources back and not just to sale, which will decrease their own raw material purchasing. Furthermore, when companies start to gather information about the chemicals and material used in their products, and share that information, the value of the products when disposed will increase since it will be easier for the recycling companies to know how to make most use of the product.

### **Other observations from the interview and quotes**

- There are several aspects that are important with the concept of circular economy. There is clearness on what to focus on and it is easier to connect circular economy to a firm's sustainability than traditional CSR-work.
- Circular economy is an economy following the rules of the nature. Waste should not even need to exist. Everything that exists or being used, should be designed to be used as functions without waste. Included waste in form of gas.
- Larger companies on a global level embrace the idea of circular economy better than smaller ones, which tend to look at circular economy as a trend and from there get curious about the concept. The larger companies have a better overview of the costs of raw materials, which make it easier for them to motivate the work with circular economy. It creates a need for them to bring back their resources. In other words, there are two different driving forces.
- Circular economy is not something made to use as marketing, it rather is a driving force to get one's resources back. It is about cutting costs and not so much about to impress the customers.
- I have not seen so much of circular economy within the Swedish furniture companies yet.
- Circular economy is a win-win situation. What is interesting with circular economy is that there is a social and a corporate perspective and that they are linked. If there is a need within the society, the customers will be there, which means that I have already planned for a win-win situation. What is good for society is good for business.

- The first ones to take advantage of a circular economy will be the companies, those who understand a way to take back their resources.
- "I believe there is a lot of winning to made in this and there are a lot of immature approaches towards circular economy, which I believe is time to change".
- What distinguishes circular economy from earlier ways to work is that it requires much more communication with all the interests around you. You need to convince them about the win-win in this. You need to give them incitements to deliver good products and that is a totally different way of thinking than one is used to.
- Younger people will perceive one as flash if one buys new things all the time.
- Much of the circular idea inspires people and you talk more about intelligent solutions rather than moral. There is a certain type of people they buy moral but it really never breaks through, but the idea of smartness, that is what get people excited, which make things happen.
- Often it is the chemicals that are decisive. I think an important activity will be common platforms where you share the information about what materials you have used in the products. This to be able to control and declare the products afterwards. That is an immaterial value, the information about the products that you sell. What you use in the products in the beginning will have a large economic importance in the end and when one understands it, one will put more effort to get that information through smart information systems. I am surprised that not more people talk about this.

## **Appendix: B.6**

**Code:** P1

**Type:** Producer

**Meeting:** Skype 2016-03-16, 13.00-14.00

<b>Key Partners</b> Recycle companies as producers of raw material Producers of raw material Designers Logistics companies Collaboration of Non-profit second-hand Research	<b>Key Activities</b> Design for re-... Prolong the use of virgin material  <b>Key Resources</b> Human capital: important to take care of the capabilities in the companies  Innovative researchers that can find new raw materials from used products and combining used material	<b>Value Proposition</b> Owning will stay at the producers > <i>Incentives for the producers to have high quality and long lasting products</i>  Value sold: Utilization of the product  Full service and good ways of communication makes the utilization for the customer easy  Added feature: When furnitures rented out, procedure could also help with setting up accounts at Eg. "Workaround.se"	<b>Customer Relationship</b> Everything just need to work Delivery of the function rather than the product Growth of intermediaries - one point of contact  The producers will be further away from the end customers and have less communications with them  <b>Channels</b> Communication: mostly digital and in real time  Physical distribution: collaboration and environmentally friendly transports  Logistics industry will have an increased importance	<b>Customer Segments</b> Customers will be similar type: Public institutions and private companies Shift in buyer patterns: from owning to utilization The change needs to come from the customers, the producers themselves won't move towards circular models without demand > <i>However, there is a need for the produces to dare to try</i>  Generations shift will ease this process due to shift in mindset
<b>Cost Structure</b> Price pressure effects > <i>Labour and rent costs is high in Sweden moving labour intensive parts of the operations abroad</i> Most producers are buying their raw material parts from low labour cost countries > <i>Hard to keep simpl jobs in Sweden</i>		<b>Revenue Stream</b> Owning finance companies that enables renting models Rent Producer responsibility; customer pays a bit more that is received back when the used product is returned (hidden rent) Subscription of functions		

*Most important parts of the canvas to change*

### Customer Segments

The interviewee does not think the customer segments will change; their biggest customers will yet be public institutions and private companies. However, the interviewee believes that it is crucial for a shift in buying patterns, from the need of owning the product to utilisation of the product. He believes this process will ease with the generations shift and that the younger generations are showing more of this behaviour of not needing to themselves own all products. Despite this requires a change in the business model, such as enabling of renting opportunities, from the producers, the interviewee believes that the request needs to come from the customers, hence, the demand determines the supply. On the other hand, the interviewee also wishes for more producers to dare to make the move towards renting models.

