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## Business Models for Sustainable Consumption

### Identifying and Overcoming Barriers to Rental and Reuse of Home Furnishings

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# Business Models for Sustainable Consumption

Identifying and Overcoming Barriers to Rental and Reuse of Home Furnishings

HEATHER A. SCHOONOVER | IIIIEE | LUND UNIVERSITY





## Business Models for Sustainable Consumption



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Identifying and Overcoming Barriers to Rental and  
Reuse of Home Furnishings

Heather A. Schoonover



**LUND**  
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DOCTORAL DISSERTATION

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<b>Abstract</b>			
<p>It is widely recognised that society is consuming at levels and in ways that are unsustainable. Sustainable business models, broadly defined as those that consider economic, ecological and social value, hold promise for shifting consumption patterns. By facilitating activities such as rental and reuse, including second-hand, repair, refurbishment, and upcycling, they can help to provide more sustainable options for consumers to acquire, utilise and dispose of products. This, in turn, can extend product lifetimes, keep products from going to waste, and reduce the need for new production. Yet despite the potential of these business models, there are still relatively few of them in the business-to-consumer market.</p> <p>This thesis aims to understand why we do not see more rental and reuse business models in practice, and how these models can become more prevalent. It does so by addressing two research questions: what barriers rental and reuse business models encounter, and how these barriers can be overcome. It focuses on the home furnishings sector, while also bringing in lessons from and for other consumer goods.</p> <p>Through interviews with consumer goods rental companies, document analysis of company marketing materials, and a case study of Sweden's pioneering reuse-based shopping mall, ReTuna, the thesis finds that rental and reuse business models encounter a number of barriers regarding finance and economics, product design, capabilities, relationships, consumers, and policy. Home furnishings pose particular challenges due to their bulky nature, wide range of products, and uncertainties regarding consumer use patterns. The thesis also finds strategies through which the barriers can be addressed, including reducing or eliminating the barriers directly through the design of the business models, involving other actors, associating new offerings with concepts that are already familiar to consumers, and outweighing or offsetting the barriers by emphasising added benefits. In addition, it suggests that consumer-related barriers regarding desire for ownership and hygiene concerns about not-new goods may not be as substantial as previous research would imply.</p> <p>The findings in this thesis are relevant for researchers interested in understanding how business models that can facilitate sustainable consumption can become more prevalent, as well as for companies and other societal actors seeking or struggling to offer opportunities for rental and reuse of home furnishings and other consumer goods.</p>			
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Heather A. Schoonover



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**MADE IN SWEDEN** 

*To my family, who have always supported me in my endeavours,  
whatever they may be*



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*Heather A. Schoonover*

Lund, Sweden

August 2022

# Abstract

It is widely recognised that society is consuming at levels and in ways that are unsustainable. Sustainable business models, broadly defined as those that consider economic, ecological and social value, hold promise for shifting consumption patterns. By facilitating activities such as rental and reuse, including second-hand, repair, refurbishment, and upcycling, they can help to provide more sustainable options for consumers to acquire, utilise and dispose of products. This, in turn, can extend product lifetimes, keep products from going to waste, and reduce the need for new production. Yet despite the potential of these business models, there are still relatively few of them in the business-to-consumer market.

This thesis aims to understand why we do not see more rental and reuse business models in practice, and how these models can become more prevalent. It does so by addressing two research questions: what barriers rental and reuse business models encounter, and how these barriers can be overcome. It focuses on the home furnishings sector, while also bringing in lessons from and for other consumer goods.

Through interviews with consumer goods rental companies, document analysis of company marketing materials, and a case study of Sweden's pioneering reuse-based shopping mall, ReTuna, the thesis finds that rental and reuse business models encounter a number of barriers regarding finance and economics, product design, capabilities, relationships, consumers, and policy. Home furnishings pose particular challenges due to their bulky nature, wide range of products, and uncertainties regarding consumer use patterns. The thesis also finds strategies through which the barriers can be addressed, including reducing or eliminating the barriers directly through the design of the business models, involving other actors, associating new offerings with concepts that are already familiar to consumers, and outweighing or offsetting the barriers by emphasising added benefits. In addition, it suggests that consumer-related barriers regarding desire for ownership and hygiene concerns about not-new goods may not be as substantial as previous research would imply.

The findings in this thesis are relevant for researchers interested in understanding how business models that can facilitate sustainable consumption can become more prevalent, as well as for companies and other societal actors seeking or struggling to offer opportunities for rental and reuse of home furnishings and other consumer goods.





# Popular Science Summary

It is widely recognised that society is consuming at levels and in ways that are unsustainable. At current global consumption rates, humanity's annual demand for ecological resources exceeds the Earth's ability to regenerate those resources by a factor of 1.8 – meaning we consume the equivalent of 1.8 Earths every year. At the same time, the world disposes of more than two billion tonnes of municipal solid waste annually, a number that is expected to increase by 70% by 2050.

Whereas many studies put the responsibility for consumption problems – and thus solutions – on individual consumers, others recognise that consumption decisions and practices are influenced by the broader contexts in which they occur. For example, consumers cannot choose to use public transportation if the infrastructure does not exist. Similarly, they cannot choose to purchase second-hand products or to rent products rather than buy them if companies and other organisations do not provide the opportunity to do so.

Sustainable business models hold promise for shifting consumption patterns. By facilitating activities such as rental and reuse (including second-hand, repair, refurbishment, and upcycling), they can help to extend product lifetimes, keep products from going to waste, and reduce the need for new production. Yet despite the potential of these business models, there are still relatively few of them in the business-to-consumer market.

This thesis aims to understand why we do not see more rental and reuse business models in practice, and how these models can become more prevalent. It does so by addressing two research questions: what barriers rental and reuse business models encounter, and how these barriers can be overcome. It focuses specifically on the home furnishings sector (furniture and home textiles), which is a sector with both substantial environmental impacts and exciting business model innovation, while also bringing in lessons from and for other consumer goods.

The research finds that companies and other actors encounter a number of barriers in developing and implementing rental and reuse business models. These include barriers concerning finance and economics, product design, capabilities, relationships, consumers, and policy. For example, rather than simply selling products, companies need to figure out ways to get the products back, as well as to repair or refurbish them if needed. They thus need to develop or acquire additional capabilities, which often also requires developing new relationships with other

actors. Barriers may also arise due to products not being designed for easy disassembly or repair, which can make reuse more difficult. Home furnishings pose particular challenges due to the size and weight of furniture and the wide variety of products they encompass. Companies also encounter consumer-related barriers, such as concerns about the quality, functionality, cleanliness and cost of not-new goods, and uncertainties due to the novelty of rental and reuse.

