END USER ACCEPTANCE OF AND ATTITUDES TOWARDS PRE-OWNED OFFICE FURNITURE

ANN-CHARLOTTE MELLQUIST

UB 12040072

INNOVATION, ENTERPRISE AND CIRCULAR ECONOMY MBA

MANAGEMENT PROJECT

2016

Statement of Authenticity

BRADFORD
UNIVERSITY
School of Management

UB Number	**Family Name**	**First Name**	**Signature**
12040072	Mellquist	Ann-Charlotte	

I certify that all work submitted for the award of my degree is the result of my/our own work and does not exceed the word count noted below.

Number of words: 9027

(excluding appendices/bibliographies, tables and diagrams)

I am aware that the University may submit copies of student work to a national database set up to detect plagiarism where they may be stored together with your name, email address, course details and institution.

University of Bradford

Electronic Thesis/Dissertation Deposit Agreement

Student name: Ann-Charlotte Mellquist

Student ID: 12040072

School/Department: Bradford University - School of Management

Degree: Master by Advanced Study x MPhil □ PhD □

Thesis/Dissertation Title:

End user acceptance of and attitudes towards pre-owned office furniture.

Student Agreement:

I understand that the University of Bradford has the non-exclusive right to electronically store, copy or translate my thesis/dissertation, in whole or in part, for the purpose of future preservation and accessibility.

I certify that the thesis/dissertation submitted is my original work, and that the version submitted is the same as the final version approved by the Examiners. I have made every reasonable effort to obtain permission from the owner(s) of each third party copyrighted material to be included in my thesis/dissertation.

I am aware that the University may submit copies of student work to a national database set up to detect plagiarism.

I understand that the thesis/dissertation may be available electronically to a variety of individuals and institutions via the World Wide Web, including automated search agents. I understand that once the thesis/dissertation has been deposited, metadata relating to my work will be incorporated into the University of Bradford Library Catalogue.

The University of Bradford reserves the right to remove any thesis/dissertation from the electronic repository in the event of its content breaching any laws including defamation, libel and copyright.

I acknowledge that the administrators of the electronic repository do not have any obligation to take legal action on my behalf in the event of a breach of intellectual property rights, or any other right, in the thesis/dissertation deposited.

Student

Signature: ______________________________

Date: 26th Aug 2016

Ann-Charlotte Mellquist

END USER ACCEPTANCE OF AND ATTITUDES TOWARDS PRE-OWNED OFFICE FURNITURE

Abstract

The demand side of the circular economy is much less researched than the supply side, but is critically important in terms of promoting and enabling circular business models and value propositions. The research literature indicates a range of perspectives towards remanufactured, refurbished and second hand (so called pre-owned) items, varying by product and consumer characteristics. There has been little or no previous study on attitudes towards pre-owned office furniture.

This management project has undertaken an exploratory study of attitudes of Swedish employees and their willingness to accept pre-owned office furniture. The aim of the study was to investigate barriers to acceptance of pre-owned versus new furniture and to create insight that could contribute to shape circular business models. A mixed method study, involving four focus groups and 32 responses to an on line survey, constitutes the core of the data collection. Albeit small, this study has shown that attitudes towards reusing office furniture in general are positive, and that the perceived quality, in terms of functionality and "freshness", is key to end user acceptance. The offer needs to be flexible to cater for volatile businesses, and there seems to be expectations on reduced price levels compared to new furniture.

Several areas for further research have been identified, such as understanding the "freshness" aspect more in detail, exploring the cost of handling office furniture and customer acceptance from other perspectives than those of end users. Finally, it is concluded that there is an opening and potential for new value chains and business eco systems to develop as circular practices increase in the office furniture space.

Key Words

B2B, Business Models, Circular economy, Customer acceptance, Office furniture, Product Service Systems, PSS, SPSS

END USER ACCEPTANCE OF AND ATTITUDES TOWARDS PRE-OWNED OFFICE FURNITURE

A study based on data from the Swedish Vinnova financed research project “Business Model Innovation of Circular Furniture Flows”

by

12040072

Management Project submitted to the Bradford University School of Management in partial fulfilment of the requirements for the degree of Master of Business Administration

2016

PREFACE

This management project was undertaken during the spring and summer of 2016. It is based solely on primary data from the research project "Affärsmodellsinnovation för cirkulära möbelflöden" (Business model innovation for circular furniture flows), and the work has been dependent on the timetable and scope of the research project. Thus, it has not been in my power to fully steer the data collection process for this study.

I am, however, very grateful towards the project team for the support and help they have given me in my work with this management project. This is valid both for my research colleagues at Viktoria Swedish ICT, Innventia and SP, as well as for the representatives of all the client organisations who have invested their time in the interview process. Specifically, I would like to thank Annika Kihlstedt from Innventia, who was instrumental for preparing and undertaking the focus group discussions, and who provided valuable support and ideas for the data analysis.

I also want to thank prof. Peter Hopkinson for his support and valuable comments through the process, and for his never-ending engagement and inspiration to continue exploring the exciting circular economy field.

TABLE OF CONTENTS

Page

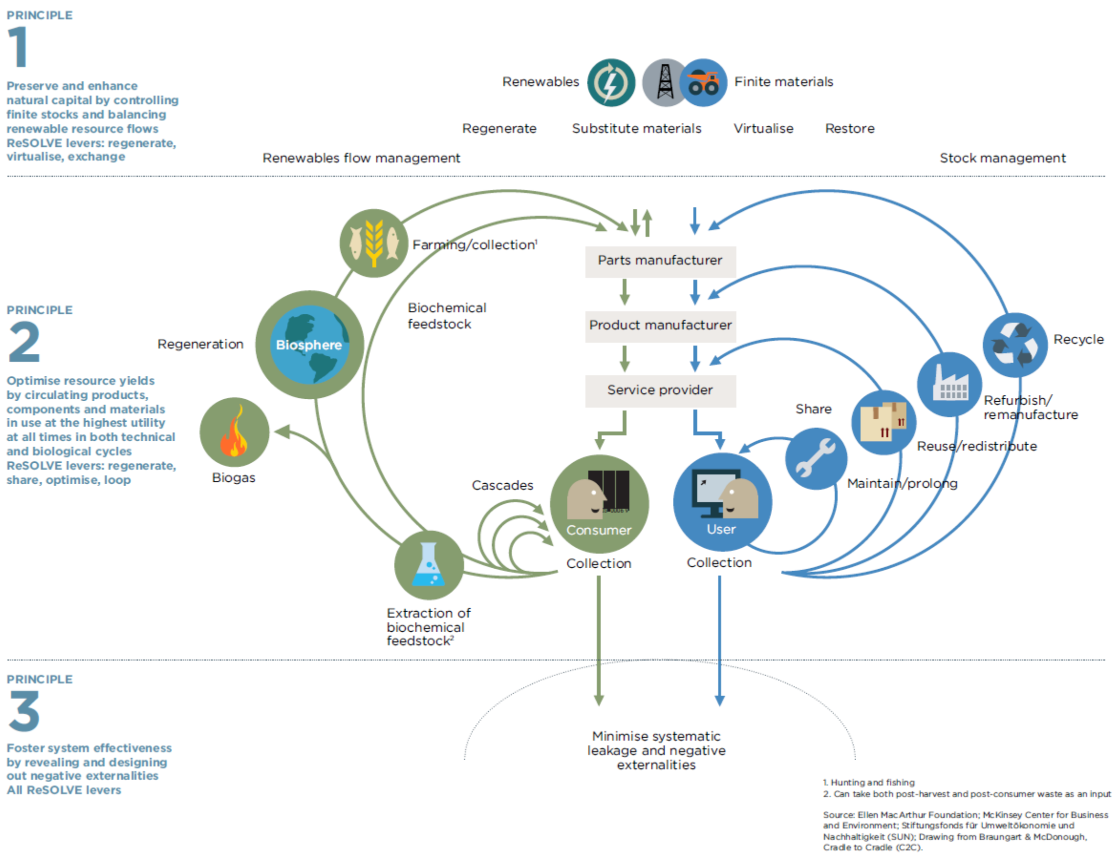
LIST OF TABLES

LIST OF FIGURES

1 INTRODUCTION

The circular economy framework, developed by Ellen MacArthur Foundation in 2010, has emerged as a highly credible and effective business response to decoupling material consumption and economic growth, and addressing systemic challenges within the global economy including global warming, clean water issues and distortion of ecosystems and biodiversity. The framework (see figure 1.1) has been a catalyst for the recent EU circular economy policy package.

Figure 1.1: The circular economy framework



(EMF 2015)

The gains and value capture from a transition to a circular economy are potentially huge, up to 630 billion USD per annum for the material savings in EU alone in an advanced scenario according to EMF (2013). The circular economy framework is predicated on some key building blocks, namely product design, business models, reverse logistics and cross-sector collaboration (EMF 2013), and EMF also claims that one of the key enablers for the transition to and implementation of a circular economy is customer acceptance.

Customer attitudes to and acceptance of circular business models is an important research area, but has been much less studied than supply side issues such as product design, reverse logistics, material revalorisation and closed loop supply chains. Hence this project focus will be on end user acceptance of a specific category of product that is familiar to us all: office furniture.

A number of new business ideas focusing on sharing, reusing and recovering used office furniture have taken form in the last couple of years, as part of the growth of the circular economy movement and practise in Sweden. There are companies that provide sharing platforms, such as Off2Off (similar to British Warp-it) as well as organisation who have developed their own IT applications for the same purpose. There are also companies that offer refurbished and remanufactured office furniture. These ventures are, however, often local and small-scale and their impact rests marginal. For more information about these organisations, see Appendix B.

The research project Affärsmodellsinnovation för cirkulära möbelflöden (Business Model Innovation for Circular Furniture Flows) was therefor started in 2015. The project (abbreviated to the CM project) is financed by the Swedish research fund Vinnova. The purpose was to try to find ways of implementing new circular business models on a larger scale, by gathering main actors of the office furniture industry in Sweden in the same project. The CM project consists of 21 partners from the furniture industry, from research institutes and from customer organisations. A full list of the research partners with web page links is found in Appendix B. The CM project will run until the summer of 2017. The goal is that the participating furniture manufacturers and distributors will then have tested new circular business models in practice and have created action plans to continue the implementation.

This management project will explore the attitudes of customers and end users towards pre-owned office furniture in the context of the CM project. (The term pre-owned here covers all types of reused or recirculated products, be it second hand, refurbished or remanufactured.) It also aims at understanding how these attitudes might constitute both challenges and enablers for the implementation of circular practises in customer organisations, and propose ways to overcome them.

1.1 Structure of the paper

This brief introduction is followed by the background of the research area including a literature review (chapter 2). The methodology of this study, including data collection and sample, is outlined in the next section (chapter 3). Following from there, the results are presented (chapter 4) and discussed (chapter 5), and the paper ends with a conclusion in chapter 6.

2 BACKGROUND

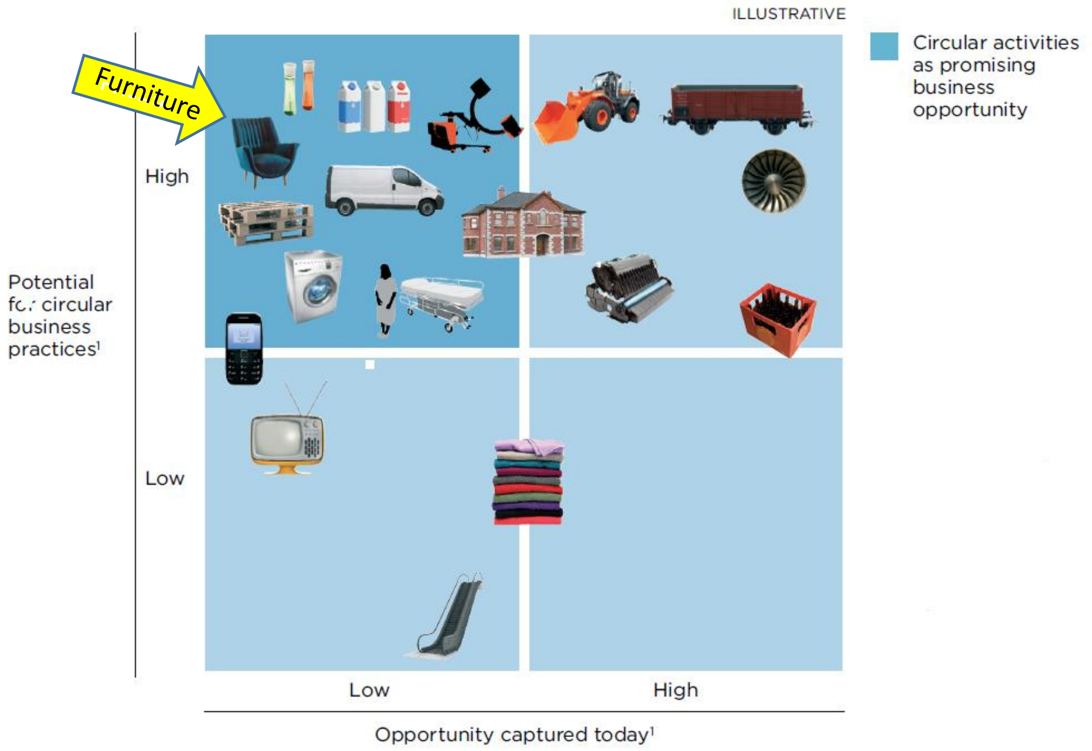
2.1 The product

Furniture is a product group where the main material fractions are wood, steel, textile and plastics. In Sweden these material fractions have very different end of life patterns. Steel is a metallic material with potentially high recycling rates - up to 90% according to IVA (2016) – but it is unclear how much of the steel in furniture that is recycled, due to issues with disassembly and separation of different material fractions. The other material fractions – wood, textile and plastics - end up in incineration or landfill (SCB 2016).

In 2012, the total volume of waste in Sweden, excluding households and the mining sector was 22,8 million tonnes, and the fraction “Mixed and non-differentiated materials”, of which office furniture constitutes one part, was 800 000 tonnes (Naturvårdsverket 2014). More specific volume numbers will have to be estimated. Besch (2004) reported that the wasted quantity in Germany (an economy roughly 10 times that of Sweden) was 700 000 metric tonnes of furniture in 2004. The waste volumes in general, have increased considerably since then, and it is thus likely that the volume of wasted office furniture in Sweden is at least 100 000 tonnes yearly, thus forming an important waste stream.