### Customer Relationships

In the future the customer will view the functions of the furniture as something that just have to work, as the interviewee phrases it "a hygiene factor". If a chair broke the fix needs to be easy and quick for the customer, hence, the customer will be interested in the function rather than the specific product itself. The interviewee further believes that there is a possibility that the intermediaries (e.g. ISS and Coor) will grow and have a more significant position in the industry. They can customise from the customers need buy in what is needed and then rent it out to the end customer. This also gives the customer a "one point of contact" that will ease the process of failure

or changes. For the producer themselves this means that they will be moved further back in the supply chain and have less communication directly with the end customers.

### Channels

The communication with current and new customers is believed to be mostly through digital channels and increasingly in real time. The interviewee thinks that the logistic industry will have a growing importance and collaborations between producers to make be more efficient and together with an increased use of environmentally friendly trucks. The only substitute to the growth of the logistic the interviewee sees is that companies should start provide “self service warehouses” (like IKEA). However, the interviewee sees this as an very unlikely evolution of the industry. Large buyers will not fix the transport and setup of furniture themselves.

### Value Proposition

The interviewee thinks that the Value proposition will be the most important and the most significant change in the business model for producing companies. The interviewee believes that the ownership of the product will stay at the producer, which will give the producers incitements to have a high quality and long lasting products. The value the producer will sell will be the utilisation of their products. This will also include a full service and ease when failure for the customer or when the customer wants to change their need. Finally, the interviewee suggests that the producers possibly could offer added features when delivering new furniture. The interviewee suggests that they could offer to set up the customer on for example “Workaround.se” and in that way the company when they have offices spots available, for example. due to sickness or business trip, can rent it out to anyone who is in need. Hence, the customer can use a share economy feature and earn money on anyway not utilised assets.

### Key Partners

The interviewee points out that the recycling companies will have an increasing importance and that they also will also become suppliers of raw material. Today's producer of raw material will also be important since they are the ones with the best knowledge of the material and the possibilities for recycle or reuse of them. Further, as discussed under channels, the logistics companies will also be important partners in the future business models for the producing companies. The designers will also play an important role, to enable designs that ease the process of reuse, reengineering and recycle, but also to reduce the environmental effect of production, i.e.

use of recycled/reused parts. The interviewee also says that there already is regulation that makes sure that the furniture can be disassembled for recycling. The interviewee further suggest that maybe there would be possibilities to connect non-profit organisation together with each other and with recycling companies and that would enable the second-hand market on a larger scale in comparison to today where it only is several small actors. The interviewee thinks that the system we are using today; the person coming to the recycling station themselves decide what should be trashed and what should be given to second hand, would benefit of a change towards that a person at the recycling company take the decision of what things that could have a next life market value. This also would create new working opportunity, hence, also give a positive social effect. Finally, the interviewee says that also the research needs to be more focused on finding new ways to recycle and not “just” use the waste for heating.

#### Key Activities

The activities that the interviewee believes will be important for the producing companies is that they are in need of design their furniture so they are able to recycle, remanufactured or easily can be reused in another context. Further, the interviewee says that there is a need to find ways to prolong the use of virgin material.

#### Key Resources

The human capital will be an important resource for producers, to be able to use the capabilities within the company. The interviewee also points out that there is a need of changing the perception of low quality work, hence, Sweden here have opportunities to provide more work to less integrated people. Moreover, innovative researchers are needed to find new ways of creating raw material from recycled material, used products and combine materials to create completely new types of raw material.

#### Cost structure

The interviewee mentions the problems the Swedish producers are facing due to high labour and rent costs in combination with a high price pressure. This has forced most big producers (the interviewee thinks only Kinnarps is the exception) to outsource the production of raw material and parts and only assembling is kept in Sweden. Hence, there is a cost for buying in the parts needed and the transport, but yet it is a better alternative that producing themselves. The interviewee does not see a change in this trend.