The research also finds a number of ways that companies can address these barriers. One is through changes in aspects of their business models. For example, companies can offer modular furniture that is easier to store, transport and maintain. A second way is to involve other actors. This can range from working with other companies that have the needed capabilities, to integrating non-corporate actors into the business model. As an example of the latter, the thesis presents a case study of Sweden's pioneering reuse-based shopping mall, ReTuna, in which a local municipality has played a key role. Third, to address consumer uncertainties, companies can link their new offerings to concepts with which consumers are already familiar. For example, one company that offers a subscription service for sheets and towels markets its offer as "a hotel experience at home". Similarly, ReTuna was designed to mimic a traditional shopping mall in order to make second-hand shopping seem just like shopping anywhere else. Finally, companies can outweigh or offset the barriers by emphasising added benefits. For example, rather than seeking to reduce the cost of rental, companies can communicate benefits such as access to high-quality products or the flexibility to meet changing needs.

Understanding the barriers that rental and reuse business models encounter and the opportunities to overcome these barriers can help companies and other actors anticipate and address the barriers and thus increase the likelihood of successful implementation. This, in turn, can provide more sustainable options for consumers to acquire, utilise and dispose of home furnishings and other consumer goods, and thereby decrease the negative environmental impacts of consumption.

# List of Papers

- Paper I      **Schoonover, H.A.**, Mont, O., & Lehner, M. (2021). Exploring barriers to implementing product-service systems for home furnishings. *Journal of Cleaner Production* 295, 126286. <https://doi.org/10.1016/j.jclepro.2021.126286>
- Paper II      Borg, D., Mont, O., & **Schoonover, H.** (2020). Consumer Acceptance and Value in Use-Oriented Product-Service Systems: Lessons from Swedish Consumer Goods Companies. *Sustainability* 12, 8079. <https://doi.org/10.3390/su12198079>
- Paper III     **Schoonover, H.A.**, Mont, O., & Klintman, M. (2022). Communicating access-based business models: Company framings of home furnishings rental. *Cleaner and Responsible Consumption* 4, 100047. <https://doi.org/10.1016/j.clrc.2022.100047>
- Paper IV     **Schoonover, H.A.**, Mont, O., & Voytenko Palgan, Y. Innovations in reuse: a case study of ReTuna, the world's first reuse-based shopping mall. Submitted.

# Paper Contributions

- Paper I HAS designed the study in collaboration with OM and ML. HAS performed the literature review, formulated the research questions, created the analytical framework, and developed the interview guide. HAS led the semi-structured interviews with assistance from OM. HAS analysed the interview data, wrote the original draft of the paper with feedback from OM, and submitted the paper. HAS collaborated with OM and ML to make revisions in response to two rounds of peer review, wrote the responses to reviewers, and got the paper through to final publication.
- Paper II HAS and OM helped to conceptualise and supervise the study, which was led by DB. DB carried out the analysis and wrote the master thesis in which this work originated. HAS helped develop the thesis into an academic paper, contributing additional analysis and playing a substantial role in writing and revising the paper.
- Paper III HAS designed the study and performed the literature review in collaboration with OM and MK. HAS created the analytical framework, performed the analysis and synthesised the findings. HAS wrote the original draft of the paper, with feedback from OM and MK, and submitted the article. HAS revised the article pursuant to peer reviews, wrote the response to reviewers, and got the paper through to final publication.
- Paper IV HAS designed the study, performed the literature review, developed the initial interview questions, and led the initial interviews. Based on the findings, the authors jointly discussed repositioning the paper. Following a recommendation from YVP, HAS performed additional literature review and outlined a new analytical framework. HAS, YVP and OM jointly developed additional interview questions and carried out the mobile research lab. HAS wrote most of the original draft, with input from OM and YVP, and submitted the paper.

# Other Publications

## Conference Papers

**Schoonover, H.** (2021). Innovative Business Models for Reuse: A Case Study of the World's First Reuse-Based Shopping Mall. 6<sup>th</sup> International Conference on New Business Models, Halmstad, Sweden (online due to COVID-19), 9-11 June 2021.

**Schoonover, H.**, Mont, O. and Klintman, M. (2021). Communicating Access-Based Consumption: Company Framings of Home Furnishings Rental. 4<sup>th</sup> Product Lifetimes and the Environment (PLATE) Conference, Limerick, Ireland (online due to COVID-19), 26-28 May 2021.

**Schoonover, H.**, Mont, O., and Lehner, M. (2021). Facilitating sustainable consumption through innovative business models. Knowledge for Sustainable Development – Lund University Research Conference, Lund, Sweden (online due to COVID-19), 4 May 2021.

**Schoonover, H.** (2020). Understanding and Overcoming Barriers to Leasing Business Models in the Home Furnishings Sector. Sustainable Consumption Research and Action Initiative (SCORAI) Conference: Sustainable Consumption and Social Justice in an Urbanizing World, Boston, USA and Stockholm, Sweden (online due to COVID-19), 10-12 June 2020.

**Schoonover, H.** (2019). An Overlooked Aspect of Sustainable Business Models: Consumption Practices. 4<sup>th</sup> International Conference on New Business Models: New Business Models for Sustainable Entrepreneurship, Innovation, and Transformation, Berlin, Germany, 1-3 July 2019.

Palm, J., Richter, J.L, Curtis, S., Wickenberg, B., **Schoonover, H.** (2018). Article Incubator: Building Interdisciplinary Academic Writing Skills Amongst PhD Students. Lund University Faculty of Engineering Pedagogical Inspiration Conference, Lund, Sweden, 6 December 2018.

## Project Reports and Briefs

Mont, O. Lehner, M., and **Schoonover, H.** (2021). Business Models for Sustainable Consumption: Inspirational Examples from the Furniture and Home Textiles Sectors. Mistra Sustainable Consumption, Report 1.9. KTH Royal Institute of Technology, Stockholm, Sweden.

Lehner, M. **Schoonover, H.**, and Mont, O. (2021). Business models for sustainable consumption – Inspirational examples from the furniture and home textiles sectors. Mistra Sustainable Consumption, Policy Brief 1.2. KTH Royal Institute of Technology, Stockholm, Sweden.

Lehner, M., **Schoonover, H.**, and Mont, O. (2021). Business models to mainstream sustainable consumption practices. Mistra Sustainable Consumption, Policy Brief 1.1. KTH Royal Institute of Technology, Stockholm, Sweden.