It has been suggested that the circular value creation potential varies by product category depending on factors such as product price, ease of recovery, residual value in products at end of first use phase etc. (EMF 2013). Furniture has been suggested as having high potential but low capture to date (see figure 2.1), a major issue being customers’ willingness to accept pre-owned products (EMF 2013). The reasons for this low capture and customer acceptance therefore forms the basis for this study.

Figure 2.1: Business opportunity – potential and captured – for different product categories



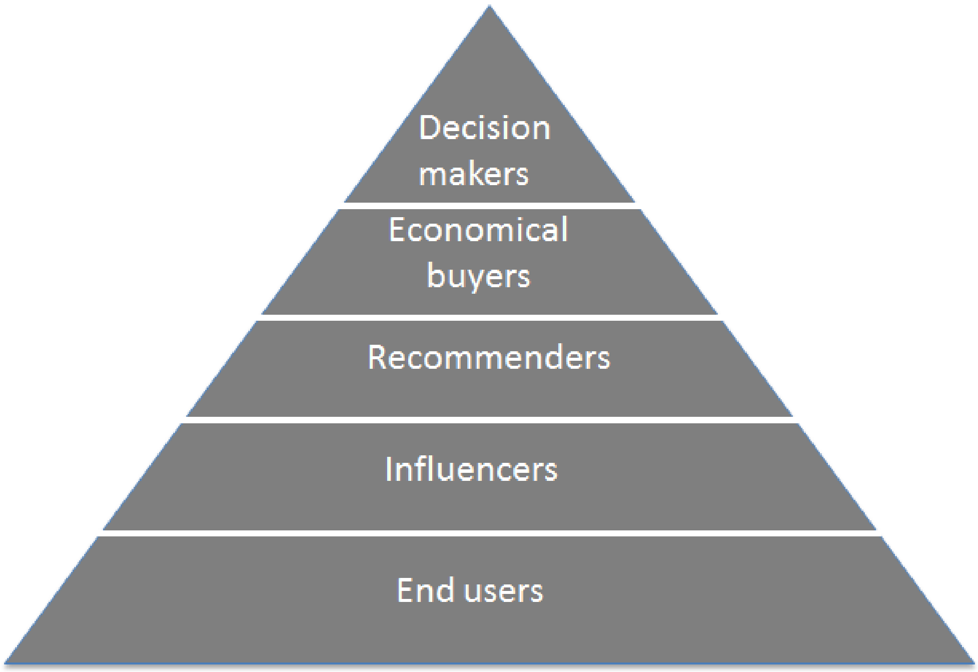
(EMF 2013)

2.2 The business model context

The delivery of furniture, as any other product, to its customers and users can be described in terms of a business model. Two different aspects of business models are useful to establish for the purpose of this management project: Customers, because they constitute the target research sample, and the so-called PSS business models.

Customer segments and customer relationships are an integral part of the Value proposition canvas and the Business model canvas by Osterwalder and Pigneur (2010). For the purpose of identifying and segmenting different types of customers, Blank and Dorf's (2012) categorize them into different types in a pyramid. The top of the pyramid is the decision makers and economic buyers, and the base of the pyramid is the end users (see figure 2.2).

Figure 2.2: Customer types



(Blank and Dorf 2012)

Blank and Dorf (2012) state that a deep understanding of end users and their needs and motivations is very important for any business model to succeed, and that end users often have influence on adoption processes. Hence, the special focus on end users in this study.

Business models for pre-owned furniture form part of a category known as Product service systems (PSS). PSS is a type of business model that contains both product and service aspects. There are many attempts to define a PSS. According to Tukker and Tischner (2006: 1552), it "consists of a mix of tangible products and intangible services designed and combined so that they are jointly capable of fulfilling final customer needs". Tukker (2013) and Reim et al (2014), among others, identify three main PSS business models:

- The product-oriented model
- The user-oriented model
- The result-oriented model

User acceptance of these business models, and different aspects of them, will be investigated in this management project.

2.3 Literature review

The term “Circular business models” is often interchanged with “Product service system” and sustainable or “green” products, hence the literature search needs to avoid narrowing the review process too quickly. The objective of the literature review is to identify previous studies on the implementation of PSS including barriers and challenges, and more specifically customer attitudes, preferences and acceptance towards pre-owned products in general, and furniture in particular.

The search was conducted in several steps, with different combinations of the search terms “circular business models”, “sustainable” and “circular economy” on the one hand, and “user acceptance”, “consumer preferences” and “B2B” on the other. There were also specific searches conducted based on “furniture” and “interior design”. In general, the findings with a combination of these elements, were scarce.

Table 2.1 shows an overview of the studied literature, with a classification of what was relevant for circular business models, customer acceptance and furniture, respectively. There is also a classification of the literature regarding if it is B2B or B2C related.

Table 2.1: Literature overview and segmentation

Reviewed Papers	B2C	B2B	Circular business models (incl. env./green products, PSS, SPSS, remanufacturing)	Customer preferences, acceptance and attitudes	Furniture
Abbey et al (2015)	x		x	x	
Armstrong et al (2015)	x		x	x	
Bednárik and Pakainé Kováts (2010)	x			x	x
Besch (2004)		x	x		x
Mylan (2015)	x		x	x	
Piscicelli et al (2015)	x		x	x	
Reims et al (2014)	x	x	x		
Rexfelt and Hiort af Ornäs (2009)	x		x	x	
Tukker (2013)	x	x	x		
Tukker and Tischner (2006)			x		
Vezzoli et al (2015)	x		x	x	

As is shown, there is limited previous research in the exact focus of this study and nothing at all that covers all the elements of interest.

Besch (2004) studied office furniture and PSS offerings in a B2B setting. She identified five different service concepts for furniture: Design for durability, repair and maintenance, reuse of parts, remanufacturing and leasing/renting which align closely with the principles of a circular economy (EMF 2013). She concluded that price is a defining factor for a successful PSS offering, but did not study the customer acceptance issues, although she specifically suggested more research in that area.

Bednárik and Pakainé Kováts (2010), explored customer behaviours and trends in decision making processes of furniture purchase. They concluded that even for environmental and health-conscious customer groups, price is an outstandingly important factor when purchasing furniture. The study did not cover business models.

In the wider literature, Rexfelt and Hiort af Ornäs (2009) studied PSS development strategies in relation to customer acceptance in a B2C context. They concluded that the two most important factors for successful implementation of PSS are reduction of uncertainty of the offer and that the benefits are perceived as relatively higher than other, pure product, offers. They also recommended that PSS is developed together with a strategy for communication.

Abbey et al (2015) surveyed on user acceptance of remanufactured products, in the three categories technology goods, household goods and personal goods. Remanufactured was defined in a broader sense, including both reconditioned and refurbished. The study investigated the attractiveness of remanufactured products in relation to perceived quality, negative attribute perception and greenness of the product, and tested the sensitivity towards factors such as price discount and brand equity. Across product types, they concluded that consumers view remanufactured products more negatively than new products in general and that the most influencing factor is perceived quality, followed by negative attribute perception - “disgust factor” - grounded in perceptions of contamination and dirtiness, and lastly the perceived greenness of the product. They suggest that the disgust factor could be a major challenge for remanufactured products, especially in the personal goods segment. They also concluded that price reductions affected the attractiveness more than brand equity.

Abbey et al (2015) called for more research in the field of user acceptance of remanufactured and reused products in general. Specifically, they pointed at the need to investigate why greenness rates low in importance for acceptance, and the nature of the negative attribute perception, the “disgust factor”. Since the latter stemmed from a population of solely students in the USA, it is interesting and useful to understand if it is as important in other country and user contexts.

Vezzoli et al (2015) introduced the notion of practice theory as a means of analysing consumer behaviour and routines. Practice theory emphasises the importance of use regimes and everyday patterns as a basis for acceptance and take up of PSS (see for ex Mylan 2015). They referred to Piscicelli et al (2015), who combine the two views in a study of a collaborative consumption venture in the UK. Piscicelli et al (2015) concluded that sharing economy ventures, as well as other PSS models, are intrinsically disruptive and challenging of status quo, and as such require users with values that lean towards self-transcendence and openness to change, rather than self-enhancement and traditionalism.

Vezzoli et al (2015) identified user acceptance and satisfaction as one of four major clusters of barriers and opportunities to the implementation of Sustainable Product Service Systems (SPSS). They list a number of areas where more investigation is needed to understand and drive the uptake of SPSS including one question that is specifically interesting for this study (Vezzoli et al 2015: 4): "How can final users influence the introduction and scaling-up processes of SPSS?"

Armstrong et al (2015), studied customer choices in the fashion industry, and they showed that the green, or environmental, aspects of preferences and choices of users/consumers are not as strong an influence compared to aspects like function, fashion and price.

In summary, the reviewed literature shows that there is no previous study on the same topic as the one proposed in this project and indeed the study of customer attitudes to pre-owned goods in general and furniture in particular, is very limited. Price, function and quality appear as key determinants of acceptance with notions of greenness being far lower priority. The concept of disgust and negative attributes associated with a pre-owned product appear strong with personal products.

2.4 Research questions

Based on the literature review and the overall background described above, and in the context of the CM project, this study aims at answering the following research questions:

- How do end users view pre-owned office furniture in terms of factors such as aesthetics, function, comfort, flexibility/convenience and price?

- How do user acceptance levels potentially enable and/or a challenge the uptake of pre-owned products in customer organisations, and how could challenges be overcome?

3 METHODOLOGY

3.1 Type of research

Collis and Hussey (2014) define research in terms of purpose, process, outcome and logic.

The purpose of this research study is a mix of exploration and description, and the logic is inductive analysis. This study aims at investigating, exploring and describing the research area and the empirical findings and results that are presented, can be used as input to hypothesis formulation and theory creation.

In terms of process, this research has been undertaken as a mixed-method study, involving qualitative interviews and focus group discussions, as well as more quantitative end user surveys. As such it has taken a similar approach as the study of the clothing industry by Armstrong et al (2015) - both studies are exploratory and there are similarities between the two industries in terms of relation to product, fashion aspect and material.

The outcome of the study can be classified as applied research. It constitutes a part of a wider CM research project, which is an applied research project with the aim of creating very specific knowledge, readily applicable for the organisations involved. The furniture clients that are the direct research object of this study will, if they want to, be able to make use of and apply the findings of this study.

This study is a kind of case study, according to the definition of Eisenhardt (1989). It is exploring an area of research that is fairly new by trying to understand a piece of the puzzle through deep insight into organisation, process and context. The research questions about how end users perceive and accept different types of pre-owned furniture in their workplace were formulated at the start. The different sets of data were collected in somewhat different ways, and the interview questions were somewhat different for different user groups (see 3.2 Data collection). Therefor the research questions developed over time, although the core of them remained the same. It has been possible to draw some conclusions and formulate new suggested areas of research from the findings.

3.2 Data collection

This study has been undertaken based on data from the CM project. In the CM project Work Package 2, the focus is on customer incentives and user acceptance of circular furniture flows. The purpose is to investigate perception and acceptance of a number of circular furniture offers, originating both from an earlier project step/pre study and from the furniture suppliers in the project who, in parallel, work with their new circular business models.

The study is based on the views of end users from five main organisations – four in the public sector and one in the private sector. The public sector organisations involved are Region of Västra Götaland (VGR) - a major region in Sweden with 1,6 million inhabitants and around 50000 employees - the municipality of Lerum (40 000 inhabitants and 3500 employees) and two state owned research institutes, SP with around 1500 employees and Innventia with around 200 employees. The private sector client organisation is Centigo, a consultancy business with around 175 employees.

The data collection was undertaken by the project WP2 team, including the author, and was done during the spring and early summer of 2016. Data was collected in three different ways:

- Focus group discussions with end users in four of the organisations involved in the CM project: VGR - Regional development office (RDO), SP, Innventia and Centigo. Of these, Centigo represent private sector and the other three public sector. In three of the four cases (VGR, SP and Centigo), the organisation had recently undertaken an office relocation, which was interesting to study from a furniture perspective. The selection of these cases were thus purposive. The focus group work followed the guidelines by Krueger and Casey (2002) and Freitas et al (1998). The data is purely qualitative.

- An end user survey was conducted during the Furniture and Light Fair at the Stockholm Convention Centre in February 2016. The purpose was to gather a wider range of data from normal "furniture users". This data is quantitative, since responses are ranked on a given scale or selected from given alternatives. Some qualitative data in the form of free text comments were also collected. The data is not deemed to be broad enough to do statistical analysis, but can nevertheless be used to quantify and compare some of the findings.

- Interviews with decision makers in six of the organisations involved in the CM project: VGR – RDO, VGR – Local Health service, VGR – Nya Varvet, the municipality of Lerum, SP and Centigo. This data is purely qualitative.

The data that was collected through focus group discussions and the end user survey constitute the core data of the study. The interview data was mainly targeted at collecting data from a decision maker point of view, on subjects such as the purchasing process, the management view and the public procurement aspects, and it has only been used when it was deemed relevant for the research questions.

In the focus group discussions, the questions were structured around a number of key themes including need for furniture (what types of furniture are needed and how has it changed over time), the importance or not of furniture for communicating the values of the organisation, at what point and for what reason a furniture is considered as used/worn out (functional, aesthetic or other) and needs to be replaced and what trends and developments people are foreseeing for office furniture, and the office work place in general, in the future. A central part of the discussions covered themes and questions derived from the literature review including attitudes towards pre-owned furniture and towards the three key circular business models (CBM's) that had been identified in an earlier step of the CM project, and that correspond very well to the three major PSS models mentioned in section 2.2:

1. Furniture with buy-back opportunity and continuous repair service,
2. Furniture without ownership (renting)
3. The complete solution for a sustainable work place (performance)

Key characteristics of each model were defined, which were considered relevant and important to potential user acceptance, and questions drawn up to seek user responses. Questions were also asked about existing examples of pre-owned product categories, other than furniture, to determine whether furniture was a special case or part of a wider 'transcendental' acceptance of pre-owned products.