### Revenue streams

The interviewee thinks that the most predominant models should be some kind of rent. The interviewee thinks that the producer might sell their products to either own finance companies that is renting them to the end customers or using middle hand firms that provides the end customer with “total” solutions. A type of rent could also be of subscription type. For example a customer buys a subscription for 10 functions to sit and when they grow they can easily upgrade their subscription to 20 functions to sit. Furthermore, the interviewee mentions that “Producer responsibility” is used in other industries like for batteries and refrigerators. The “Producers responsibility means that the producers has the responsibility to take back the product and take care of the waste. This also means that there is an added cost, a pawn, to the product.

### **Other observations from the interview and quotes**

- Today no producer is mature to use circular economy, but it is not a question about if the producer wants to, they will have to.
- Companies are not brave enough to get into the new and most of the companies are struggling with margins
- The company is branded as a producer and that is how the customer view us, so to move towards also providing other solutions we also need to be branded differently.
- Today's furniture will be tomorrow's raw materials “The table I am sitting by,..., is the forest of the future” profitability which affects the willingness to invest.
- There need to be forced by law to make a change happen, many companies want to but not have the power.
- We need to change the way we talk about garbage “It is not garbage, it is resources”
- We need to work with people's mindset.
- Recycling companies will need to pay for getting their “raw material”.
- The demand of environmental product will affect the supply
- “But for real big effect we need to be able to make new raw material of old furniture to make “new” second-hand furniture. That is what will make the biggest difference.”
- The biggest differences will the recycling companies and today's producers of raw material.
- “As buyers, colleagues and fellow men we need to set demands on the products we buy... I do not believe that this company itself will build an industry where we recycle our furniture and make new resources. That I do not think”.

**Appendix: B.7**

**Code:** P2

**Type:** Producer

**Meeting:** Personal 2016-04-06, 11.45-12.45

<b>Key Partners</b> Suppliers of material > <i>Dialogue to meet demands</i> Retailer stores	<b>Key Activities</b> Short lead times Delivering what's promised Developing, assembly and selling of a basic sortiment for public spaces  <b>Key Resources</b> Competences to provide customer with financing models Ability to invest in take back procedures	<b>Value Proposition</b> A solution for a monthly fee Pay for usage and not responsible with disposal Take care of products after first life cycle Added service: financial plan for customer Service to end user (technical competence)	<b>Customer Relationship</b> Responsible for service to end users (take back or third party) Closer relations Listen to needs and wants  <b>Channels</b> More intermediary and "new" types of actors actors Financial companies as intermediary > <i>Not locked to one producer</i> Web Pages: the ability to look from "home" Retailer stores	<b>Customer Segments</b> Behaviour change of the end user is far away More beneficial to own
<b>Cost Structure</b> Willingness to take the cost instead of asset with depreciation Mature industry: price pressure → increased use of recycled material Cheaper to use recycled material Regulations of take back		<b>Revenue Stream</b> Sale vs. Rent Producer Responsibility: Higher price for end user (Complement retailers next life sales)		

*Most important parts of the canvas to change*

**Customer Segments**

The interviewee says that the customers in this industry make decisions based on two things. First, the tradition is typically and always has been to buy furniture. Secondly, the decision is made upon what is best from an economical point of view. Is it better to have it as an asset in the balance sheet, which depreciate and can be used even after the value is zero or does the company prefer to take the cost for the use? It is pointed out that now when the rents are low there is low incitements for companies to save money, hence, it is better to use the money on something that anyway is necessary. Some customers might be hesitant to allow financial models for rental due to also a third party making money on the transaction is also noticed. Overall it is believed that there is a long way to go for a change in the customer behaviour.

**Customer Relationships**

Due to rental models, it is likely that the producer will come closer to the end user, since the producer will have the technical service responsibility to the end user. In the case of the producer, it would mean that if any service on place is needed and possible, they will use a third hand party. In other cases, the producer will take back the product that needs to be fixed and replace it to the

customer. Furniture is a typical industry that is affected by “needs and wants” and that might complicate purchases. Needs and wants means that the customer have “needs” for desks and chairs but “the wants” are what type, colour and design. Hence, with the different wants from the employees it might be hard for one producer to satisfy. An intermediate that can use several producers in order to solve both the needs and wants of the end user will be of importance.