Lehner, M., **Schoonover, H.**, Mont, O., Bradley, K., and Svenfelt, Å. (2019). Att inreda hållbart? En kartläggning av vad hållbar heminredning kan innebära. [To furnish sustainably? An overview of what sustainable home furnishings can mean.] Mistra Sustainable Consumption, Report 1.1. KTH Royal Institute of Technology, Stockholm, Sweden.

# Preface

The research in this thesis was carried out at the International Institute for Industrial Environmental Economics (IIIEE) at Lund University. The IIIEE is an interdisciplinary centre characterised by solutions-oriented research and collaboration with societal actors in order to meet sustainability challenges.

The research took place within the research programme Sustainable Consumption: from Niche to Mainstream, funded by the Swedish Foundation for Strategic Environmental Research (Mistra). The Mistra Sustainable Consumption research programme aims to facilitate a transition to sustainable consumption practices in the areas of home furnishings, food and vacationing, with the goal that by 2030 sustainable consumption practices that currently take place on a small scale will have become mainstream in Sweden. To that end, it brings together a number of different researchers, businesses, municipalities and non-governmental organisations (NGOs) to explore what sorts of business models, policy mechanisms, and civil society involvement might be needed to help sustainable consumption become more widespread.

The research has also been influenced by my past experience as a practitioner. Prior to embarking on this PhD, I worked as a brand, product and sustainability manager for a fast-moving consumer goods company, and as a project manager and policy analyst at a sustainability-focused “think-and-do” tank. I am thus keenly interested in ensuring that my research has practical relevance for companies and other societal actors.



# Figures and Tables

Figure 1. Connections between the four papers in this thesis

Figure 2. Relationships between the foundations of this thesis

Figure 3. Actors involved in the ReTuna reuse-based shopping mall

Figure 4. The entrance to and shops at the ReTuna reuse-based shopping mall

Figure 5. Examples of home furnishings rental company messaging

Table 1. Overview of the four papers in this thesis

Table 2. Framework of barriers encountered by rental and reuse business models

Table 3. Framework of strategies to overcome barriers to rental and reuse business models

# 1 Introduction

## 1.1 Background

It is widely recognized that human society is putting pressure on our natural systems to the extent that these systems are no longer sustainable (Rockström et al., 2009; Wackernagel et al., 1999). Global material use has nearly quadrupled in the past 50 years, despite only a doubling of the population, and is forecast to double between now and 2050 (de Wit et al., 2022). At current global consumption rates, humanity's annual demand for ecological resources exceeds the Earth's ability to regenerate those resources by a factor of 1.8 – meaning we consume the equivalent of 1.8 Earths every year (Global Footprint Network, 2022). At the same time, the world disposes of two billion tonnes of municipal solid waste annually, a number that is expected to increase by 70% by 2050 (Kaza et al., 2018).

Historically, many of the efforts to reduce such negative impacts have focused on production (Cohen, 2005). More recent efforts, however, have acknowledged that the widespread, systemic societal changes that are needed to address sustainability challenges must also include changes to current patterns of consumption (Cohen, 2007; Reisch & Thøgersen, 2015). These changes must go beyond simply shifting consumption to “greener” choices, such as more fuel-efficient vehicles, to fundamentally changing how and how much we consume (Ceschin & Gaziulusoy, 2016; Seyfang, 2009).

Whereas many studies put the responsibility for consumption problems – and thus solutions – on individual consumers, others recognise that consumption decisions are influenced by the broader contexts in which they occur. For example, consumers cannot choose to use public transportation if the infrastructure does not exist. Similarly, they cannot choose to purchase refurbished products or to rent products rather than buy them if companies and other organisations do not provide the opportunity to do so. Influencing consumption patterns thus requires going beyond focusing only on individual consumer behaviour change to addressing the larger systems of provision that shape the context in which consumption decisions take place (Spaargaren, 2011; Tukker et al., 2008).

Sustainable business models, broadly defined as those that consider not only economic but also ecological and social value (Lüdeke-Freund & Dembek, 2017), hold promise for changing both systems of provision and consumption patterns.

They can do so in different ways, such as by shifting the focus of companies' offerings from products to services (Mont, 2002b; Tukker, 2015), providing access rather than ownership (Bardhi & Eckhardt, 2012; Belk, 2014), facilitating reuse (Bocken et al., 2016; Nußholz, 2017) or reducing consumer demand for new items (Bocken & Short, 2016). This, in turn, can help to extend product lifetimes, keep products out of the waste stream, and reduce the need for new production (Baines et al., 2007; Ceschin & Gaziulusoy, 2016; T. Cooper, 2010; den Hollander et al., 2017; Vezzoli et al., 2015). In other words, sustainable business models can help make more sustainable consumption choices more available to, and more feasible for, more consumers (Bocken et al., 2022; Lüdeke-Freund et al., 2019).

## 1.2 Problem Definition and Knowledge Gaps

Despite the potential of sustainable business models to facilitate sustainable consumption, there is still a relative lack of these models in the business-to-consumer market (Geissdoerfer et al., 2018). Previous research finds many barriers to the implementation and acceptance of sustainable business models. These range from financial concerns (Linder & Williander, 2017) and lack of consumer acceptance (Camacho-Otero et al., 2018; Kirchherr et al., 2018; Laukkanen & Patala, 2014) to challenges related to incorporating different notions of value (Evans et al., 2017) and redesigning value chains (Tura et al., 2019).

Better understanding these barriers and identifying opportunities to overcome them is crucial if sustainable business models are to live up to their potential to help shift consumption patterns in a more sustainable direction. Although research has been done on barriers to sustainable business models somewhat generally (e.g., Kirchherr et al., 2018; Laukkanen & Patala, 2014; Mont, 2002a; Mont et al., 2017; Tura et al., 2019), previous research suggests that the barriers vary depending on the specific type of business model (Guldmann & Huulgaard, 2020; Vermunt et al., 2019). There has also been a call for research to understand whether and how barriers differ based on the particular sector and products involved (Kirchherr et al., 2018; Vermunt et al., 2019). Thus, to understand the barriers to sustainable business models and identify opportunities to overcome them, it is important to look at specific business models in specific sectors (Kirchherr et al., 2018).