The detailed interview guide for the focus groups, and for the interviews that include decision makers can be found in Appendix C.

The end user survey included the same question on the attitudes towards circularity and circular furniture supply and the aspects of the three business models. The question on when furniture become old and worn out was also the same, as in the focus group discussions. A few additional questions were included, to cater for the broader research agenda in the CM project. The details of the survey questions and results can be found in Appendix D.

Table 3.1 summarises the data collection methods and the main questions. The questions and answers not included in the analysis of this study have been italicized and are shown in a lighter font.

Table 3.1: Data collection methods and questions

Questions	Focus group discussions	Interviews with decision makers	End user survey
Furniture need and recent trends	x	x	
Importance for value communication	x	x	
When does a furniture become old/worn?	x	x	x
Attitudes towards the three CBM's	x	x	
Attitudes towards aspects of the three CBM's	x	x	x
Attitudes towards second hand /refurbished/remanufactured	x	x	x
Other circular examples	x	x	
Trends and future outlook for office furniture	x	x	
Atttudes towards reuse and recirculation in general			x
Attitudes towards offer of database			x
Are furniture changed often enough?			*x*
Management, procurement and process aspects of office furniture supply		*x*	

No secondary data have been used.

3.3 Population and sample

The population selected for the end user survey was the visitors at the aforementioned furniture fair. Although they could be deemed as positively motivated towards furniture in general – since they were attending the fair – they are for the purpose of this study and their perception of pre-owned furniture, considered to be a random sample of office furniture users. Visitors were approached randomly, and an approximation by the project team is that one out of four people who were approached accepted to do the survey, which added up to 32 people. Not all questions were answered by all respondents.

The respondents were classified into gender, if they work in public or private sector and customer type, according to Blank and Dorf (2012). 58 % of the respondents were women and 42% men. 71% of the respondents worked in private sector and 29 % in public sector. 50% of the respondents claimed to be only users of furniture while the remaining 50% were spread on purchasers, financial buyers, influencers and recommenders.

The sample at the four customer organisation in the project, that were selected for the focus group discussions, were pre-selected by a CM project coordinator within the organisation, from the total population of furniture users. They were selected purposively based on availability and spread of roles. There was a stated purpose not to include managers or decision makers in the furniture purchase process in the sample, to avoid bias and promote openness for all opinions. The total number of end users interviewed in this way was 18, that is 4 – 5 people per focus group. In addition, two caretakers were purposively selected and interviewed with a specific focus on handling and maintenance of furniture.

The interviews with purchasers/decision makers further up in the customer type pyramid were conducted with 22 people from six of the CM project organisations.

See table 3.2 for an overview of sample sizes and type of data collection per organisation, together with a classification into public/private sector and if the organisation had recently relocated or not.

Table 3.2: Organisations and data collection

Organisations	Public sector	Recent relocation	Interviews - no of participants	Focus group disc. - no of participants	Care takers interviewed
VGR - Regional development office	x	x	2	4	1
VGR - Local health service	x		3		
VGR - Nya Varvet Conference centre	x	x	3		
The municipality of Lerum	x		2		
SP	x	x	7	5	
Innventia	x			4	1
Centigo		x	5	5	
Total			**22**	**18**	**2**

3.4 Data Analysis

The focus group discussions and most of the interviews were recorded. The focus group discussions and the interviews were also transcribed directly from meeting notes.

In a next step, the findings were organised into different categories, to be able to group and compare the results across the participants and organisations. This also made it possible to compare the qualitative data with the quantitative data from the survey across the same questions. When needed the transcriptions and recordings have been used as reference material for review and quality checks.

The purpose of the data analysis was to examine each survey group in turn and then to aggregate findings to reach broader conclusions on customer acceptance and its implications for uptake of circular practices in the office furniture space.

4 RESULTS/FINDINGS

Section 4.1 and 4.2 will present findings from the focus group discussions, regarding furniture needs and existing examples of pre-owned items. Section 4.3 and 4.4 address the key research questions. In the last section, 4.5, there will be a short summary of the relevant findings from the interviews with the decision makers.

4.1 Furniture need and recent trends

The results from the different focus groups regarding what furniture are needed for the daily office work are broadly consistent and fall into the following limited number of categories:

- Adjustable office desk
- Adjustable chair
- Storage (shelf/drawer unit/locker)
- Good light
- Guest chair
- Plastic mat (to support when standing at the desk)
- Common space furniture, for lunch room, meeting rooms, reception etc.

All focus groups pointed out that both shelves and drawer units were items that had seen a declining use in recent years, as digitalisation of information and data has caused a decreasing need for books and printed material. Some positions at the office, such as accountants and HR people, still seem to need storage for their daily work though (SP), and the general opinion at the two research institutes in the sample (SP and Innventia), was that “researchers still need book shelves”.

Besides the impact that digitalisation has had on the demand for storage furniture, the other big change that demand for office furniture has gone through in the last decade, is the types of desks needed. There was consensus in all focus groups that people need smaller desks than before, since computer screens and paper heaps are smaller, and that desks should be adjustable up and down. This has caused huge amounts of scrapped non-adjustable and large desks over the last years. All those interviewed involved in relocation and furnishing unanimously said that non-adjustable desks are impossible to recirculate and find new usage for today.

4.2 Existing examples of pre-owned office items

The focus group discussions reported the following common pre-owned/rented items in their offices:

- Printers/copy machines
- Coffee machines
- Plants

All of these examples had been broadly accepted in the office work place since many years. An example of an existing performance contract mentioned, was cleaning (Innventia).

The focus groups largely agreed that renting and performance contracts should work also for furniture.

4.3 Acceptance level

The question of when office furniture is considered old and needs to be replaced, and to what extent this is related to functionality, aesthetics and comfort, was asked both in the end user survey and in the focus group discussion.
The scale used in the survey was from 1 – most important to 3 – least important. The results (based on a sample size of 24) are shown in table 4.1.

Table 4.1: Importance of aesthetics, function and comfort for need for furniture replacement – survey results

Aspects	Rank 1	Rank 2	Rank 3	Weighted average
Aesthetics	25%	33%	42%	1,83
Function	63%	29%	8%	2,54
Comfort	12%	38%	50%	1,63

Function is the most important factor, with a weighted average of 2,54 (of 3).

The results of the focus group discussions have been assessed according to the same scale as in the survey, from 1 – most important to 3 – least important, and are summarised in table 4.2.

Table 4.2: Importance of aesthetics, function and comfort for need for furniture replacement – focus group results

When does a furniture become old/worn?	VGR - Regional development office	SP	Innventia	Centigo
Aesthetics	1	1	2	1
Function	1	1	1	1
Comfort	mot mentioned	mot mentioned	mot mentioned	mot mentioned

Here “function” is almost unanimously rated as the key factor with comments such as “Things have to function properly” (Centigo) and “We change it when it is broken and can no longer be repaired” (Innventia). Typical examples of functional failures are armrests that have come off and tables that wobble.

A number of other comments were also made. “When it’s worn, shabby and stained” (VGR), “It has to be fresh looking” (SP), “It needs to fit in” (Centigo) and “When you relocate, you want things to be new and fresh looking” (Centigo) indicate that also aesthetics is a very important factor for keeping or replacing furniture. One of the caretakers even put it in this way: “It’s the exterior that counts” (Innventia).

Comfort was not mentioned at all in the focus group discussions.

The conclusion is that the levels of both function and aesthetics are crucial for accepting furniture in the work space. The wording “functioning” and “fresh looking” were repeatedly used to describe what was acceptable. These findings are relevant across all focus groups.

4.4 View on pre-owned furniture supplies

4.4.1 View on the business models and their components

In the end user survey, the respondents were asked their view on purchase of new furniture and supply of furniture based on the three aforementioned circular business models (CBM’s).

The models were briefly introduced and described by the interviewer and the responses were collected on a scale of 1 – 5, where 1 is negative, 5 positive and 3 neutral. The results (based on a sample size of 15) are presented in table 4.3.

Table 4.3: Attitudes towards circular business models – survey results

Type of model	1 - negative	2 - slightly negative	3 - neutral	4 - slightly positive	5 - positive	Weighted average
View on New	0%	7%	13%	20%	60%	4,33
View on CBM1	0%	0%	0%	33%	67%	4,67
View on CBM2	7%	7%	40%	7%	40%	3,67
View on CBM3	0%	0%	13%	33%	53%	4,40

The results show that CBM 1 (purchase with buy-back opportunity) ranks highest in the survey (4,67 in weighted average). CBM 2 (furniture without ownership) ranks the lowest (3,67 in weighted average). It is also worth noting that the ranking of new purchases is lower than both CBM 1 and CBM 3.

In order to verify the understanding of the models, another question was asked about the view of different components of the models. In this way the findings could be triangulated. The responses were collected on the same scale (1 – 5) and the results (based on a sample size of 15) are shown in table 4.4.

Table 4.4: Offering components of circular business models – survey results

Offering component	CBM Model	1 - negative	2 - slightly negative	3 - neutral	4 - slightly positive	5 - positive	Weighted average
Buyback option	1	0%	0%	0%	7%	93%	4,93
Interior decoration service w combination of old and new furniture	1				27%	73%	4,73
Replacement of worn parts	1	0%	0%	13%	13%	73%	4,60
Rotation of furniture at fixed intervals	1,2	0%	7%	20%	20%	53%	4,20
Storage and return logistics	1,2,3	0%	7%	0%	13%	80%	4,67
On site repair and service	2,3	7%	7%	0%	7%	80%	4,47
Personal advisory incl. ergonomics and environmental aspects	3	0%	0%	20%	0%	80%	4,60
Ergonomics training and individual advisory	3	0%	0%	13%	20%	67%	4,53

These results confirm the findings from the first question: The weighted averages of the components relevant to CBM 1 rank the highest, followed by CBM 3 and CBM 2.

In the focus group discussions, the three circular business models were not introduced, per se, but the different components were discussed. In table 4.5, there is an assessed overview of the results, on a scale from minus (negative), through 0 (neutral) to plus (positive). The three aspects of “interior decoration service”, “replacement of worn parts” and “storage and return logistics” have been brought together to the aspect “renting”, since this was the overall offering discussed in the focus groups.

Table 4.5: Offering components of circular business models – focus group results

Attitudes towards aspects of the three CBM's	VGR - Regional development office	SP	Innventia	Centigo
Buyback option	+	+	+	0
Renting (incl. interior decoration service w combination of old and new furniture, storage and return logistics and replacement of worn parts)	+	+	+	0
Rotation of furniture at fixed intervals	-	-	0	-
On site repair and service	+	+	+	+
Personal advisory incl. ergonomics and environmental aspects	0	+	+	0
Ergonomics training and individual advisory	0	+	+	0

As is shown, the majority of the sample were positive to the idea of a supplier offering on-site repair and replacement of worn parts, buyback of used furniture and storage and return logistics. All of these offerings respond to identified pain points that include lack of time and skills to repair and lack of time and space to handle storage and return logistics.

When asked about being able to rent furniture, the same aspects came up on the positive side: "It's annoying with all furniture you no longer need" (SP), "Someone else would take care of it" (Innventia) and "Then they could manage relocations as well" (Innventia) etc. On the negative side, was a fear of getting involved with too many suppliers and furniture service providers (Innventia) and it was suggested that one contact point would be needed. Another negative aspect was that renting seems too expensive (VGR, Centigo). The organisations in the study already have the furniture they need, they are, in most cases, already depreciated and the perception is that long time renting contracts would not be financially beneficial. One of the users mentioned that it is "important for the soul of our company" to own your own furniture (Centigo), but this was an exception.

One respondent offered the view that renting would be most suitable for new start-ups that want to get started quickly and have shorter time perspective than established big organisations (Centigo).

Reactions were largely positive to the option of "Personal advisory including ergonomics and environmental aspects", as a part of the most elaborated business model, that of selling performance (CBM 3) with the expectancy that the competency of the supplier must be at least at the same level as today's Company health service

(Innventia), and possibly that a party independent of any furniture supplier would be best suited to do this (Centigo).

The only component where the reactions were more negative and interrogative than positive was "Rotation of furniture at fixed intervals". No one could really see the benefit of this. Replacement of furniture is a time-consuming and rather tough task, and doing it without an explicit need does not seem attractive.

In summary, the findings from the end user survey and the focus group results seem to be aligned. The attitudes towards the three circular business models and their components are, for the most part, positive, with a slightly more positive outcome for the public sector organisations compared to the private company. CBM1 – purchase with buyback option – and its components are slightly more attractive than CBM2 and 3, and the main concerns regarding renting or leasing seem to be the price level and how to best organise the value chain.

4.4.2 View on different types of reuse

In the end user survey, questions were asked about how people perceive four different types of furniture supply: New, remanufactured, refurbished and second hand/"as is". The responses were collected for the different categories functionality, aesthetics, comfort, quality and ergonomics and they were ranked on a scale from 1 – 5 (where 1 is negative, 5 positive and 3 neutral). The results (based on a sample size of 23 – 24) are shown in figure 4.1 and 4.2.