### Channels

There is an opportunity to move towards more new actors at the market. Today the producer is using retail stores and interior decorators. It believed that there could be new and less traditional actors that can come in and compete as intermediaries. As mentioned before, these types of actors provide flexibility to the end user in providing solutions combined from different producers. Suggested are financial companies who have the competences to create financial models for rental. In this specific case, it is believed that they will keep being dependent and have relations with their current retailers and has no intention of integrating further in the value chain. Finally, Internet and their retailers are believed to be highly important for integrating with the customers since it allows the customer to look at the products from their office.

### Value Proposition

The value proposition is believed to be the most important change in the shift towards a circular economy and the most probable offer is a solution to a monthly fee. This means that the customer would pay for a product and during the time they are using the product, and they will not have the responsibility for the product afterwards. Hence, the producer will take responsibility for the product after the first life cycle, to either next life or disposal. The interviewee suggest that an added value to the end customer is to provide with financial models for making this work and service on the products when needed. It is believed that they will not have the financial competence in-house. However, they will have the technical expertise and if that expertise is needed at the customer’s site they will contract a third party.

### Key Partners

The most important partners are their sub-suppliers, which they have longstanding relations with. It is important for them to develop together and be significant partners to them. For example, the producer is not aiming for a leading position in the industry, so if there are external demands they



will discuss this with their suppliers and make sure that they meet the demands. Further in their business model it is important with a good relation with their retailers.

### Key Activities

It is believed that what is important for the producing company is to deliver fast (short lead times) and also make sure that they deliver what is promised. A problem within the industry that sometimes occur is that only a part of the delivery is arriving to the customer or there are defaults on the products. Otherwise, the producer's main activities are considered to be, which is believed to be similar for at least the close future, are to develop, assembly and sell furniture for public spaces. The interviewee believes that if products will be returned to them as procedures, they will not be able to reuse the parts. Rather they will need to scrap the products and their suppliers could use the recycled material to manufacture new parts.

### Key Resources

For a circular model to work it is pointed out that the company will be in need of having the competences to provide the customers with financial model. However, he thinks it is most likely this will be a service provided by an intermediary. Further if that is the case, it would be for the producer to take back their products which also require them to have the capabilities in the organisation to handle the return flow. This could be a process of how, take up storage and increase the need of human capacity.

### Cost structure

The natural development of recycling that they can take after as it gradually develops from specialists it considered positively for the industry. It is probable that the more recycled material that can be used will lower the cost for the input materials. In a mature business, like the furniture industry, it is common with a price pressure and the possibility to lower the cost with more recycled material might help that development. Further, it is suggested that if the customer could take on higher cost as they use the furniture, rather than taking the asset and let it depreciate over time, it would enable for a renting model. This renting model would affect the cost structure of the producer. Finally, it is pointed out if there come regulations for producers to take back their products, they will also have the costs for this in their process.

### Revenue streams

For the near future the interviewee does not think there will be any major changes in the industry. The producer will sell their products to gain revenues. However, it is mentioned that there are possibilities for renting models. With regulation of take back their products it is probable that this would mean a higher price for the customers as a consequence of covering up for the increased costs for the producer. Further, the producer is likely to continue to use retailers as sales channels and some of them will have second hand sales. If a customer wants to have a full solution with usage of reused furniture the retailer might be able to provide most of it from their second hand sales, however, they might need compliment with new furniture from the producer.

### **Other observations from the interview and quotes**

- We are working like the automobile industry; we have competent sub-contractors who deliver parts. But in contrast to the automobile industry, we keep the parts in stock. If we did not, our industry would have such a long lead times.
- We have three types of sales; distance, office specialist retailers and interior decorators. These are free actors and the producer does not have any vertical integration forward.
- To make a circular model work, a supporting financing model needs to be in place.
- We are not aiming to be in a leading position in the market and we will follow the demands that the market put on us.
- Today we are not taking any products back but we are considering disposal in the design phase. It should be really easy to disassemble the products and we are working with very few mixed materials.
- The tradition and the economy are, and will for the near future, be what is determined by the business. Tradition: we have an inherited behaviour that furniture is something we buy. Economy: more beneficial to own and it is a matter of what is best for the business. Either investing in an asset that depreciates and can be used after the value is gone or taking the cost when used. Further, with low interests there is low incitement to have money, better to invest in something that anyway are used.
  - Financial models are beneficial and possible to make business of. However, there is a tradition of not willing, as a customer, to allow someone else to make profit on something that could be purchased. (Purchase vs. renting)

- For a change in customer behaviour we need some incitements, which makes it more beneficial to pay for usage rather than owning.
- The biggest barrier as, I see it, is that it is not driven by market economy i.e. the actors in the value chain does not earn on a circular model. ... An economic plan model is doomed to fail or destroy the competitive power in the business.
- Higher interests could push a change towards not borrowing to own and then rental is more attractive.