One sector that is ripe for more sustainable business models is home furnishings (furniture and home textiles). Consumption of furniture and home textiles is on an upward trend, driven in part by seasonal trends (Conlon, 2019) and increasingly mobile lifestyles (Jansen, 2019) that result in more frequent replacement. In Sweden, consumption of furniture and household items increased by 47% between 2009 and 2019, while home textiles increased by 78% (Kruse et al., 2021). At the same time, furniture is one of the most frequently disposed of products (Fortuna &

Diyamandoglu, 2017a). Approximately 10 million tons of furniture are discarded in the EU each year, of which an estimated 80%-90% is either incinerated or sent to landfill (Forrest et al., 2017). Many of these products are disposed of before the end of their useful life (Arvidsson et al., 2016). EU consumers similarly dispose of nearly six million tons of textiles<sup>1</sup> a year, 75% of which are neither reused nor recycled (Beasley & Georgeson, 2014). In addition to taking up space in quickly filling landfills, replacing discarded items with new furnishings generates substantial environmental impacts, with the majority of furnishings-related impacts occurring in the raw materials and production stages (Cordella & Hidalgo, 2016; Donatello et al., 2017; van der Velden et al., 2014).

Home furnishings is also a sector that is seeing increasing interest in addressing these environmental impacts. Both the EU Waste Framework Directive and the EU Circular Economy Action Plan have identified furniture as a future priority (T. Cooper et al., 2021). There is also a proposal to expand the EU Ecodesign Directive to include products such as furniture, mattresses and textiles (European Commission, 2022).

Strategies such as renting, repairing, refurbishing, upcycling and purchasing second-hand home furnishings have the potential to reduce consumption of home furnishings, whether by decreasing the volume or frequency of purchases, extending product lifetimes, or keeping products from going to waste (T. Cooper, 2010; den Hollander et al., 2017; Kjaer et al., 2019). At present, however, most of them are taking place on a small scale (Pieroni et al., 2019) – for example, through online peer-to-peer platforms or repair cafés (Bradley & Persson, 2022; Forrest et al., 2017). Larger-scale efforts can be found with regard to office furniture (Bartlett, 2009; Besch, 2005; Fisher et al., 2011), green public procurement policies (Donatello et al., 2017; Öhgren et al., 2019), and reuse by third sector organizations (Alexander & Smaje, 2008; Curran & Williams, 2010), but seeing as over 80% of furniture consumption takes place in the domestic sector (Forrest et al., 2017), there is clearly a need to address furnishings consumption by individuals.

New business models that can support more sustainable home furnishings consumption have begun to emerge. For example, IKEA has recently launched several initiatives, including second-hand sales, furniture buy-back, and home furnishings rental (Milne, 2019). ReTuna,<sup>2</sup> a shopping mall occupied entirely by retailers offering second-hand, repaired, refurbished and upcycled products, similarly aspires to drive changes in consumption practices through its business model. However, while both rental and reuse models hold promise for home furnishings, these business models remain few and far between.

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<sup>1</sup> This number includes both clothing and home textiles, as most statistics about textile disposal do not differentiate between these products.

<sup>2</sup> <https://www.retuna.se/>

Rental and reuse business models for home furnishings have not been well explored in academic literature to date. Previous research on furnishings has addressed topics such as disposal patterns (Fortuna & Diyamandoglu, 2017a; Lehner et al., 2020), eco-design of furnishings products (Bosch et al., 2017; Bumgardner & Nicholls, 2020; Prendeville et al., 2017), corporate social responsibility in furnishings companies (Høgevold, 2011), rental and reuse of office furniture (Besch, 2005; Costa et al., 2015; Fisher et al., 2011; Parker et al., 2015) and reuse in the public and non-profit sectors (Alexander & Smaje, 2008; Curran & Williams, 2010; Öhgren et al., 2019). However, business models that can facilitate sustainable consumption of home furnishings have been largely overlooked. A recent systematic literature review assessing the state-of-the-art in research about furniture lifetimes concluded that knowledge needed to support the creation and implementation of business models that can reduce the negative environmental impacts of furnishings consumption is currently lacking (T. Cooper et al., 2021). Investigating this sector can reveal whether home furnishings pose any unique challenges to rental and reuse business models, versus barriers that may apply more widely. In addition, because many home furnishings products exhibit characteristics previously thought to reduce their suitability for rental, including being relatively inexpensive, used frequently, influenced by fashion, and not requiring much maintenance (Tukker & Tischner, 2006a), focusing on home furnishings can reveal insights about the potential of rental models for similar consumer goods.

### 1.3 Research Objective and Research Questions

In light of the research gaps, this thesis aims to understand why we do not see more home furnishings rental and reuse business models in practice, and how these rental and reuse models can become more prevalent. It does so through the following research questions:

RQ1: What barriers do rental and reuse business models encounter?

RQ2: How can these barriers be overcome?

These questions are explored in the context of the home furnishings sector, while also bringing in lessons from and for other consumer goods.

### 1.4 Scope and Delimitations

This thesis focuses on two broad types of *business models* that can help to facilitate sustainable consumption: those that provide access rather than ownership (specifically rental) and those that extend the life of owned products (namely reuse,

including second-hand, repair, refurbishment, and upcycling). These models were chosen both because they are applicable to home furnishings (European Furniture Industries Confederation, 2020) and because they are areas that are experiencing substantial activity and innovation (Forrest et al., 2017; Mont et al., 2021). This is not to say that there are not other business models or strategies that can facilitate sustainable home furnishings consumption. For example, for products with low use-phase impacts, including furniture (Cordella & Hidalgo, 2016), maintaining products one already owns retains more value than acquiring additional products through any means (Ellen MacArthur Foundation, 2013). Product design is also a key component in enabling sustainable consumption, including designing for durability, emotional attachment, disassembly or adaptability (Bakker et al., 2014; Bocken et al., 2016; Ceschin & Gaziulusoy, 2016). As product design and business models go hand-in-hand (Bocken et al., 2016; De los Rios & Charnley, 2017; Sumter et al., 2018), product design is addressed in this thesis in the context of enabling or hindering rental and reuse business models, but is not in itself explored in depth. Sharing business models, which aim to make use of idle capacity and entail non-exclusive access to products (Curtis & Mont, 2020), are also not included, as they were considered to be less relevant for home furnishings.

In focusing on business models, this thesis takes the perspective of what *companies* can do to facilitate sustainable consumption of household goods. It thereby addresses the business-to-consumer market, keeping both the business-to-business and peer-to-peer markets out of scope. Further, although consumer-related drivers and barriers with respect to rental and reuse business models are addressed, they are seen in the context of how companies have encountered them and what companies have done to address them. Research directly with consumers was beyond the scope of this thesis, for several reasons. First, there has already been a considerable amount of research directly with consumers exploring drivers for and barriers to rental and reuse (Armstrong et al., 2015; Bovea et al., 2018; Catulli, 2012; Cherry & Pidgeon, 2018; Day et al., 2020; Durgee & Colarelli O'Connor, 1995; Fota et al., 2019; Mukendi & Henninger, 2020; Petersen & Riisberg, 2017; Poppelaars et al., 2018; Rexfelt & Hiort af Ornäs, 2009; van Weelden et al., 2016; Ylä-Mella et al., 2015), including one specifically addressing home furnishings (Gullstrand Edbring et al., 2016). Many of these studies are included in the literature reviews for Papers I-IV. Second, many consumer studies are based on hypothetical scenarios and consumers' expressed preferences, which, in the case of topics that can be seen as environmentally or socially desirable, can be prone to a social desirability bias (Bryman & Bell, 2015, p. 234). One way that was considered to address the latter challenge was to interview customers of the companies included in the papers for this thesis, but practical limitations, including the COVID-19 pandemic, precluded doing so.