Figure 4.1: Ranking of aspects of acceptance for different supply options – survey results

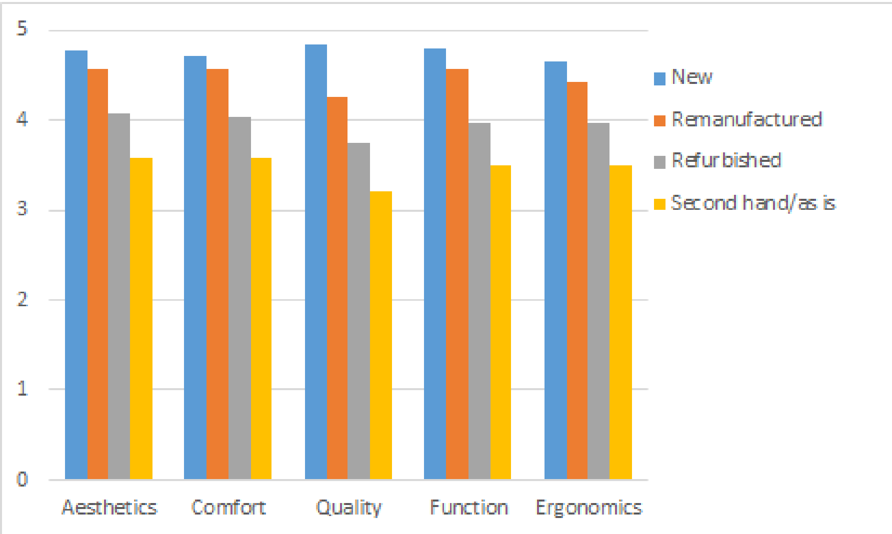


Figure 4.2: Relationship between aspects of furniture and different supply options – survey results

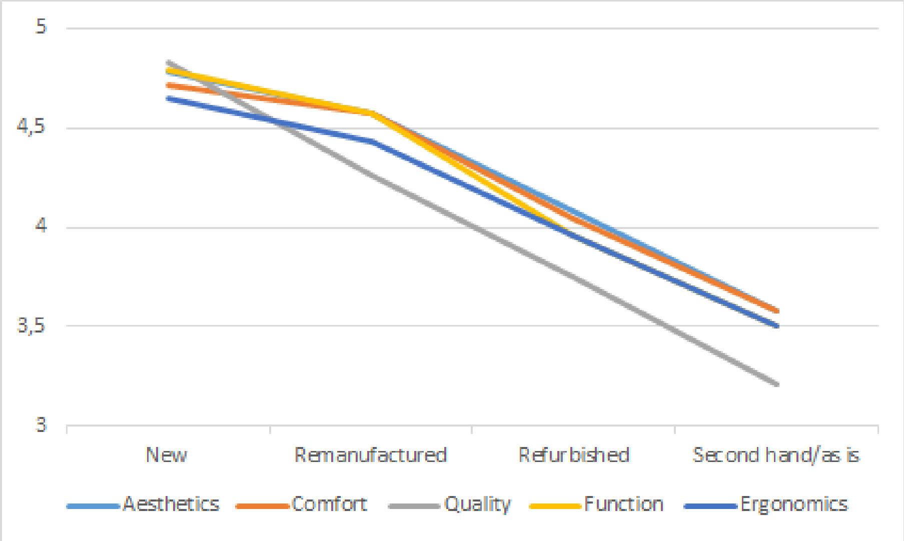
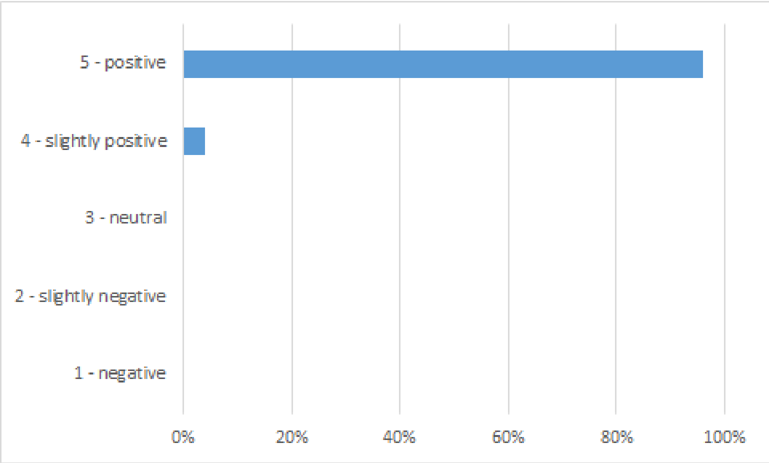


Figure 4.1 shows a declining relation between the perception of a furniture (related to all aspects - aesthetics, function, quality, comfort and ergonomics) from the highest ranking for new furniture, through remanufactured and refurbished to second hand purchase of "as is" furniture. The decline is most notable for the perception of quality, see also figure 4.2.

Figure 4.1 and 4.2 also show that for all aspects the results are positive (> 3) across the four different supply options. Even for the lowest ranked supply option (second hand purchase) the average is around 3.5.

A sample of 24 answered the question "How do you view the idea of reusing and recirculating office furniture as many times as possible, in general?". The results are clearly positive, with 96% of the respondents answering positive and 4% slightly positive, see figure 4.3.

Figure 4.3: View on idea to recirculate a furniture as many times as possible – survey results



The optional comments that were supplied in relation to this question, referred to both environmental and financial benefits compared to buying new. Comments like “Good for the environment”, “Less waste makes financial sense” and “Financially it’s better to freshen something up” exemplify this.

In summary, the end user survey demonstrates a broad acceptance and positive attitude towards recirculation of furniture, but a concern that quality and other aspects of the furniture might not be good enough. This concern is higher for second hand than for refurbished and remanufactured goods.

The results of the focus group discussions are presented in table 4.6. The responses have been assessed on a scale from minus (negative), through 0 (neutral) to plus (positive).

Table 4.6: Attitudes towards different circular supply options – focus group results

Attitudes towards second hand /refurbished/remanufactured	VGR - Regional development office	SP	Innventia	Centigo
Second hand/"as is"	0	-	+	+
Refurbished	+	0	+	+
Remanufactured	0	+	+	+

The results show mostly positive attitudes towards the three types of recirculation. Again, in all four focus groups the terms “functioning” and “fresh looking” were used to describe a base level for acceptance of the different options.

As is shown in the table, the attitudes of two of the organisations, VGR and SP, are somewhat less positive than the others. These two organisations had recently relocated to new offices, which had been largely decorated with reused furniture, and users at both organisations expressed some concern in relation to buying second hand. They stated that it is extremely important that someone can look after and manage the office space over time, especially when the intention is to continue the reuse theme. Searching for the right products and understanding what fits together takes more time than buying new, and requires people with the right skills of design and style. They also emphasized the importance of telling the story about the reuse scenario. It is "something to be proud of" and important for the company profile for example when recruiting (SP). "It is more and more important for branding" (VGR) and "It is important to walk the talk" (SP).

Users at VGR and Centigo suggested that the reused furniture would have to be accompanied with some kind of warranty to guarantee quality. One suggestion was a joint market place (on-line platform) where new and reused/recirculated furniture could be compared next to each other including price (Centigo).

The question about price expectation was not directly asked, but in all focus groups discussions price came up spontaneously when discussing the three different types of reuse. It was stated that a lower price point would be needed, for example "It has to be cheaper" (Centigo) or "There has to be a price difference" (VGR).

4.5 Additional interview results

The interviews with decision makers across the six participating customer organisations, also produced some insight relevant to the research questions.

At VGR, three different organisations participated in the interviews: The RDO, the Local health service and a conference centre. They represent different types of businesses with different needs for furniture. The most important factor for the Local health service organisation (with more than 200 health centres spread over the region) is that their business tends to shift upwards and downwards in size, depending on when the different health centres are outsourced to private health care suppliers or insourced again. All three interviewees in this organisation repeated the word "flexibility", as a response to what aspect of furniture supply would be beneficial for their business, together with a need for uniformity in colours, style and design across the organisation.

The conference centre, Nya Varvet, has a more stable business over time and the RDO was in fact in a phase of declining need for office space and office furniture, because of both downsizing and a successive move towards activity-based offices.

The municipality of Lerum is also a public, tax financed, organisation. Like VGR it has strong values around environment and sustainability. One of the interviewees from Lerum also stressed the word “flexibility” for the same reason as the VGR Local health care service: The business tends to fluctuate over time as it is outsourced and insourced again from private actors. In the municipality case this happens mostly in the school business, but could also be relevant for offices and nursing homes.

At SP the interviewees also mentioned flexibility and the need to be able to scale up and down, in case of long term contracts. Another reflection was that it lacks a central responsible person for office interiors. This makes it difficult to keep an interior environment uniform over time, especially if it should be based on second hand purchases and reuse. One aspect regarding acceptance of reused furniture was that even if it was purchased second hand or reused, that aspect should not be visible - the furniture should be “as good as new”.

Interviewees at both SP and Centigo mentioned that they see a potential role for the real estate owner to take more responsibility for the interior of the office, including furniture.

5 DISCUSSION AND RECOMMENDATION

5.1 Discussion on findings

There are three main findings in this study, which are discussed in this chapter.

1. *The general attitude towards different pre-owned models is positive. As long as function and aesthetics are good enough, end users seem prepared to accept pre-owned office furniture, although with some restrictions.*

The overall conclusion from this study regarding acceptance of pre-owned office furniture highlights the need for the furniture to meet the end user requirement for functional and fresh looking products. Beyond this there appears to be no other major barrier to take up and acceptance. The answer to the survey question “How do you view the idea of reusing and recirculating office furniture as many times as possible, in general?” gave a 100% positive response. Both survey and focus group results show that function and aesthetics are equally important factors for acceptance.

This finding suggests that the acceptance of a furniture PSS is less about being open to change and very purposively not being a traditionalist, as decribed by Piscielli et al (2015). But rather meeting the right level of functionality, and aesthetics that is deemed “good enough”.

The findings confirm the observation by Abbey et al (2015) that pre-owned products are somewhat less attractive to customers than new products often due to the perception of “quality”. The results of this study show positive attitudes on a falling scale from new, through remanufactured and refurbished to second hand purchase of “as is” furniture, but with all results still positive. The other observation by Abbey et al (2015), that there is a “disgust factor” related to pre-owned products, cannot be confirmed. Furniture is not a personal item, and as such not considered “disgusting” or “dirty” when being reused. Practically, we constantly use furniture, which have been used by someone else, in for example theatres, cinemas, public transport, restaurants and hotels. In the office context, the growing concept of activity-based offices, is based on the idea of sharing office furniture – and space.

The suggestion by Armstrong et al (2015), that function, fashion and price are more important than greenness or environmental benefit, is more difficult to confirm or reject. Attitudes towards greenness were not specifically investigated, but it was known to all participants in the data collection that the purpose of the project was to investigate “circular furniture flows” and as such that environmental benefit was an underlying theme and goal. Many of the comments in the end user survey were related to environmental benefits, although this was not associated with notions of acceptance but rather an additional societal benefit of pre-owned products.

From a customer and user acceptance perspective, it is interesting to note that those users who had a real life experience of reused and second hand furniture in the office space, were slightly more sceptical towards the second hand/”as is” option in the discussions. They emphasized the need for continuity and long term responsibility, and they also suggested “storytelling” about the positive environmental impact that the chosen pre-owned furniture have. This could help to overcome resistance, increase acceptance and boost knowledge and pride of the office environment, in line with Rexfelt and Hiort af Ornäs (2009) suggestion that PSS should be developed together with a strategy for communication.

2 *The need for flexibility renders a renting concept attractive.*

The flexibility aspect was not covered in the studied literature, but turned out to be one of the three major findings of this study. The need for flexibility in terms of handling different furniture need when the business is scaled up and down were emphasised by users at both VGR, Lerum, SP and Innventia. This need does not exist to the same extent in all types of businesses, but was thus crucial for several of the studied customer organisations.

Users, including caretakers, are mainly concerned with this because they experience considerable pain when relocations and restructuring of the office space take place. Every time this happens a surplus of non-wanted furniture is created. And the more the organisations are cut down over time and activity-based offices are introduced, the bigger the problem gets. The handling and the storing of the furniture surplus is perceived as very annoying by the users.

Study participants at both VGR, Innventia, SP and Centigo directly linked the issue with furniture surplus and varying need for furniture as a result of business variations over time, to a possible solution of renting or buying service or performance instead of stuff. The pain of handling and storing surplus furniture, and often ending up with scrapping it anyway, would go away with a supplier that would take care of furniture records, return logistics and storing.

3 *A price reduction is expected for all types of circular supply.*

Price is an important factor, both in the focus group discussions and in the free comment field of the end user survey, thus confirming the previous work of Abbey et al (2015), Besch (2004), Bednárik and Pakainé Kováts (2010) and Armstrong et al (2015). This is especially true for the second hand/”as is” option, which is the simplest reused product, with the least expected quality.

In the discussions about the different aspects of the CBM’s, price was not mentioned as frequently. This is possibly due to the fact that these aspects of business models are not directly related to an actual offer or purchase. When they were discussed at the aggregate level of being part of a rental agreement, the price discussion reoccurred. Users at both VGR, Centigo and SP doubted that an attractive enough price point for renting could be found.

Besides confirming the findings of earlier literature on the importance of price, this study also seems to suggest that users care about price, even in a B2B context.

5.2 Challenges

Two major challenges for a large scale transition to more circular supply of office furniture can be derived from end user reactions in this study.

There is an existing surplus of furniture in several of the studied organisations. This stems from the fact that there is a general trend towards less office space and less office furniture as organisations work more flexibly and take up practices such as activity-based offices. The existing furniture are already depreciated and it is perceived as cheap to continue to use existing furniture with small additional purchases, as opposed to, for example, start renting. Even if this is not directly an end user issue in a B2B context, it was still mentioned as a challenge by many of the respondents in our study.

Another challenge is the lack of responsibility for interior decorations and furniture. None of the studied organisations had an appointed person that was responsible for everything around interior decoration. In some cases, a caretaker was available for smaller fix and repair work and relocations, and bigger relocations were handled with a project team set up for this special purpose. But on an ongoing basis there is no one responsible for the complete picture. This could be set in contrast to the normal situation for the exterior of a building, where the common practice is to have someone – or a team – responsible for everything around the real estate and its management. This fact causes frustration with end users in general, because they don't know where to turn to, and it is an obstacle for moving to second hand supply, specifically, since this would require knowledge, skills and data that are kept and monitored continuously over time.

5.3 Recommendations

End user attitudes are not a major obstacle to introducing pre-owned furniture in the office space. However, the expected levels of function and aesthetics, flexibility and price indicate that some key factors need to be in place to ensure end user acceptance and enable a larger scale uptake of pre-owned office furniture. These findings, together with the need to overcome the main challenges identified above – furniture surplus and lack of management – have resulted in the following recommendations, targeting the customer organisations and the potential suppliers:

Internally, if an organisation wants to maintain a supply of reused/second hand furniture over time, it is suggested to appoint someone who is responsible for furniture and internal decoration. Management of second hand furniture potentially takes more time and effort than that of new furniture, especially when organisations want to maintain a uniform standard and style. Such an appointed person could also be responsible for positive storytelling around pre-owned office furniture to overcome resistance, increase acceptance and boost knowledge and pride of the positive environmental impact that the chosen furniture supply actually has. It is a possibility to create a strong link to an organisation's internal values of sustainability and "greenness".