**Appendix: B.8**

**Code:** P3

**Type:** Producer

**Meeting:** Phone, 2016-04-15 10.00-10.30 and 2016-04-19, 11.00-11.30

<b>Key Partners</b> Sustainable sub-contractors Branch organisation: Trä och möbelförbundet	<b>Key Activities</b> Product development Traceability Logistics Ergonomics Ability to give the customer choices <b>Key Resources</b> IT: documentation Adjusted production line Lobbying	<b>Value Proposition</b> Sales of function > Workspaces, Mobile service, Upgradings, Moving Re-make	<b>Customer Relationship</b> Close on local level with retailers Knowledge about the customer > Documentation systems <b>Channels</b> Logistics > Collective, Return, Mobile service Sales organisation > New provision models Marketing arguments	<b>Customer Segments</b> Dare to buy "functions" Price sensitivity Willingness to chose
<b>Cost Structure</b> Material, Logistics and storage Bulk cost which takes long to get back in sales (taxes)		<b>Revenue Stream</b> Sales → Sales of function Sale → Re-make		

*Most important parts of the canvas to change*

Customer Segments

The most important change is that the customers need to challenge change their traditional purchasing patterns and dare to purchase the function of workspaces from the producers. Furthermore, the interviewee mentioned that there is a lot of customers that is showing this willingness to change, however, when it comes down to the actual purchase, the cheapest price it the most important factor. It is mentioned that tests have been made with various qualities and level of environmental impact and in the end it was shown that only the finest was "good enough". It is also noticed that the customer want to have the power to decide the design features, colour, materials etcetera, and it is believed that this in a functioning sales still will be true.

### Customer Relationships

With a higher service level, the relationship with the customer needs to be close and most likely on a local level from the retailing stores, which the producer has integrated in their organisation. It is vital both to understand the needs of the customer and to be able to fast and simple help with example upgrades or repair. The interviewee this also that the relationship could be easier if IT solutions like chips in the products and/or documentations systems both for tracking and to know what quality the products are in.

### Channels

The logistics is a main area for the furniture industry and it is believed that collective transports will be more and more common. Other things mentioned is the possibilities with having more effective transports with return flow, hence, less miles with empty trailers, but also the possibility to have a mobile service that can fix the products at the customer's sites. All transport that can be eliminated is good. In regards to the ability for customers to upgrade, for example amount of workspaces or if they are in need of spare parts, storage for fast delivery versus less local storage and probably lower storage costs needs to be considered. Further, this producer owns its retail stores and is making provision on sales. With functional sales or remade cheaper products there is a need of considering the provision models so that these sales will be boosted. The ability to remake and easily repair the products could also be used as marketing arguments towards the customer.

### Value Proposition

The foremost important value offered to the customers is expected to be the sale of functions. Within the concept of function both the actual function of the workstation comes but it is likely to also include services on them, the ability to upgrade and, when needed, help with physical moving. Further, the producer could offer Re-made furniture and also re-make furniture for the customers.

### Key Partners

The interviewee takes up the issue regarding stronger regulations for environmental standards over time. And it is possible that for example a table top that was made 10 years ago is not, due to regulations, possible to reuse in made products today. Hence, it is believed that to find subcontractors with a sustainable thinking and who are trying to constantly be ahead of the regulations will be beneficial. Further, to get the industry as a whole to move towards becoming

more circular the branch organisation “Trä och Möbelförbundet” is mentioned as an important actor.

### Key Activities

Key activities, in particular the product development of furniture, have the possibility to easily be disassembled, repaired and re-make and are mentioned as the most important change for more circular models. Further, it is believed that traceability, of physical location and quality, will be important for the producers. Suggestively, this can be done through chips in the furniture. Due to the probability of increasing transports, both if amount of workspace will change and the return flow, the ability to organise effective logistic will also be important for the producer. Today, and what is expected to also be the same with a circular model of functional sales, is to meet the customer's wishes of design and their need for good ergonomic workspaces. However, over the years in the industry the interviewee has notice that many customers are wishing for furniture to meet good environmental standards, but in the end in general the prices is a more dominant decision factor.