From a *sector* perspective, this thesis focuses primarily on home furnishings (furniture and home textiles), which, as described above, is a sector with both

substantial environmental impacts and substantial opportunities to address these impacts. However, two of the papers do include other consumer goods. First, given the relatively small number of home furnishings rental companies in Sweden, Paper II also brings in Swedish companies offering rental of similar types of consumer goods, namely clothing and eyeglasses. These other examples do provide learnings about home furnishings, including better understanding what is unique about home furnishings compared to other sectors, thus supplementing the broader literature reviews in Papers I and II with empirical findings. Second, because Paper IV considers the business model of the ReTuna reuse-based shopping mall as a whole, it does not specifically differentiate between the different types of goods included in the model. However, home furnishings make up a substantial portion of ReTuna's offerings, with five of the 14 shops focusing exclusively on home furnishings and an additional three selling home furnishings alongside other goods including clothing and children's items. In instances where interviewees did mention challenges related to specific products, these are included in the key findings in Chapter 4.

*Geographically*, this thesis focuses primarily on Sweden. This was determined in part by the Mistra Sustainable Consumption research programme in which the research took place<sup>3</sup> but also by the relevance of Sweden in terms of both a need for sustainable consumption and the prominence of its home furnishings sector. Despite its reputation for sustainability, Sweden boasts the third highest consumption rate in the EU and accounts for 3% of the world's material footprint despite being home to only 0.13% of the world's population (Conde et al., 2022). Sweden is well-known for its home furnishings sector (Renda et al., 2014; Statista, n.d.; Vanacore et al., 2021) and has recently seen substantial innovation toward more sustainable furnishings business models by both the private and public sectors (Rex et al., 2020). Sweden also has strong governmental support for engaging companies and other actors in moving toward a more sustainable and circular economy, such as its recent National Strategy for a Circular Economy (Government Offices of Sweden, 2020). The one exception to the exclusively Swedish focus is Paper III, which, in order to get a broad overview of how companies promote home furnishings rental, looked at messaging by home furnishings companies from around the world.

Finally, from a sustainability perspective, the focus on rental and reuse as avenues for facilitating sustainable consumption is based on the *potential* of these models to contribute to reducing environmental impacts as compared to buying and disposing of new products, as has been suggested by much previous research (e.g., Baines et al., 2007; T. Cooper, 2010; den Hollander et al., 2017; Tukker, 2015; Vezzoli et al., 2015). Life-cycle assessments (LCAs) of furniture and home textiles find that the vast majority of impacts occur in the raw materials and production stages (Cordella & Hidalgo, 2016; Donatello et al., 2017; van der Velden et al., 2014). Thus, business

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<sup>3</sup> <https://www.sustainableconsumption.se/>

models that can potentially extend product lifetimes and reduce the need for new production make sense for these products. However, it is important to acknowledge that no business model is inherently sustainable. The environmental impacts of any business model depend on both the design of the business model and how consumers engage with it (Corvellec & Stål, 2017; Fischer et al., 2015). Yet no matter how well a business model is designed, it must be feasible for companies to implement and must resonate with consumers in order to be successful. This thesis focuses on these latter aspects, investigating the barriers that currently hinder rental and reuse business models. Calculating the environmental impacts of the business models in question is beyond the scope of this thesis. However, further discussion of their environmental implications can be found in the descriptions of rental and reuse in Chapter 2, and in the suggestions for future research in Chapter 6.

## 1.5 Research Process and Overview of Papers

The research in this thesis comprises four peer-reviewed papers, each of which builds on one another (Figure 1). Based on previous research that found barriers to sustainable business models to vary based on the type of model (Guldmann & Huulgaard, 2020), the research began by considering the types of business models that are relevant for reducing consumption of home furnishings. Two types of models were chosen – those that provide access over ownership (namely rental) and those that can extend the life of owned products (namely reuse, including second-hand, repair, refurbishment, and upcycling).

As illustrated in Figure 1, three of the four papers focus on rental, with only one on reuse. This was justified for several reasons. First, as described in the Key Findings chapter, a number of the barriers found for rental also apply to reuse. Second, because home furnishings rental is a relatively new phenomenon, consumer barriers are prevalent, hence undertaking two studies on this aspect. In addition, whereas the rental papers (Papers I-III) encompass essentially one type of business model, the paper on reuse (Paper IV) involves different types of reuse, including second-hand, repair, refurbishment and upcycling.

A short description of each of the papers, including its title, research questions posed within the paper, methods, key findings, and to which of the two overarching thesis research questions it contributes to answering, is provided below and summarised in Table 1.



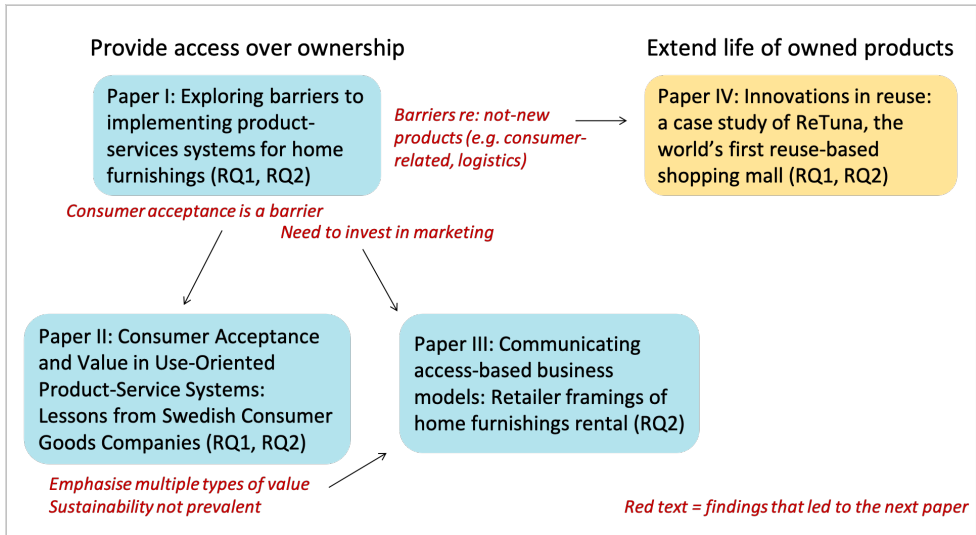


Figure 1. Connections between the four papers in this thesis

### *Paper I: Exploring barriers to implementing product-service systems for home furnishings*

This paper investigates barriers that home furnishings rental companies have encountered in developing and implementing business models and discusses opportunities to overcome those barriers. It thus contributes to answering both RQ1 and RQ2.