This study points at a number of potential business opportunities for office furniture suppliers. All of them must be based on providing pre-owned products with a level of functionality and freshness that is good enough to be accepted by customers and users. The suggested offerings below are examples of PSS offerings, and are presented here, starting from the simpler product-oriented to the stronger result-oriented models:

- One specific opportunity is to take care of old office desks and assemble used desk tops with new adjustable chassis to avoid unnecessary scrapping as the majority of office workers change from standard to adjustable desks.

- Offer a mix of reused and new furniture, preferably side by side in an order system for simple comparison.
- Offer a warranty in relation to all pre-owned products.
- Offer flexibility towards the client, either in form of take-back offers, rental or performance. The need for flexibility differs with different types of businesses, but generally a flexible offer that could help the client with storage and reverse logistics in times of surplus, could be expected to succeed with organisations that face a volatile business. Also start-ups and businesses with a somewhat short time horizon could benefit from this. This offer could be extended with a digital application for better information management.
- The rental or performance offer could be extended to include everything in an office context, such as furniture, coffee machine, reception service, office supplies etc. End users appreciate one contact point for all issues. Real estate owners and managers could be in a good position to take on this responsibility.
- There is an opportunity to include internal decoration services, where the responsibility to maintain a uniform style and design over time, based on recirculated furniture, is part of the offering. Ultimately this offer could replace the internal position as “responsible for interior decorations” discussed above.

The more the offering is result-oriented, rather than product-oriented, the more the offering differs from the normal business of the existing furniture suppliers, be it manufacturers or distributors. Long term commitments towards customers with constant reuse, refurbishment and remanufacturing of existing furniture, is definitely a challenge for the existing actors in the value chain. It will be key to be able to offer the right interface (easy to choose, one-stop-shop) towards the client, and it is possible that new actors in the value chain would be able to take on this, as well as existing ones.

To be able to offer flexible renting contracts to customers where there already exists a surplus of furniture, and in a situation where old furniture is still functional and useful, and depreciated, it is recommended to offer a “take-over” of existing furniture, before starting a renting offer. This is deemed as necessary to get these types of customers on board.

A general reflection is that, with the relatively low variety of functionality that is actually required in the office space, it should be possible to introduce a higher level of standardisation and modularisation of the products, which should make all kinds of repair, refurbishment and remanufacturing offers, including storage and transport, more efficient and interesting for the suppliers. This is possibly even more important, based on the finding that an attractive low price point is one of the key factors for acceptance of recirculated furniture.

6 CONCLUSION

This study investigated end user attitudes and acceptance levels towards different types of pre-owned circular office furniture supplies, in the context of Sweden and the CM project. It also explored whether end user attitudes would be a challenge and/or an opportunity for a wider uptake of pre-owned office furniture and thereby of the implementation of circular business models. There has been no similar study of this type reported in the literature. Based on a set of focus groups and an on-line user survey the study has produced findings as a baseline for more research in the area, and applicable directly by customer organisations and suppliers of office furniture.

The acceptance of recirculated furniture and the awareness of its positive impact for the environment is high. There is, however a few “basic parameters” that need to be right: The functionality and perceived “freshness” of the product need to be at a “good enough” level. The offer needs to be flexible to cater for volatile businesses and remove the customer pains of taking care of furniture surplus. And there seems to be expectations on price levels that would be competitive compared to new furniture.

The understanding of what “fresh” and a “good enough” level means in a furniture context is an interesting area for further research, as is the exploration of the costs associated with office furniture storing and handling. The detailed understanding of the cost components will be necessary to be able to find an acceptable price point for the supplier offerings.

The most important challenge seems to be around taking care of the existing furniture surplus and to find a way to offer responsibility of the interior environment over time, which is in line with the customers’ expectations regarding function, design and style.

With the right service level and price point, it is concluded that the potential opportunity for an “office furniture service supplier” is considerable. Whether this role will be taken by the existing furniture manufacturers or furniture distributors, or by completely new players in the value chain, is yet to be seen.

Transforming a whole industry, like the office furniture industry, to circular practices and value chains is, no doubt, a huge step. To do it, it is crucial to understand customer behaviour and user acceptance of the new business models and practices. While this study has given some interesting new findings in the area of user attitudes and acceptance, it is also important to understand other aspects of the customer side of the business model, such as behaviours, routines and organisational potential for transformation, in a more nuanced way. This is a suggested area for further research.

There is also a need to look at the overall value chain, to compare different actors and type of actors, their potential for developing their business models and taking on new roles in a more circular value chain. The system perspective and the value chain analysis are still relatively unexplored and offer a broad area for further research.

This study has shown that the potential for circular supply of furniture in the office space is considerable. Besides the obvious resource gains and value capture in the industry itself, it is believed that a large-scale transition to circular practices in the office space could have a more wide-spread influence on implementation of circular economy practices, since the office space is an arena for daily work for millions of practitioners, and the positive impact on environment and resource use could be learnt and transferred to other sectors and to private life.

It is therefore crucial for all actors in the office furniture value chain - customer organisations, furniture suppliers and new ventures - to continue the path of trying to find the best way forward towards circularity.

APPENDIX A: PROJECT PROPOSAL

MANAGEMENT PROJECT PROPOSAL

UB number:	12040072
Project title:	User preferences and attitudes towards a circular transition in the B2B furniture industry
Supervisor:	Peter Hopkinson
Company:	Viktoria Swedish ICT
Submission date:	Sep 5th 2016

1 Scope/rationale of project

The management project will be carried out in the context of a research project driven by Viktoria Swedish ICT, a research institute in Gothenburg, Sweden. The research project is financed by the Swedish research fund Vinnova, and it aims at identifying and evaluating the challenges and opportunities of circular value creation in a fraction of the Swedish B2B furniture industry. The research project consists of 21 partners, from the furniture industry, from research institutes and from clients. The clients are both from the public and private sector.

The public sector organisations involved in the research project are Region of Västra Götaland (a major region in Sweden with 1,6 million inhabitants), the municipality of Lerum (40000 inhabitants) and the municipality of Tibro (11000 inhabitants). The private sector organisation is Centigo, a small consultancy business.

In terms of business models, three different business models have been the scope of the client investigations. These are 1. Furniture with buy-back opportunity with continuous repair service, 2. Furniture without ownership and 3. The complete solution for a sustainable work place. These correspond very well to the three different PSS models listed by Reim et al (2014): The product-oriented mode, the user-oriented model and the result-oriented model.

There is a lack of published research about user reactions on and behaviour towards changes in furniture supply in their work places, to more circular options. Thus the acceptance of different value propositions from suppliers are still – to a great extent – unknown. Besch (2004) calls for the need to investigate further the customer need and patterns of use of office furniture.

The aim of this management project is to understand the values and preferences of the users, in terms of furniture and decoration and the three different types of circular supplies investigated.

2 Methodology

This management project will be undertaken as a user study based on the private and public sector clients involved in the above mentioned research project. Client representatives at different levels of the organization will be studied. End users are mainly employees/furniture users and they will be studied with the help of questionnaires and with the help of user focus groups. There will also be an opportunity to study employees that are both users and purchasers/decision makers in the furniture value chain. These users will be studied with the help of qualitative interviews.

The goal is to be able to generalize from this study, both to other user groups and to other types of products.

Specifically, the goal of the study is to answer the following research questions:

- How do the users view the transition from linear supply/purchase of new furniture to circular supply (reuse/second hand, functional purchase and performance purchase) in terms of aesthetics/feeling, quality of the work place and flexibility/convenience?
- What are the challenges and opportunities to secure user acceptance and buy in in a circular transition of office furniture, and how could the challenges be overcome? How important is the “green” branding of the employer organization?
- How important is end user acceptance and behaviour for circular furniture supply uptake in a work environment? Is user involvement in itself a barrier for circular furniture supplies?
- What other obstacles and challenges might be more important?

The analysis will be done in terms of consumer behaviour theory (see for example Abbey et al 2015 and Dasgupta et al 2015), and practise theory (Mylan 2015).

3 Data sources

The data source will be primary data from the Circular furniture project. It consists of:

- Questionnaires with a broad group of end users
- Focus group discussions with end users
- Qualitative interviews with purchasers/decision makers in the client organizations

4 Aspects of MBA syllabus used

The project will involve aspects of the following modules of the CE MBA:

- Circular Economy – Core Principles and Concepts
- Business Models for a Circular Economy
- Innovation and Enterprise
- Operations Mangement

5 Proposed chapter headings and sub-headings

Introduction (1000)
Background (1500)
    Literature review
    Social and theoretical framework
    Research questions (key issue, problem solving)
    Hypothesis
Methodology (1000)
        Population and sample
        Variables
        Data collection
Results/Findings/Data Analysis (3000)
Discussion/Limitations (1500)
Conclusion/Recommendations (1000)

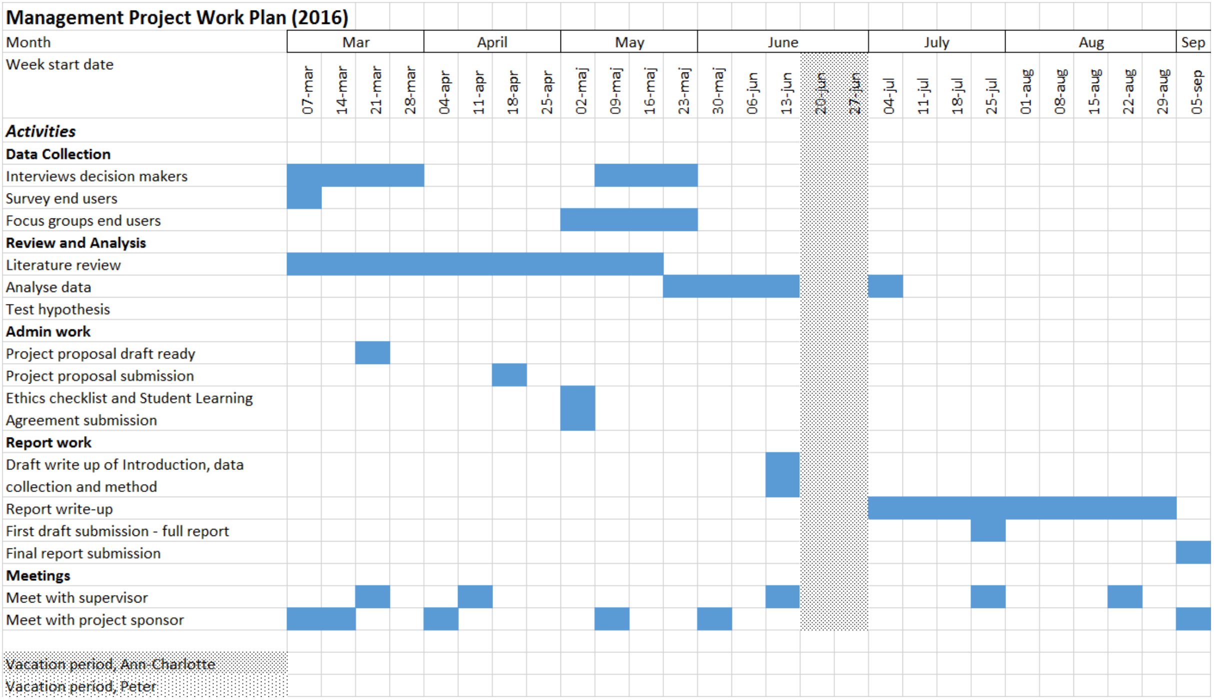
References

(Identified so far:

- Abbey, J. D., Meloy, M.G., Blackburn, J., Guide, V.D. R. Jr. (2015). Consumer markets for remanufactured and refurbished products. *California Management Review*, 57(4).
  - ➔ Impact on quality, brand, green view and “disgust factor” of reman products (B2C)
- Abbey, J. D., Meloy, M.G., Guide, V.D. R. Jr., Atalay, S. (2015). Remanufactured Products in Closed-Loop Supply Chains for Consumer Goods. *Production and Operations Management,* 24 (3), pp. 488–503
- Atasu, A., Guide, V. D. R. Jr., Van Wassenhove, L.N. (2010). So what if remanufacturing cannibilizes new product sales? *California Management Review*, 52(2).
  - ➔ Newness-conscious, functionality-oriented and “green” buyers (B2B and B2C)(???)
- Besch, K. (2004). Product-service systems for office furniture: barriers and opportunities on the European market. *Journal of Cleaner Production,* 13 (2005), pp 1083-1094.
  - ➔ Proposal for research in line with this thesis. More oriented towards the supplier side.
- Cooper, T., (2010). *Longer Life Products: Alternatives to the Throwaway Society.* Farnham, Gower Publishing.
- Dasgupta, P., Southerton, D., Ulph, A. and Ulph, D. (2015) Consumer Behaviour with Environmental and Social Externalities: Implications for Analysis and Policy. *Environmental and Resource Economics.* [http://link.springer.com.ezproxy.brad.ac.uk/article/10.1007/s10640-015-9911-3. Accessed 28 October 2015](http://link.springer.com.ezproxy.brad.ac.uk/article/10.1007/s10640-015-9911-3).
  - ➔ Socially-embedded and socially-directed preferences
- Mobley, A. S., Painter, T. S., Untch, E. M. R., Unnava, H. (1995). Consumer Evaluation of Recycled Products: ABSTRACT. *Psychology & Marketing (1986-1998)*. 12 (3). ProQuest Business Collection, pg. 165
  - ➔ Positive attitudes towards recycled product (face tissue and greeting cards) especially for well-known brands, but less for personal care products.
- Mylan, J. (2015) Understanding the diffusion of sustainable product service systems: Insights from the sociology of consumption and practice theory. *Journal of Cleaner Production*, 97:13–20. Elsevier.
  - ➔ Aligning with ongoing internal practice dynamics, coupling and linkage – impact on uptake
- Reim, W., Parida, V. and Örtqvist, D. (2014) Product-Service Systems (PSS) business models and tactics – a systematic literature review. *Journal of Cleaner Production*, 97: 61–75.
  - ➔ Risk of rebound effects from PSS models. More oriented towards the tactics of the supplier side.(??))