### Key Resources

Firstly, the importance with a model of functions sales is the need of IT and documentation. This enables the producer to keep track on where the furniture is, when it should have service or be replaced by new once. It is believed with the ownership keep at the producers, they will be more concern of keeping track of these factors. To enable re-make and to use returned products, it is likely a need of a new specific product line for this, since it is not likely that it can be taken into the current where virgin raw material is used. The producers will probably also need to put down extra resources, especially in the beginning, to lobby for the customers so they will see and understand the benefits of circular models (functional sales in this case).

### Cost structure

The change in cost structure is expected to be from with functional sales that the producer will purchase material to produce its furniture in bulk, but it will take a few years to cover up for these costs. The same is for taxes; it will not have the same balance as with “normal” linear sales. If the producer should provide service and repair it is likely that more spare parts will be needed and the producers might be in need to take higher costs for a faster delivery to the customer, example, more parts in, most storage close to the customers and the flexibility in logistics.

### Revenue streams

The interviewee believes that there is a long way to go to change the traditional liner sales and that this will be their main income for a long while ahead. However, it is mentioned that it is noticed a change only over the last couple of years in the requests of more sustainable ways of purchasing furniture. Functional sales together with sales of re-made furniture is believed and hoped to start entering the market in the near future.

### **Other observations from the interview and quotes**

- The thoughts of CE have shifted from, a few years back, to recycling while now it is more focus on the ability to use material, parts or products more than one time.
- The logistics with the return flow and with substitutable parts for the customers will change today's business.
- If the producer is making the service at place and the customer will not be able to work during this time, these functional sales might not be beneficial. Hence, it might be better for the customer to simply get a new product instead of service on the site, if the cost of the product is below the cost of the lost work time.
- The product development is important, e.g. to easily repair or upgrade to next year's model. The benefits will be that it will be cheaper if the product can be used more than one time and on a greater scale, we will save on the earth's resources. This I believe is the benefits of functional sales, if we promise the customer to give them flawless products for 10 years it is in our interest to have great quality and easy way of upgrading due to that will reduce our costs for service.
- The main obstacle for circular models is believed to be the people. Their habits and the likely need of making larger investments in the beginning to make CE beneficial.

### **Appendix: B.9**

**Code:** C1

**Type:** Customer

**Meeting:** Personal 2016-04-12, 13.00-14.15

<b>Key Partners</b> Branch collaboration > "Trä & Möbelförbundet", Other branches for inspiration Researchers Customers Insurance companies Craftsmen	<b>Key Activities</b> Design for Re-... > Product development, Moduling Take care of current furniture Reengineering, quality? Verifying, marking and tracing	<b>Value Proposition</b> Rent Service > Quality, Ability to upgrade and repair (on place), Service for longer product life, "Clean" furniture Product vs. full solution Take back	<b>Customer Relationship</b> Relations to new actors? Industry symbiosis	<b>Customer Segments</b> Change in public procurement	
<b>Key Resources</b> Transition from linear models Take back		<b>Channels</b> Share-economy platforms Collective transport		<b>Cost Structure</b>	
		<b>Revenue Stream</b> Producer responsibility			

*Most important part of the canvas to change: What does the producer offer?*

### Customer Segments

The interviewee tells us that as for today the regulations public procurement makes it hard for them to have rental contract or make so called function purchases. At least, the interviewee does not know how it would work with furniture. They have had discussions at the company regarding rent but so far it has been considered too expensive and that it will be cheaper to buy the products. Further the interviewee discusses the problem of renting a product with a low value but a long expected lifetime; the rental cost is very much likely to exceed the purchase price. The interviewee mentions that on a national level a strategy are presented regarding sustainability and a part will be a package presented in June that will contain some adjustments to ease the process of functional purchase or rental in public procurement, similar initiatives has also been made on EU level. The interviewee also points out that most decisions are based on the economical offer. They are trying to take in environmentally friendly parts in their public procurement, however, the cost for a "better" product can not be too much. The interviewee also mentions the limitations in their organisation where all separate entities are purchasing their own furniture and for example a nurse or a principal, which then are responsible, do not have the expert knowledge of furniture and together with the purchase of furniture are addressed to each separate budget, hence, the cheapest is in general preferred. The interviewee believes that is common for many customers, their main task is not to buy furniture; it is something else, ex. Treating patients teach kids or sell cars. The interviewee believes it is common that many companies prefer the easy way and hire a interior decorator company that will provide a full solution.