After developing an initial analytical framework based on a literature review of consumer goods rental and home furnishings business models broadly, it finds through semi-structured interviews with experts from all (four) known Swedish home furnishings rental companies that home furnishings pose some unique challenges for rental business models as compared to other products. For example, furniture's bulky nature makes takeback, storage and transport more difficult and costly than for products such as clothing. Compared to office furniture rental, which is more established, home furnishings rental faces higher barriers to trial and lower economies of scale. These barriers are in addition to those that hinder rental models generally, including long payback times, products that are not designed for repair or refurbishment, need for new capabilities and relationships, consumer uncertainties, and lack of supportive policy. Companies have addressed these barriers by altering elements of their business models, such as by streamlining the choice of products available in order to reduce inventory management demands, and partnering with other actors to acquire needed capabilities. Companies also pointed to the need to invest in communications and marketing, given consumers' relative unfamiliarity with, and uncertainties about, home furnishings rental.

*Paper II: Consumer Acceptance and Value in Use-Oriented Product-Service Systems: Lessons from Swedish Consumer Goods Companies*

This paper picks up on findings from both Paper I and product-service systems literature that consumer acceptance hinders business models for product rental. Although previous research has engaged consumers directly to understand their perceived barriers, there has been little research about how rental companies experience consumer-related barriers in practice, nor how they influence consumers to choose access over ownership. In exploring these issues, this paper contributes to answering both RQ1 and RQ2.

Given the relatively few home furnishings rental companies in Sweden, this paper also includes rental of clothing and eyeglasses. Like home furnishings, these products exhibit characteristics previously thought to reduce the suitability for rental, including being relatively inexpensive, used frequently, influenced by fashion, and not requiring much maintenance. Through semi-structured interviews with experts from seven companies and document analysis of the companies' websites and reports, the paper finds that companies encounter consumer barriers regarding economics and costs, uncertainty and trust, and desire for ownership. Companies have sought to reduce these barriers by tailoring their business models to different sectors and consumer segments, as well as to outweigh the barriers by emphasising different types of value. The latter draws on the concept of consumer perceived value, illustrating how rental can provide financial, functional, emotional and social value, and finding that social value, especially regarding sustainability, seems not to be a primary driver for consumers nor a factor that companies emphasise in their interactions with consumers.

*Paper III: Communicating access-based business models: Retailer framings of home furnishings rental*

This paper picks up on the finding from Paper I that consumer unfamiliarity with home furnishings rental has led to a need for companies to invest in communications and marketing, as well as findings from Papers I and II that although companies may be motivated to offer rental for sustainability reasons, sustainability tends not to be something they emphasise in their interactions with consumers. The latter findings contrast with literature that suggests consumers are (or should be) motivated to engage with sustainable business models due to their sustainability benefits. In addition, although there has been much research on how to design rental models, there is little on how they might be promoted. This paper thus looks at how home furnishings companies promote rental in practice, and how this compares to consumer drivers for rental more broadly. By viewing communications as a way companies can emphasise different types of value (Paper II) and thereby address consumer barriers to rental, this paper contributes to answering RQ2.

In order to explore company messaging across a wide range of companies, this paper looks beyond Sweden to include home furnishings companies around the world. Through a qualitative content analysis of 25 company websites, it confirms that sustainability is not widely communicated. Companies instead tend to emphasise a variety of benefits that reflect consumer drivers for product rental more broadly, including economic benefits, freedom from burdens of ownership, convenience, and novelty. However, home furnishings rental companies represent these drivers somewhat differently than does literature, including appealing to intangible ideas such as aspiration, self-expression and homeyness, and citing aspects specific to home furnishings like the literal burdens of transporting furniture when relocating. In addition to providing empirical illustrations of how rental can be promoted, the paper raises questions about the role of sustainability messaging in promoting sustainable business models.

*Paper IV: Innovations in reuse: a case study of ReTuna, the world's first reuse-based shopping mall*

This paper shifts the focus from rental to reuse, in part picking up on findings from Paper I regarding barriers to business models that involve not-new products. After synthesising barriers to reuse found in literature, it presents an innovative business model that has managed to overcome many of these barriers simultaneously and discusses how this was possible. This paper thus contributes to answering both RQ1 and RQ2.

The paper is an in-depth case study of Sweden's pioneering reuse-based shopping mall, ReTuna. ReTuna combines different types of reuse, including direct reuse (second-hand), repair, refurbishment and upcycling, all under one roof mimicking a traditional shopping mall. Five of ReTuna's 14 shops focus exclusively on home furnishings, while an additional three include home furnishings alongside other goods such as clothing and children's products. ReTuna is particularly notable for the way it has integrated different actors in its business model, as the mall is overseen by the local municipality, the goods are sourced from private citizens via the municipal waste management system, and the shops are run by private entrepreneurs. Although ReTuna has attracted visitors from around the world interested in implementing a similar concept in their own cities, few meaningful attempts to do so have been seen. This paper thus seeks to understand the factors that have contributed to ReTuna's establishment and development, and discusses how these findings might be applied to replicate such an innovation elsewhere.

Data collection for this paper comprised 19 semi-structured interviews with actors involved in ReTuna's establishment and development, analysis of historical documents, and a two-day on-site mobile research lab. The data were analysed from the perspective of technological innovation systems (TIS), which can be used to understand the emergence and development of innovations. The paper finds that

ReTuna has demonstrated all of the functions necessary for successful innovation according to the TIS approach. These include entrepreneurial experimentation, knowledge development and diffusion, guidance of the search (incentives for engagement), resource mobilisation, market formation and legitimisation. The key enabling factors that allowed these functions to occur include the involvement of diverse actors, a broad vision that contributed to multiple goals, and design that mimics a traditional mall. Those interested in emulating ReTuna need not start developing all the functions from scratch as ReTuna did, but likely do need municipal involvement, the ability and space to design the facility, and involvement of entrepreneurs.