Appendices

6 Work plan


Management Project Work Plan (2016)
Month
Mar
April
May
June
July
Aug
Sep
Week start date
07-mar
14-mar
21-mar
28-mar
04-apr
11-apr
18-apr
25-apr
02-maj
09-maj
16-maj
23-maj
30-maj
06-jun
13-jun
20-jun
27-jun
04-jul
11-jul
18-jul
25-jul
01-aug
08-aug
15-aug
22-aug
29-aug
05-sep
Activities
Data Collection
Interviews decision makers
Survey end users
Focus groups end users
Review and Analysis
Literature review
Analyse data
Test hypothesis
Admin work
Project proposal draft ready
Project proposal submission
Ethics checklist and Student Learning
Agreement submission
Report work
Draft write up of Introduction, data
collection and method
Report write-up
First draft submission - full report
Final report submission
Meetings
Meet with supervisor
Meet with project sponsor
Vacation period, Ann-Charlotte
Vacation period, Peter

APPENDIX B: CM PROJECT PARTNERS AND OTHER USEFUL WEB LINKS

Project partners with web links

Lerums kommun	http://www.lerum.se/
Tibro kommun	http://www.tibro.se/
Västra Götalandsregionen	http://www.vgregion.se/en/Vastra-Gotalandsregionen/Home/
Centigo	http://www.centigo.se/
SP	http://www.sp.se/en/Sidor/default.aspx
Innventia	http://www.innventia.com/en/
Viktoria Swedish ICT	https://www.viktoria.se/
Swerea	http://www.swerea.se/en
IDC	http://idcab.se/
Lots Design	http://lotsdesign.se/wordpress/portfolio-item/volvo/
White	http://en.white.se/
TMF	http://www.tmf.se/english_1/about_tmf_1
Allies	http://allies.se/
Kinnarps	http://www.kinnarps.com/sv/se/
Input Interiör	http://www.inputinterior.se/sv/
Swedese	http://swedese.com/
Gärsnäs	http://www.garsnas.se/en/
Offect	http://www.offecct.se/en
Scandinavian Business Seating	http://www.sbseating.co.uk/
Ludvig Svensson	http://www.ludvigsvensson.com/interior-textiles

Bafab, Swedish provider of new and reused office furniture:

http://www.bafab.se/

Off2Off, Swedish sharing platform provider:

http://www.off2off.se/en/

RP Möbler, Swedish provider of reused and recirculated office furniture:

http://www.rp.se/

Warp-it, British furniture sharing platform:

https://www.warp-it.co.uk/

APPENDIX C: INTERVIEW GUIDES

Interview guide – end users + care takers (in Swedish)

CM - Frågor till brukare

[Ta även kort på miljön och be gärna respondenten visa olika möbler och åsikt om dessa.]

Inledning

- A-C/Annika presenterar sig och varför de är där
    - Hej och välkomna till detta samtal om möbler i kontorsmiljö. Jag heter Ann-Charlotte Mellquist och jag jobbar på Viktoria Swedish ICT, som är ett forskningsinstitut. Min kollega … Annika Kihlstedt och jag jobbar på Innventia, som också är ett forskningsinstitut.
    - Er organisation (VGR, SP etc) deltar i ett forskningsprojekt om möjliga cirkulära affärsmodeller för möbelleverantörer. Ni är inbjudna som användare/brukare av möbler i kontorsmiljö. Materialet kommer att användas till att utvärdera brukarperspektivet för dessa affärsmodeller. Därför vill vi veta vad var och en av er tycker – eller inte tycker – om ett antal frågeställningar.
    - Liknande fokusgruppsdiskussioner hålls på ett antal andra kontor.
- Presentation av hur mötet ska genomföras
    - Säg det du tycker oavsett andras åsikt (det finns inga rätt eller fel åsikter)
    - Ni är anonyma i det sammanställda materialet
    - Inte avbryta
    - Inga mobiltelefoner
    - Vi spelar in
- Presentation av alla deltagarna
    - Namn och yrkesroll (våningsplan på SP)

Öppningsfråga

- Vilken är er huvudsakliga arbetsplats?
    - Hur mycket är ni på det här kontoret per dag/vecka?
    - Vilka rum nyttjar ni (mötesrum, kontorsplats…)?
    - (Aktivitetsbaserat?)

Transitionsfråga

- Hur länge har ni haft de möbler ni använder idag?

Nuläge

- Vilka möbler behövs här på kontoret för det du ska göra? Finns några speciella krav på dem?
    - Vad behövs? Hur ofta? Hur länge?
    - Vad fungerar bra idag?
    - Vad fungerar inte?
    - Service och reparation?
    - Ergonomi? Specialanpassning?
- Är det någon av er som har tagit bilder på möbler som ni vill byta ut?
    - När upplever ni att en möbel behöver bytas ut? (Estetik, bekvämlighet, funktion)
    - Var går gränsen för när ni inte vill använda möblerna?
    - Var finns acceptansnivån för möbler?

- Vilken typ av möbler behövs inte längre?
    - Samhällsutveckling, funktioner som ändras
- Hur är ni med och påverkar vid möbelbyte?
    - Vad händer då? Leverans? Flytt?
- Finns några möbler/inredning idag som är återbrukade? (cirkulära exempel)
    - Hur ser ni på det? Slitage/trasigt/problem? Eller positivt?

Aspekter av cirkulära affärsmodeller

- Hur ställer ni er (allmän åsikt, praktiskt) till följande erbjudanden från möbelleverantörer:
    - Att använda begagnade (as is) möbler?
    - Att använda renoverade (uppfräschade) möbler?
    - Att använda återtillverkade (i fabrik/som ny) möbler?
    - Oavsett typ: Byte av slitagedelar på befintliga möbler? Service och reparation på plats?
    - Oavsett typ: Byte av möbler vid vissa intervall? (Rotation)
    - Personlig rådgivning vad gäller möbler avseende ergonomi, miljöfrågor mm?
    - Att möbler hyrs i stället för köps?
- Har ni några andra exempel (ej möbler) på hyra eller återbruk?

Värdegrund

- Vad tror du att besökare får för intryck av den här organisationen/verksamheten utifrån möblerna på det här kontoret?
- Vilka är de officiella värderingarna för den här organisationen?
    - Hållbarhet/miljö?
- Hur viktiga är möbler/inredning för att spegla värderingar/varumärke?
    - Hur tycker du att möblerna på din arbetsplats speglar eller inte speglar värdegrunden?
    - Vilka positiva/negativa budskap sänder möbler ut?
    - Är olika miljöer olika viktiga för detta?

Framtiden

- Vad tror du generellt om trender för arbetsplatser och möbelbehov?
- Hur skulle du vilja arbeta i framtiden?
    - Hur skulle du vilja att möbler/inredning fungerade?

Avslutning

- Har ni några egna idéer om hur cirkulära modeller skulle kunna fungera?
- Hur viktiga är dessa frågor?
    - Ge exempel
    - Vilken är viktigast?
    - Är något oviktigt?
- Vill ni lägga till något mer? Har vi glömt fråga något?

Sammanfattning

- Görs av assisterande moderator

Frågor till vaktmästare:

- Vilka är dina arbetsuppgifter när det gäller möbler?
    - Hur jobbar du med det?
    - Stora flytter/dagligt underhåll?

- Hur mycket tid lägger du på att hantera (flytta, beställa, köpa in och reparera) möbler?
    - Vad fungerar bra?
    - Vad fungerar dåligt?
    - Vilka är dina största problem med denna hantering?
    - Förbättringsförslag

- Hur skulle du beskriva status idag för möbler på de kontor du arbetar?
- Varför slängs möbler? (Trasigt? Fläckar? Mode?)
- När upplever du att en möbel behöver bytas ut? (Estetik, bekvämlighet, funktion)
- Vilken typ av möbler behövs inte längre?
    - Samhällsutveckling, funktioner som ändras
- Hur är du med och påverkar vid möbelbyte?

- Hur ställer du dig (allmän åsikt, praktiskt) till följande erbjudanden från möbelleverantörer:
    - Att använda begagnade (as is) möbler?
    - Att använda renoverade (uppfräschade) möbler?
    - Att använda återtillverkade (i fabrik/som ny) möbler?
    - Byte av slitagedelar på befintliga möbler?
    - Service och reparation på plats?
    - Byte av möbler vid vissa intervall? (Rotation, kan vara beg/återtillv/renov)
    - Personlig rådgivning vad gäller möbler avseende ergonomi, miljöfrågor mm?

- Vad tror du att besökare får för intryck av den här organisationen/verksamheten utifrån möblerna på det här kontoret?
- Vilka är de officiella värderingarna för den här organisationen?
    - Hållbarhet/miljö?
- Hur viktiga är möbler/inredning för att spegla värderingar/varumärke?
    - Hur tycker du att möblerna på din arbetsplats speglar eller inte speglar värdegrunden?
    - Vilka positiva/negativa budskap sänder möbler ut?
    - Är olika miljöer olika viktiga för detta?
- Om möbler skulle hyras i stället för att köpas vad skulle det innebära praktiskt för dig? Vad tycker du om det?

- Vill du lägga till något mer? Har vi glömt fråga något?

- Kan du visa oss några exempel på möbler som du tycker ska bytas ut? Exempel på möbler som är svåra att hantera i ditt jobb?
    - Ta kort

Interview guide CM AP2 - decision makers (in Swedish)

CM AP2 INTERVJUGUIDE – BESLUTSFATTARE OCH INKÖPARE

Intervjuns syfte:

Vad känner du till om Cirkulära möbelflödesprojektets syfte och mål?

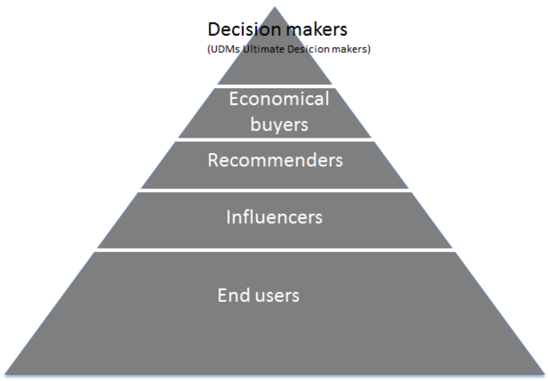
Vi försöker skapa en bild av vad som krävs av organisations- och processförändringar för att upphandla möbler via cirkulära affärsmodeller och funktions- eller prestationsbaserade kontrakt.

Våra frågor handlar om grader av förändring mot CBM.

- I första läget är det att inkludera krav på cirkulära flöden vid inköp av produkter, dvs möjlighet till återköp och att blanda nya och återbrukade möbler i mixen
- i andra läget funktionsbaserade kontrakt som inkluderar tjänster för reparationer, service och uppgradering
- i tredje läget prestationsbaserade kontrakt med outsourcad helhetslösning av kontorsmiljön, inkl. möbler, belysning etc.

Klassificering intervjuperson:

Kan du beskriva var din egen roll i planering och inköp av möbler till din organisation? (Identifiera var i pyramiden rollen finns.)



Organisation:

Vem ansvarar för den inre miljön? Din organisation, fastighetsägaren, annan?

Hur ser organisationen ut kring beslut och process för inköp av möbler och inre miljö?

Hur sker överlämning (uppåt/nedåt?) kring möbelfrågor i organisationen/processen

Behov och krav:

När uppstår behoven av nya möbler? Flytt, behov av färre/fler platser, utslitning, utveckling av arbetsmiljö/ergonomi?

Vem specificerar behoven? Finns något grundsortiment eller någon bruttolista att hålla sig till? Vad anser du om möjligheten att dra ner antalet valmöjligheter till ett antal VGR-profilerade möbler och textilier?

Finns några specifika regelverk/lagar som styr era möbelinköp? Interna miljö-/hållbarhets-/CSR-policys (Gröna listan)?

Kan en tjänst möta era behov? Bättre? Går behovet uttrycka som en funktion?

Hur arbetar ni idag med miljö/hållbarhet/återvinning i verksamheten? Har ni några mål av typen x% källsortering, y% återvinning? Ingår möbler i de målen?

Görs Life Cycle Costing på nyinköp vs underhåll/reparation?

Arbetsplatsen:

Arbetar ni med begreppet standardarbetsplats (bas för funktionsförsäljning) idag?

Jobbar ni med aktivitetsbaserade kontor?

Hur stor möjlighet har den enskilda personen att påverka möbler och inredning på sin arbetsplats?

Processen:

Hur ser anskaffningsprocessen ut? Vilka parter/aktörer, tidsspann från behov till leverans?

Vem beställer miljön? Kontraktspart möbelanskaffning?

Vem godkänner beslut om beställning?

Vad fungerar riktigt bra i er nuvarande process?

Vilka är era upplevda problem med möbelinköp och möbelinnehav? Vad skulle ni vilja ändra?

Hur tas användarnas/brukarnas behov in i processen? Återkoppling?

Har ni några exempel på arbetsplatser/möbler som redan idag är skaffade på cirkulärt sätt? Kvantifiera gärna (antal, pengar/beloppsgränser).

Finns några andra exempel på cirkulära leveranser hos er idag (leasing, hyra, återbruk)? Kan man lära sig/inspireras av dem?

Hur skulle processen i stort påverkas av cirkulär möbelanskaffning (återköp, funktion, prestation)?

Vad tror du skulle vara de stora möjligheter resp. utmaningarna med dessa olika cirkulära alternativ:

- Möjlighet till återköp
- Köpa funktion/leasing
- Köpa prestation

Vad händer med det som blir över i en flytt eller avveckling av kontor? Vem tar kostnaden?

Marknad:

Hur ser er marknadsdialog ut i dag kring möbler etc?

Får ni information av säljare/leverantör om nya produkter med mindre påverkan?

Pratar ni med leverantörer/branschen om tjänster som hyra/leasa möbler?

För ni dialog om affärsmodeller med mindre påverkan?

Strategi:

Hur viktigt är möbler och inredning för organisationens identitet, varumärke och erbjudande?

Hur viktigt är miljö/hållbarhet/CSR för organisationens identitet, varumärke och erbjudande?

Hur ser budgetprocessen ut? Vem äger den och hur allokeras pengar?

Hur skulle budget-/ekonomiprocessen påverkas om man går mot mer cirkulär anskaffning (prestation, funktion, återköp)?