### Customer Relationships

Today the company is making their public procurement foremost through interior decorator companies and not directly with the producers due to that they need a more full service and

different needs for the different entities than one separate producer can provide for. Depending on the size of the entity the responsible in-house for them are either on a specific person or it can be the person in the best position at the time. The interviewee suggests that it might be a possibility that they could have the decorator competences in house or that their building responsible company could have the competences and purchasing and planning could be made a bit more centralised. Under the concept of CE the interviewee also mention initiatives to encourage industrial symbiosis where they mostly are customers/users. The interviewee believes this is definitely a good way to move, where the actors in the value chain in an early stage are connected and together can figure out the best way to produce and who should be responsible for each step.

### Channels

Firstly, the interviewee mentions that at VRG are working with concepts of sharing economy platforms. For example, they have a system internally, which is a platform where entities internally can trade furniture. The interviewee believes these kinds of platforms could be helpful when shifting to circular models. Further, they do have demands on their suppliers to deliver orders collectively and the interviewee says it possible that from their side they also will have demands on type of fuel used during the transport.

### Value Proposition

The value proposition they will receive the interviewee believes will be vital. The interviewee mentions additional services that could be seen as additional value to the purchase; quality of the product, for the product to be modular and easy to upgrade and repair, service for longer product life i.e. maintenance, clean furniture meaning as little chemicals as possible and the producer offers to take back the products when they should be disposed. The interviewee also discussed whether the best solution will be to purchase separate products of a full solution to an office. The interviewee mentions that the interviewee feels that the interior decorator companies sometimes are given a bit too much power in the decision making, however, it is as the interviewee says; they are limited in knowledge for being good clients and the service of getting help with the decoration is required. As mentioned above, the interviewee thinks this is common in other organisations too, but not something that obviously will be constant.



### Key Partners

The interviewee thinks it is important for the producers to start to collaborate more. And the interviewee believes that “Trä och Möbleförbundet” will be an important actor to facilitate some of this. The interviewee says that the branch needs to set standards, like how to verify their material and mark their products. Other branches could here be used as inspiration. Further, research and a close relation with their customers will be important to know what is possible and what the needs on the market are. With rental or other extra services models the interviewee mention that producers might need to work closer to insurance companies, for other services like repair and upgrade, the interviewee see craftsmen as an important actor.

### Key Activities

The most important activity the interviewee says is the design of the product and the development. The products should be modular, easy to upgrade and have a high quality. However, as for today there is already a lot of products on the market that do not meet these requirements and the producers need to consider how to handle this. As an activity the companies could take on is to repair and re-engineer their products, but a discussion with the customer is needed then due to that the risk is that the product will be a of a lower quality, which might be ok, but should maybe have shorter warranty etcetera. Further, here is an opportunity for either the producer to move closer to the customer or for a third party to have mobile repair and service, hence, as fast as the furniture needs to be sent somewhere the cost also increases. Finally, the interviewee says it is important for the procedure to be clear what content they have as well as how they mark it. The interviewee says in a such large organisation as VRG which over time has purchased a lot of furniture they do not know who is the producer of all their things, hence, maybe there will be a need of a way of tracing each product, eg. with chips.

### Key Resources

Everything in our society is created after a linear model and companies will need to transform and gain the resources to enable a circular model. The interviewee thinks that an important ability is to take back the furniture, which the interviewee says would be very beneficial for them as customers.

### Cost structure

This section is not discussed during the interview due to the interviewee is a supporting actor and not a producer.

### Revenue streams

The interviewee says that the way they would prefer to pay will be depending on the offer, but as discussed above, with the current regulations rent are hard and then a producer responsibility (the producer are responsible for disposal) are more likely to work. The interviewee also mentions the general concern regarding that the rental cost is likely to exceed the purchase price.

### **Other observations from the interview and quotes**

- The producers need to believe that this (CE) is a good solution and they have to change their products, services and offers to us.
- The economic incitements are the most important for all companies and they are not willing to change if the environmental positive externality is too expensive. However, if there is a combination of economic and environmental effect, then will we see a fast change.
- The interviewee thinks there will be a group of some brave companies, some customers and some researchers, that will take the lead and then the rest will follow towards circular economy.
- The reason for the interviewee's organisation interest in the question is quite unique and is due to that the company is a large actor in the Western Sweden and the furniture industry is important for the region.