**Table 1. Overview of the four papers in this thesis**

#	Title	RQs in Paper	Methods	Key Findings	Thesis RQs
I	Exploring barriers to implementing product-service systems for home furnishings	<p>1. What barriers have companies offering home furnishings leasing encountered in developing and implementing their business models?</p> <p>2. What can these companies' experiences teach the home furnishings sector about strategies to overcome these barriers?</p>	Semi-structured interviews with 5 home furnishings rental company experts in Sweden; qualitative content analysis of interview transcripts	Home furnishings pose unique barriers compared to other consumer goods; consumer acceptance is a key barrier	RQ1, RQ2
II	Consumer Acceptance and Value in Use-Oriented Product-Service Systems: Lessons from Swedish Consumer Goods Companies	<p>1. What characterises use-oriented PSS (u-PSS) offerings in consumer goods sectors, including furniture, clothing and eyewear?</p> <p>2. When introducing these u-PSS, what consumer-related barriers do business-to-consumer (B2C) companies experience?</p> <p>3. What types of consumer value may drive the adoption of these u-PSS, as perceived by B2C companies?</p>	Semi-structured interviews with 7 home furnishings, clothing and eyeglass rental company experts in Sweden; qualitative content analysis of interview transcripts and marketing materials	Companies can address consumer-related barriers by tailoring business models and emphasising different types of value; sustainability is not a primary selling point	RQ1, RQ2
III	Communicating access-based business models: Company framings of home furnishings rental	How do companies actively engaged in home furnishings rental frame their offers to consumers, and how does this compare with consumer drivers for product rental found in literature?	Qualitative content analysis of 25 home furnishings rental company websites from around the world	Companies emphasise many different benefits but sustainability is not primary	RQ2
IV	Innovations in reuse: a case study of ReTuna, the world's first reuse-based shopping mall	<p>1. What enabling and constraining factors have contributed to ReTuna's establishment and development?</p> <p>2. How can learnings from ReTuna be applied to replicate such an innovation elsewhere?</p>	Semi-structured interviews with 19 different actors involved in ReTuna, mobile research lab; qualitative content analysis of interview transcripts, historical documents and researcher reflections	ReTuna's development can be understood through functions of innovation systems; involvement of municipal actors and entrepreneurs and opportunity to design the facility were key and are likely needed to replicate the model elsewhere	RQ1, RQ2

## 1.6 Target Audience

The research in this thesis is relevant for a number of different actors. From an academic perspective, the research is primarily aimed at researchers in the field of sustainable business models, particularly those with an interest in understanding what hinders sustainable business models from becoming more prevalent, and how companies and other societal actors can help them become so. Given that rental and reuse facilitate product life extension and waste prevention, the research may also be of interest to researchers in the broader fields of circular economy and waste management. The research is also of value to sustainable consumption researchers interested in understanding how sustainable consumption choices can become more available to more consumers, as well as how to ensure that these choices resonate with consumers.

From a practitioner perspective, the research is relevant for companies and other societal actors interested in facilitating rental or reuse of home furnishings and other consumer goods. The practical insights regarding barriers encountered by rental and reuse business models and strategies to overcome these barriers are relevant for business developers seeking or struggling to integrate rental and reuse into their current offerings, as well as entrepreneurs interested in starting new ventures. Those in consumer-facing functions, such as communications and marketing, may also find useful the consumer-related barriers explored in the research, as well as the examples of how companies promote rental and reuse in practice. Municipalities, waste management authorities, and other public actors seeking to reduce waste and increase reuse could benefit from understanding the establishment and development of ReTuna, which has integrated public and private actors to develop the world's first reuse-based shopping mall.

## 1.7 Thesis Outline

This thesis comprises six chapters and four appended papers. The next chapter presents the theoretical and conceptual foundations underpinning the research, namely sustainable consumption, sustainable business models, product-service systems, rental and reuse. Chapter 3 describes the research design and methodology, including the research positioning, approach, and methods of data collection and analysis. The key findings of the research are presented in Chapter 4, in relation to the research questions and synthesised across the four papers. Chapter 5 places the findings in the context of broader literature, discusses developments since the research took place, and reflects on the research approach and methods. The final chapter presents a brief summary of the findings, discusses the contributions to theory and practice, and suggests areas for future research.



# 2 Theoretical and Conceptual Foundations

In this chapter, the primary fields on which the research in this thesis draws, and to which it seeks to contribute, are described. The relationships between these foundations are illustrated in Figure 2.

## 2.1 Sustainable Consumption

The concept of “sustainable consumption” emerged largely from the recognition of negative environmental consequences of resource-intensive lifestyles (Cohen, 2005) – in other words, in reaction to unsustainable consumption. It first entered the world stage in the run-up to the 1992 Earth Summit in Rio (Cohen, 2005) and continues to play a prominent role in international policy by virtue of its inclusion in the UN Sustainable Development Goal “Responsible Consumption and Production” (UNDP, n.d.). Beyond its policy-oriented origins, sustainable consumption has also begun to be embraced by businesses. For example, IKEA, in its People and Planet Positive sustainability strategy, lists “unsustainable consumption” as one of three major challenges that will influence its business going forward (IKEA, 2018, p. 5). Companies providing long-lasting products and services such as repair have also framed their offers as helping to decrease consumption (Bocken, 2017).

Despite its adoption by the policy and business sectors, as well as the research community, no one definition of sustainable consumption exists (Seyfang, 2009). A frequently cited definition comes from the 1994 Oslo Symposium on Sustainable Consumption, which proposed a working definition of “the use of goods and services that respond to basic needs and bring a better quality of life, while minimising the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardise the needs of future generations” (Ofstad et al., 1994). Most other definitions similarly emphasise decoupling economic growth from material inputs and negative environmental impacts or, as the United Nations puts simply, “doing better with less” (UNEP, 2017).



The field of sustainable consumption is broad and encompasses many different perspectives on why people consume and, hence, how consumption problems come about. This, in turn, informs what solutions might best be developed. The different sustainable consumption theories can be broadly grouped into three categories – individualistic, cultural and socio-material.

Individualistic theories assume that responsibility for consumption problems and solutions lies with individuals, who are generally rational actors who make choices based on their values, beliefs, or potential personal consequences (e.g., Ajzen, 1991). Social and moral norms are acknowledged to play a role in individualistic approaches (Ajzen, 1991; Bamberg & Möser, 2007) but context, such as infrastructure and other structural factors, is largely considered external (Keller et al., 2016; Røpke, 2009; Shove, 2010). Consumption choices are made to satisfy individual needs and take place for utilitarian reasons.