Finns några speciella avtalshinder för att hyra möbler och inredning?

Vilken avskrivningstid använder ni på möbler? Kan den ändras/påverkas?

Hur länge håller möblerna? På riktigt? Estetiskt? Om dom skulle underhållas bättre? Renoveras?

Kan ni omorganisera/köpa tjänster för att anpassa er till nya affärsmodeller i upphandlingen?

Hur skulle en mer centraliserad organisation runt möbelinköp kunna se ut?

Kan ni ha out-source/in-source hantering som en del av inköpsprocessen? Vad skulle skillnaden bli mellan att använda distributörens/återförsäljarens säljare och egen eller inhyrd arkitekt?

Hur utvärderas upphandlingsprocessen/inköpen och hur återkopplas det till nya upphandlingar?

Vem kan överpröva behov? Fatta sammanvägda beslut?

Går inköpsinitiativen ”båda vägarna”? Dvs kan nya affärsmodeller inspirera till dialog med ledningen som leder till nya beslut/strategier eller omorganisation av verksamheten?

Hur ser dialogen med UDM (upphandlare, avtalsansvariga, viktiga influencers, politiker) ut? Kan utredning/strategi leda till återkoppling/dialog och nya beslut hos UDM/ledning etc?

	Nyinköp/ baseline	Möjlighet till återköp	Funktion	Prestation
Organisation				
Krav/behov				
Arbetsplats				
Process				
Marknad				
Strategi/Ekonomi				
Ej allokerad				
Låg friktion				
Medel friktion				
Hög friktion				

APPENDIX D: ON LINE SURVEY DETAILS AND RESULTS

Survey details (in Swedish)

Bakgrund

1. Jag arbetar inom:

- ◯ Offentlig sektor
- ◯ Privat sektor

Kommentar:

2. På min arbetsplats har vi:

- ◯ Aktivitetsbaserad miljö
- ◯ Kontorsrum

Annat (specificera):

3. Roll:

- ◯ Upphandlare
- ◯ Inköpare
- ◯ Influencer
- ◯ Brukare

Annat (specificera):

Pyramidtoppen

4. Vad är din inställning till följande erbjudanden avseende möbler?

	Negativ	Försiktigt Negativ	Neutral	Försiktigt Positiv	Positiv
Möjlighet till återköp av befintliga möbler	○	○	○	○	○
Inredningstjänst för kombination av begagnade och nya möbler	○	○	○	○	○
Byte av slitagedelar till fast pris	○	○	○	○	○
Möjlighet att byta möbler (rotation med vissa intervall)	○	○	○	○	○
Service och reparation på plats	○	○	○	○	○
Returhantering/lagring	○	○	○	○	○
Rotation av möbler under en abonnemangsperiod	○	○	○	○	○
Personlig rådgivning för alla praktiska frågor kring verksamhetsinredning inklusive ergonomi, miljöfrågor m.m	○	○	○	○	○
Ergonomiutbildning och bedömning för personal	○	○	○	○	○

Kommentar:

5. Vad är din inställning till följande modeller för anskaffning av möbler?

	Negativ	Försiktigt Negativ	Neutral	Försiktigt Positiv	Positiv
nr 1: Inköp av nya möbler	○	○	○	○	○
nr 2: Möbelinköp med återköpsmöjlighet (av leverantören)	○	○	○	○	○
nr 3: Möbler utan eget ägande (hyra)	○	○	○	○	○
nr 4: Helhetslösning för den hållbara arbetsplatser (fullt service/uptime-avtal)	○	○	○	○	○

Kommentar:

6. Vad tror du skulle vara fördelarna/nackdelarna med modell nr1?

7. Vad tror du skulle vara fördelarna/nackdelarna med modell nr2?

8. Vad tror du skulle vara fördelarna/nackdelarna med modell nr3?

9. Vad tror du skulle vara fördelarna/nackdelarna med modell nr4?

End Users

10. Vad är din inställning till *nya* kontorsmöbler kopplade till följande aspekter:

	Negativ	Försiktigt negativ	Neutral	Försiktigt positiv	Positiv
Estetik	○	○	○	○	○
Bekvämlighet	○	○	○	○	○
Kvalitet	○	○	○	○	○
Funktion	○	○	○	○	○
Ergonomi	○	○	○	○	○

Kommentar:

11. Vad är din inställning till renoverade/återtillverkade (av tillverkare) kontorsmöbler kopplade till följande aspekter:

	Negativ	Försiktigt negativ	Neutral	Försiktigt positiv	Positiv
Estetik	○	○	○	○	○
Bekvämlighet	○	○	○	○	○
Kvalitet	○	○	○	○	○
Funktion	○	○	○	○	○
Ergonomi	○	○	○	○	○

Kommentar:

12. Vad är din inställning till begagnade kontorsmöbler kopplade till följande aspekter:

	Negativ	Försiktigt negativ	Neutral	Försiktigt positiv	Positiv
Estetik	◯	◯	◯	◯	◯
Bekvämlighet	◯	◯	◯	◯	◯
Kvalitet	◯	◯	◯	◯	◯
Funktion	◯	◯	◯	◯	◯
Ergonomi	◯	◯	◯	◯	◯

Kommentar:

13. Vad är din inställning till restaurerade kontorsmöbler kopplade till följande aspekter:

	Negativ	Försiktigt negativ	Neutral	Försiktigt positiv	Positiv
Estetik	◯	◯	◯	◯	◯
Bekvämlighet	◯	◯	◯	◯	◯
Kvalitet	◯	◯	◯	◯	◯
Funktion	◯	◯	◯	◯	◯
Ergonomi	◯	◯	◯	◯	◯

Kommentar:

14. Rangordna nedan aspekters påverkan gällande när en möbel *börjar* upplevas som gammal

- [ ] Estetik
- [ ] Funktion
- [ ] Bekvämlighet

15. Tycker du att möblerna på din arbetsplats byts tillräckligt frekvent?

- ◯ Ja
- ◯ Nej

Annat/Kommentar:

16. Hur ställer du dig till idén att möbler ska cirkulera (uppfräschas, återtillverkas, återanvändas etc) så många gånger som möjligt?

- Negativ
- Försiktigt negativ
- Neutral
- Försiktigt positiv
- Positiv

Motivera ditt svar:

Survey results (in Swedish)

32

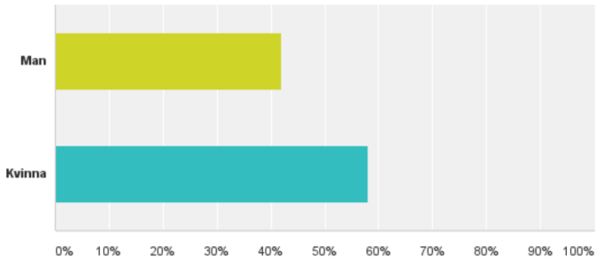
Totalt antal svar

Skapad: den 25 januari 2016

Fullständiga svar: 29

Q1: Jag är:

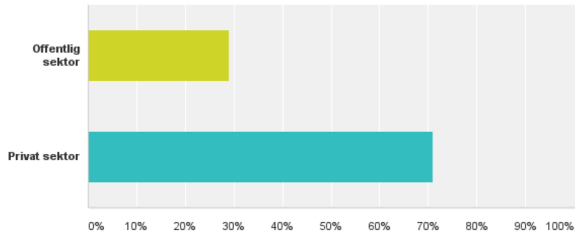
Svarade: 31   Hoppade över: 1



Svarsval	Svar	
Man	41,94%	13
Kvinna	58,06%	18
Totalt		**31**

Q2: Jag arbetar inom:

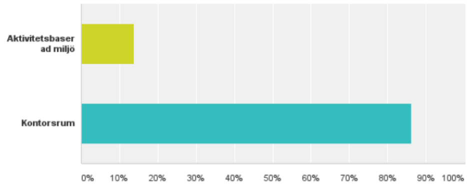
Svarade: 31   Hoppade över: 1



Svarsval	Svar	
Offentlig sektor	**29,03%**	9
Privat sektor	**70,97%**	22
Totalt		**31**

Q3: På min arbetsplats har vi:

Svarade: 29   Hoppade över: 3

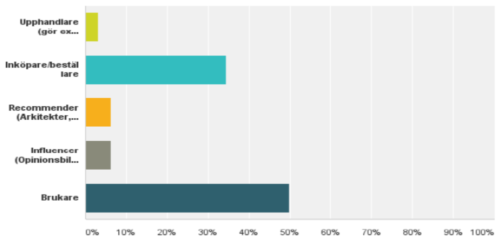


Svarsval	Svar	
Aktivitetsbaserad miljö	**13,79%**	4
Kontorsrum	**86,21%**	25
Totalt		**29**

- Landskap
- Hemma
- Byter varje halvår
- Olika
- Landskap

Q4: Roll:

Svarade: 32   Hoppade över: 0

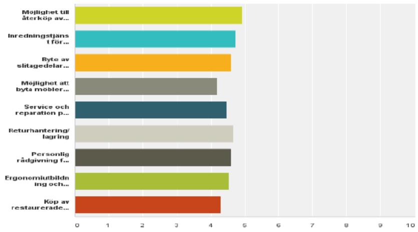


Svarsval	Svar	
Upphandlare (gör ex upphandlingen av inredningsavtal, gör inga inköp)	**3,13%**	1
Inköpare/beställare	**34,38%**	11
Recommender (Arkitekter, ergonomer, myndighet ex arbetsmiljöverket)	**6,25%**	2
Influencer (Opinionsbildare CE, designers, etc)	**6,25%**	2
Brukare	**50,00%**	16
Totalt		**32**

- Möbelavtal
- Budgetansvar
- Bloggare, även inköpare och upphandlare

Q5: Vad är din inställning till följande erbjudanden avseende möbler?

Svarade: 15 Hoppade över: 17

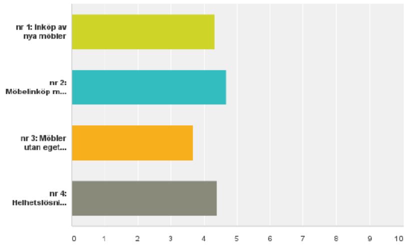


	Negativ	Försiktigt Negativ	Neutral	Försiktigt Positiv	Positiv	Totalt	Viktat genomsnitt
Möjlighet till återköp av befintliga möbler	0,00% 0	0,00% 0	0,00% 0	6,67% 1	93,33% 14	15	4,93
Inredningstjänst för kombination av begagnade och nya möbler	0,00% 0	0,00% 0	0,00% 0	26,67% 4	73,33% 11	15	4,73
Byte av slitagedelar till fast pris	0,00% 0	0,00% 0	13,33% 2	13,33% 2	73,33% 11	15	4,60
Möjlighet att byta möbler (rotation med vissa intervall)	0,00% 0	6,67% 1	20,00% 3	20,00% 3	53,33% 8	15	4,20
Service och reparation på plats	6,67% 1	6,67% 1	0,00% 0	6,67% 1	80,00% 12	15	4,47
Returhantering/lagring	0,00% 0	6,67% 1	0,00% 0	13,33% 2	80,00% 12	15	4,67
Personlig rådgivning för alla praktiska frågor kring verksamhetsinredning inklusive ergonomi, miljöfrågor m.m	0,00% 0	0,00% 0	20,00% 3	0,00% 0	80,00% 12	15	4,60
Ergonomiutbildning och bedömning för personal	0,00% 0	0,00% 0	13,33% 2	20,00% 3	66,67% 10	15	4,53
Köp av restaurerade möbler med fabriksgaranti	0,00% 0	7,69% 1	15,38% 2	15,38% 2	61,54% 8	13	4,31

- Osäker på om rotation med intervall samt köp av restaurerade möbler praktiskt kommer att fungera på ett bra sätt
- Samtliga alternativ låter jättebra
- Vi har redan ergonomiutbildning och bedömning för personal

Q6: Vad är din inställning till följande modeller för anskaffning av möbler?

Svarade: 15 Hoppade över: 17



	Negativ	Försiktigt Negativ	Neutral	Försiktigt Positiv	Positiv	Totalt	Viktat genomsnitt
nr 1: Inköp av nya möbler	0,00% 0	6,67% 1	13,33% 2	20,00% 3	60,00% 9	15	4,33
nr 2: Möbelinköp med återköpsmöjlighet (av leverantören)	0,00% 0	0,00% 0	0,00% 0	33,33% 5	66,67% 10	15	4,67
nr 3: Möbler utan eget ägande (hyra)	6,67% 1	6,67% 1	40,00% 6	6,67% 1	40,00% 6	15	3,67
nr 4: Helhetslösning för den hållbara arbetsplatser (fullt service/uptime-avtal)	0,00% 0	0,00% 0	13,33% 2	33,33% 5	53,33% 8	15	4,40

- Allt som inte är nyinköp kräver en omställning = mycket arbete initialt. Men när nya modeller satt sig brukar det ofta fungera och då låter samtliga modell 2-4 bra.
- Gällande allt som handlar om begagnat, restaurerat etc så tror jag att det är svårt att kunna garantera kvalitet och hållfasthet etc. Producenterna måste ta ett väldigt stort ansvar isf.
- Fördelen med modell2-4 är att producenterna då "måste" ha hög kvalitet på sina produkter, det tjänar de själva också på.
- Viktigt med flexibilitet!
- Det blir en avvägning av "need to have" vs "nice to have". I slutändan kommer det handla om kostnaden

Q6.1: Kommentarer fördelar/nackdelar med modell nr 1:

Svarade: 4 Hoppade över: 28

- Svårt att bedöma nackdelar med denna modell, det är så det är nu och det funkar. Man får det man vill ha och kan köpa nytt. Dock är denna modell miljömässigt negativ. Dessutom; vad ska man göra med det gamla?
- Nytt är inte slitet. Tycker återvinning är bra
- Att köpa nytt är inte miljövänligt längre

Q6.2: Vad tror du skulle vara fördelarna/nackdelarna med modell nr2?