## Appendix C: Info Sheet

### Our thesis

Our aim is to explore the effects of circular economy on business models with a focus on the office furniture industry. Together with main actors within the industry we aim to build on the new shift towards business models that are key part in the sustainable development of companies and how they deliver value.

We expect to be finish with the thesis in the beginning of June. If you prefer, you can be anonymous (with both company and name) and we will shortly after the interview ask you to read through our summary of your interview so we have understood you correctly.

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### Circular Economy

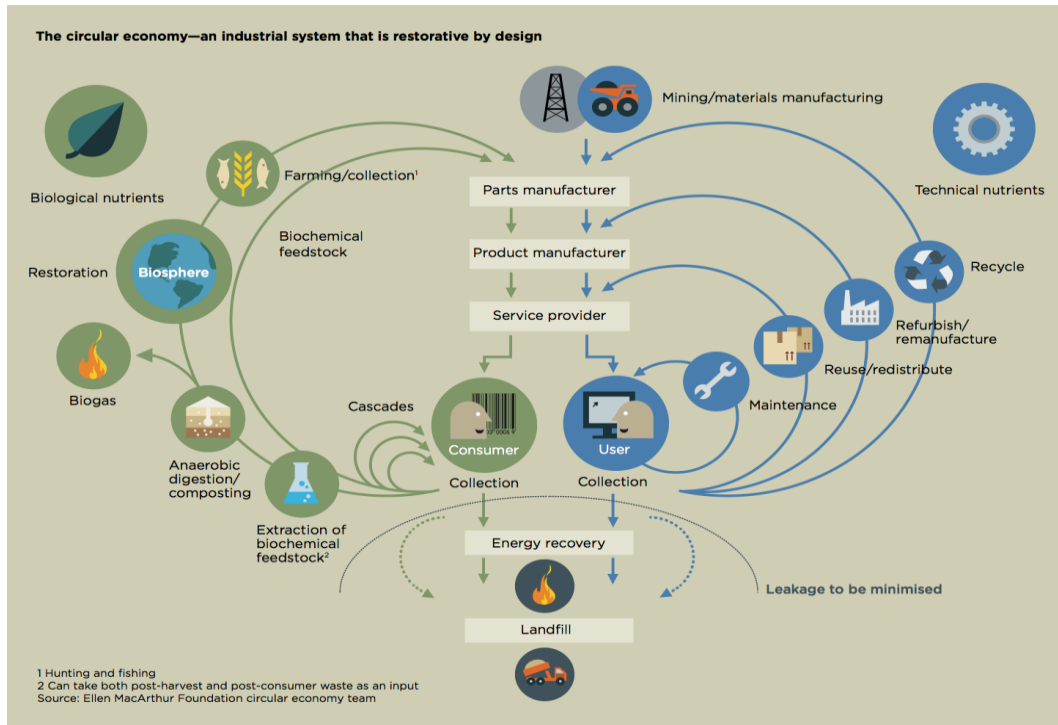
The best way to explain what a circular economy is, is to compare it to our current linear economy. In our current economic system, we extract resources from our planet at an ever-increasing pace, and turn them into a product that we mostly dispose after use. From the perspective of an individual or organisation, that seems efficient. However, zooming out to a global level shows how unsustainable this approach is. In order for those same individuals and organisations to thrive, we need an economic system that operates within our planetary boundaries. A circular economy is one that is waste-free and resilient by design. Designing the economy in a way that is restorative of ecosystems, ambitious with its innovation, and impactful for society, is a bold challenge but one that is achievable.

The final result with a circular economy is an economy:

- Where materials streams are efficiently managed and recycled;

- Which runs entirely on the basis of renewable energy;
- Without negative effects on human life or the ecosystem

In sum; Circular economy is to **reduce** the use of raw material and the environmental impact of the company, to **reuse** old parts and to **recycle** what cannot directly be used again.



## The Business Model Canvas

The Business Model Canvas is a strategic management tool. It allow you to describe, design and challenge your business model. The Business Model Canvas reflects systematically on your business model, so you are freely to map each of its elements to your real business components. The model is described through nine building blocks that show the logic of how a company intends to make money. The different nine blocks cover the four main areas of a business: customers, offer, infrastructure and financial viability.

Below is the Business Model Canvas we have chosen to use, and you will also find different examples in each box of the canvas to enhance your understanding.