Svarade: 7 Hoppade över: 25

- Bra med miljötänket. Billigare att anskaffa
- En positiv aspekt är: attraktiv pricepoint
- Att lära kunden att allt kostar
- Är bra om man köpt något som blivit tokigt eller om man vill ändra
- Lättare att byta oftare och inte behöva behålla lika länge. Positivt att möblerna inte hamnar på tippen och denna modell är även bra för ekonomin
- Här är inredningsarkitektens roll viktig
- Viktigt med transparens

Q6.3: Vad tror du skulle vara fördelarna/nackdelarna med modell nr3?

Svarade: 8 Hoppade över: 24

- Bra att brukarna behöver ej bry sig. Kan dock bli dyrare än att köpa
- Man ska ha möblerna länge
- Att köpa är en vanesak
- Denna modell är framförallt intressant för större företag
- Solution for the future
- Detta är bra, bara att lämna tillbaka
- Vi brukar sälja vid byte av möbler, med denna modell får man inte in pengar på det sättet. Dock positivt att det inte blir några reparationskostnader
- Även här är inredningsarkitektens roll viktig

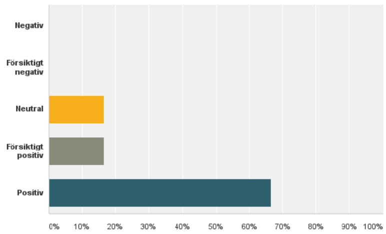
Q6.4: Vad tror du skulle vara fördelarna/nackdelarna med modell nr4?

Svarade: 5 Hoppade över: 27

- Miljötänket i denna modell är positivt
- Det handlar om resurser huruvida denna modell skulle vara aktuell; är du ett stort företag sparar du antagligen resurser (behöver inte använda tid internt utan kan leasa ut till någon som kan sin sak), är du ett litet företag blir denna modell antagligen inte ekonomisk försvarbar.
- Vet inte
- Bra att du slipper upphandlingsjobbet, någon med kunskap sköter detta ist.
- Även här blir inredningsarkitektens jobb viktigt

Q11: Om leverantören erbjuder en databas där du skulle kunna hitta information om ditt möbelinnehav, vad är din inställning till detta?

Svarade: 12 Hoppade över: 20

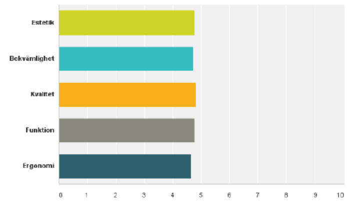


Svarsval	Svar	
Negativ	0,00%	0
Försiktigt negativ	0,00%	0
Neutral	16,67%	2
Försiktigt positiv	16,67%	2
Positiv	66,67%	8
Totalt		12

- Skulle vara värdefullt med denna typ av spårbarhet, kan hålla koll på vad som finns inom företaget, hur gamla möblerna är osv. Fungerar som en kvalitetsförsäkring som underlättar arbetet med att hålla koll.

Q12: Vad är din inställning till nya kontorsmöbler kopplade till följande aspekter (dvs hur väl uppfyller nya möbler din kravställning gällande nedan asp):

Svarade: 24 Hoppade över: 8

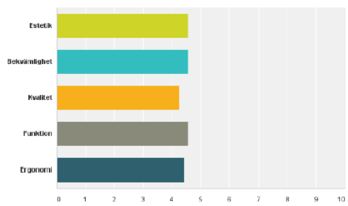


	Negativ	Försiktigt negativ	Neutral	Försiktigt positiv	Positiv	Totalt	Viktat genomsnitt
Estetik	0,00% 0	0,00% 0	4,35% 1	13,04% 3	82,61% 19	23	4,78
Bekvämlighet	0,00% 0	0,00% 0	4,17% 1	20,83% 5	75,00% 18	24	4,71
Kvaltet	0,00% 0	0,00% 0	0,00% 0	16,67% 4	83,33% 20	24	4,83
Funktion	0,00% 0	0,00% 0	8,33% 2	4,17% 1	87,50% 21	24	4,79
Ergonomi	0,00% 0	0,00% 0	13,04% 3	8,70% 2	78,26% 18	23	4,65

- Funktion och ergonomi är mkt viktigt

Q13: Vad är din inställning till återtillverkade (med full garanti) kontorsmöbler kopplade till följande aspekter (dvs hur väl uppfyller återtillv. möbler din kravställning gällande nedan asp) :

Svarade: 23 Hoppade över: 9

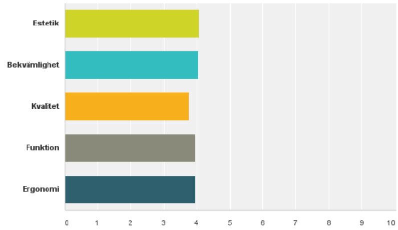


	Negativ	Försiktigt negativ	Neutral	Försiktigt positiv	Positiv	Totalt	Viktat genomsnitt
Estetik	0,00% 0	0,00% 0	13,04% 3	17,39% 4	69,57% 16	23	4,57
Bekvämlighet	0,00% 0	4,35% 1	8,70% 2	13,04% 3	73,91% 17	23	4,57
Kvaltet	0,00% 0	13,04% 3	13,04% 3	8,70% 2	65,22% 15	23	4,26
Funktion	0,00% 0	0,00% 0	17,39% 4	8,70% 2	73,91% 17	23	4,57
Ergonomi	0,00% 0	4,35% 1	17,39% 4	8,70% 2	69,57% 16	23	4,43

- Vet inte, jag har ingen erfarenhet av detta

Q14: Vad är din inställning till renoverade/uppfräschade möbler (med viss garanti) kontorsmöbler kopplade till följande aspekter (dvs hur väl uppfyller renov/uppfr möbler din kravställning gällande nedan asp) :

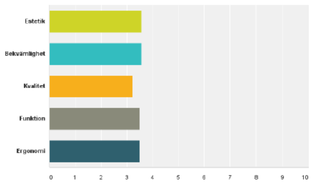
Svarade: 24   Hoppade över: 8



	Negativ	Försiktigt negativ	Neutral	Försiktigt positiv	Positiv	Totalt	Viktat genomsnitt
Estetik	**8,33%** 2	**0,00%** 0	**12,50%** 3	**33,33%** 8	**45,83%** 11	24	4,08
Bekvämlighet	**8,33%** 2	**0,00%** 0	**16,67%** 4	**29,17%** 7	**45,83%** 11	24	4,04
Kvalitet	**8,33%** 2	**8,33%** 2	**20,83%** 5	**25,00%** 6	**37,50%** 9	24	3,75
Funktion	**8,33%** 2	**0,00%** 0	**29,17%** 7	**12,50%** 3	**50,00%** 12	24	3,96
Ergonomi	**8,33%** 2	**4,17%** 1	**20,83%** 5	**16,67%** 4	**50,00%** 12	24	3,96

Q15: Vad är din inställning till begagnade kontorsmöbler kopplade till följande aspekter (dvs hur väl uppfyller beg. möbler din kravställning gällande nedan asp) :

Svarade: 24   Hoppade över: 8

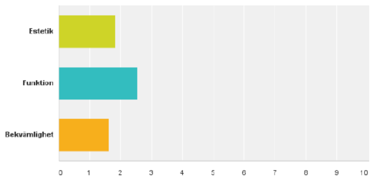


	Negativ	Försiktigt negativ	Neutral	Försiktigt positiv	Positiv	Totalt	Viktat genomsnitt
Estetik	**12,50%** 3	**12,50%** 3	**16,67%** 4	**20,83%** 5	**37,50%** 9	24	3,58
Bekvämlighet	**12,50%** 3	**8,33%** 2	**16,67%** 4	**33,33%** 8	**29,17%** 7	24	3,58
Kvalitet	**12,50%** 3	**29,17%** 7	**16,67%** 4	**8,33%** 2	**33,33%** 8	24	3,21
Funktion	**12,50%** 3	**12,50%** 3	**20,83%** 5	**20,83%** 5	**33,33%** 8	24	3,50
Ergonomi	**12,50%** 3	**8,33%** 2	**25,00%** 6	**25,00%** 6	**29,17%** 7	24	3,50

- Det ska passa mig. Utseendet och estetiken kommer först. Annars ingen skillnad.
- Bra på alla, om det är fräscht
- Jag vill ha samma kvalitet för alla alternativ (nya likväl som begagnade), begagnat kan vara bra

Q16: Rangordna nedan aspekters påverkan gällande när en möbel börjar upplevas som gammal

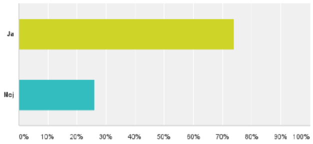
Svarade: 24   Hoppade över: 8



	1	2	3	Totalt	Score
Estetik	**25,00%** 6	**33,33%** 8	**41,67%** 10	24	1,83
Funktion	**62,50%** 15	**29,17%** 7	**8,33%** 2	24	2,54
Bekvämlighet	**12,50%** 3	**37,50%** 9	**50,00%** 12	24	1,63

Q17: Tycker du att möblerna på din arbetsplats byts tillräckligt frekvent?

Svarade: 23 Hoppade över: 9

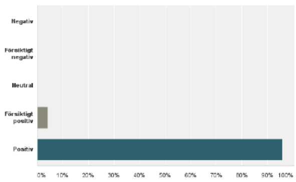


Svarsval	Svar	
Ja	**73,91%**	17
Nej	**26,09%**	6
Totalt		**23**

- Nästan överdrivet noga med estetik, kvalitet och ergonomi på min nuvarande arbetsplats.

Q18: Hur ställer du dig till idén att möbler ska cirkulera (uppfräschas, återtillverkas, återanvändas etc) så många gånger som möjligt?

Svarade: 24 Hoppade över: 8



Svarsval	Svar	
Negativ	**0,00%**	0
Försiktigt negativ	**0,00%**	0
Neutral	**0,00%**	0
Försiktigt positiv	**4,17%**	1
Positiv	**95,83%**	23
Totalt		**24**

- Bra att minimirea klimatpåverkan. Industrierna ska ta ansvar
- Detta är mycket viktigt ur kretslopp- och hållbarhetsperspektiv
- Bra för miljön. Då slängs inte lika mycket och det är även ekonomiskt positivt
- Jättebra
- Självklart ska man återanvända det som finns
- Miljömässigt bra. Ekonomiskt, det är billigare att fräscha upp
- Miljömässigt är det bra att cirkulera, bra grejer är svårslitna.

REFERENCES

Abbey, J. D., Meloy, M.G., Blackburn, J. and Guide, V.D. R. Jr. (2015) Consumer markets or remanufactured and refurbished products. *California Management Review* 57(4).

Armstrong, C.M., Niinimäki, K., Kujala, S., Karell, E. and Lang, C. (2015) Sustainable product-service systems for clothing: exploring consumer perceptions of consumption alternatives in Finland. *Journal of Cleaner Production* 97 30-39.

Bednárik, E. and Pakainé Kováts, J. (2010) Consumer behavioural model on the furniture market. *Acta Silv. Lign. Hung* 6 75–88.

Besch, K. (2004) Product-service systems for office furniture: barriers and opportunities on the European market. *Journal of Cleaner Production* 13 (2005) 1083-1094.

Blank, S. and Dorf, B. (2012) *The startup owner's manual. The step-by-step guide for building a great company.* Pescadero: K&S Ranch.

Collis, J. and Hussey, R. (2014) *Business Research: Practical guide for undergraduate and postgraduate students, 4th edition.* Basingstoke: Palgrave Macmillan.

EMF: Ellen MacArthur Foundation (2013) *Towards the circular economy, volume 1, Economic and business rationale for an accelerated transition.* Cowes: Ellen MacArthur Foundation.

EMF: Ellen MacArthur Foundation (2015) *Growth Within: A circular economy vision for a competitive Europe.* Cowes: Ellen MacArthur Foundation.

Freitas, H., Oliveira, M., Jenkins, M. and Popjoy, O. (1998) *The focus group, a qualitative research method.* Merrick School of Business, University of Baltimore (1998) 1-22.

IVA: Ingenjörsvetenskapsakademin. (2016) *Resource efficiency Pathways to 2050*. http://iva.se/publicerat/resource-efficiency--pathways-to-2050/ Accessed 20 July 2016.

Krueger, R. A. and Casey, M. A. (2002) Designing and conducting focus group interviews. *Social Analysis, Selected Tools and Techniques* 2002 4-23.

Mylan, J. (2015) Understanding the diffusion of sustainable product service systems: Insights from the sociology of consumption and practice theory. *Journal of Cleaner Production* 97 13–20.

Naturvårdsverket. (2014) *Rapport 6619 Avfall i Sverige 2012*. Naturvårdsverket. http://www.naturvardsverket.se/Documents/publikationer6400/978-91-620-6619-2.pdf?pid=13196 Accessed 2 August 2016.

Osterwalder, A. and Pigneur, Y. (2010) *Business model generation: A handbook for visionaries, game changers, and challengers*. Hoboken, NJ: John Wiley & Sons.

Piscicelli, L., Cooper, T. and Fisher, T. (2015) The roles of values in collaborative consumption: insights from a product-service system for lending and borrowing in the UK. *Journal of Cleaner Production* 97: 21-29.

Reim, W., Parida, V. and Örtqvist, D. (2014) Product-Service Systems (PSS) business models and tactics – a systematic literature review. *Journal of Cleaner Production* 97 61–75.

Rexfelt, O. and Hiort af Ornäs, V. (2009) Consumer acceptance of prodict-service systems: designing for relative advantages and uncertainty reductions. *Journal of Manufacturing Technology Management* 20(5) 674 -699.

SCB. (2016) Statistiska Centralbyrån. *Statistikdatabasen*. http://www.statistikdatabasen.scb.se/pxweb/en/ssd/START__MI__MI0305/MI0305T02/?rxid=88f35f6a-12a8-4513-8a9d-ed286592b070 Accessed 18 June 2016.

Tukker, A. (2013) Product services for a resource-efficient and circular economy – a Review. *Journal of Cleaner Production* 97 76-91.

Tukker, A. and Tischner, U. (2006) Product-services as a research field: past, present and future. Reflections from a decade of research. *Journal of Cleaner Production* 14(17) 1552-1556.

Vezzoli, C., Ceschin, F., Diehl, J.C. and Kohtala, C. (2015) Design challenges to widely implement ‘Sustainable Product-Service Systems’. *Journal of Cleaner Production* 97 1-12.