Cultural perspectives on sustainable consumption see consumption as a way in which people signify meaning, status, or identity, either to themselves or others (e.g., Arnould & Thompson, 2005; Autio et al., 2009; Black & Cherrier, 2010; Hurth, 2010). People consume not for functionality but rather for what an item communicates – for example, luxury goods that communicate affluence or particular styles that allow people to identify with a certain social group. Cultural theories differ from individualistic approaches in internalising context.

Socio-material perspectives look at both the social and material aspects of consumption. Instead of assuming that people consume based on utility or meaning, this perspective acknowledges that behaviours may not always be reflective. Rather, they are influenced by the systems of provision, infrastructures, choice architecture, and other structural factors that either limit or encourage the consumption choices that consumers have available (Lehner et al., 2016; Sanne, 2002; Shove, 2010; Spaargaren, 2003).

This thesis primarily takes a socio-material approach, focusing on business models that can offer consumers choices other than to purchase new products, and the factors that hinder these systems of provision. However, aligning with findings that all three perspectives on sustainable consumption tend to co-occur (Prothero et al., 2011; Tukker et al., 2010; Wilk, 2002), it also recognises that when engaging with these business models, both utility and identity are factors that consumers might consider, especially for home furnishings (Reimer & Leslie, 2004).

## 2.2 Sustainable Business Models

A business model, in simple terms, describes how a company does what it does. While there is no single agreed upon definition of a business model (Massa et al., 2017), most generally include the elements of value proposition, value creation and delivery, and value capture (Osterwalder et al., 2010; Richardson, 2008; Teece, 2010; Zott et al., 2011). Value proposition refers to what value is provided for whom, encompassing both the product and/or service offer and for which customers it is intended (Richardson, 2008). Value creation and delivery describe how that value is provided, namely through different value chain elements and activities including resources, capabilities, distribution channels and partners (Osterwalder et al., 2010). Value capture refers to how firms make money, considering both cost structures and revenue streams (Osterwalder et al., 2010). A business model is thus a systemic concept, linking the internal activities of a firm, external actors in the value chain, and end-users for whom value is being created (Zott et al., 2011).

Given its holistic nature, a business model can also be an avenue for integrating sustainability into both production and consumption (Boons & Lüdeke-Freund, 2013; Evans et al., 2017). Hence the concept of business models for sustainability, or sustainable business models, has increasingly become of interest to both scholars and practitioners (Lüdeke-Freund & Dembek, 2017; Schaltegger et al., 2016). Numerous conceptualisations and definitions of a sustainable business model have been proposed (Abdelkafi & Täuscher, 2016; Brehmer et al., 2018; Dentchev et al., 2018; Geissdoerfer et al., 2018; Stubbs & Cocklin, 2008) but tend to have in common a focus on broadening the concept of value to include environmental and/or social value, and benefitting a range of stakeholders beyond just shareholders.

Under the broad umbrella of sustainable business models, different types of models have been identified. These include circular business models, which aim to keep products and materials at their highest value for as long as possible (Geissdoerfer et al., 2020; Nußholz, 2017); sharing economy business models, which focus on shared use of goods (Curtis & Mont, 2020; Muñoz & Cohen, 2018; Ritter & Schanz, 2019); and product-service systems (PSS), which aim to meet consumer needs through an integration of products and services (Mont, 2002b; Tukker, 2004). Specific definitions of these business model types vary, as does the perceived degree of overlap between the models (Henry et al., 2021). For example, while rental is widely considered to be an example of a PSS (Tukker, 2015), perspectives vary as to whether rental is also an example of sharing (Curtis & Lehner, 2019). With respect to facilitating sustainable consumption, Bocken et al.'s (2014) sustainable business model archetypes, which describe the mechanisms through which companies can integrate sustainability into their value proposition, value creation and delivery, and/or value capture, provide a useful way to characterise business models. Business models can incorporate multiple archetypes simultaneously, thus avoiding some of the challenges of delineating sustainable business models using terms such as

circular or sharing. Two of the archetypes are particularly relevant for sustainable consumption: “deliver functionality rather than ownership”, which applies to business models that enable consumers to forgo the need to own products by paying to access instead of buy them, and “encourage sufficiency”, which applies to business models that seek to reduce consumption volumes, including through strategies such as extending product lifetimes via various forms of reuse (Bocken & Short, 2016; Niessen & Bocken, 2021). It is these two archetypes that underlie the business models explored in this thesis.

The term business model can be used to represent different levels of abstraction. These can range from conceptual representations (e.g., a “rental business model”) to attributes of actual firms (e.g., describing the details behind how a particular company that offers product rental runs its business) (Baden-Fuller & Morgan, 2010; Casadesus-Masanell & Ricart, 2010; Massa et al., 2017). This thesis largely uses the term business model in the former sense, referring to rental and reuse business models as those that seek to provide access over ownership and facilitate various forms of reuse, respectively. Particular configurations of these business models are, however, mentioned when relevant for the identification and discussion of the barriers these business models encounter and the possible strategies to overcome them.

## 2.3 Product-Service Systems

Business models that provide access rather than ownership have primarily been explored in the literature on product-service systems (PSS). While numerous researchers have offered definitions of PSS (Annarelli et al., 2016; Haase et al., 2017), mostly all agree that PSS consist of products and services integrated together to meet customer needs. The premise behind PSS is that consumers are not interested in products *per se*, but rather in the utility, function, satisfaction and other benefits that products provide (Mont et al., 2018; Tukker & Tischner, 2006b). PSS thus focus on delivering value in use (Baines et al., 2007; Stahel, 2010).

Although not all definitions of PSS include a focus on sustainability, many researchers see PSS as a way to create more sustainable production and consumption systems (Goedkoop et al., 1999; Mont, 2002b; Vezzoli et al., 2015). The environmental potential of PSS stems from their ability to decouple economic growth from production and sales of products and thus use of material resources (Baines et al., 2007; Ceschin & Gaziulusoy, 2016). While many of the products and services included in PSS already exist in the market, what is innovative about PSS is how they bring these products and services together into systems, including the infrastructure and networks of actors necessary to deliver and manage new customer offers (Manzini & Vezzoli, 2003; Mont, 2002b). Their systemic nature necessitates

taking a life-cycle perspective, as companies' responsibility is extended to phases of a product's lifecycle beyond just production and delivery (Baines et al., 2007).

The environmental implications of PSS depend in part on the particular type of PSS employed. PSS literature generally describes three broad types of PSS: product-oriented, use-oriented and result-oriented (Baines et al., 2007; Tukker, 2015). In product-oriented PSS, ownership of a product is held by the consumer while the company provides services such as maintenance and repair. In use-oriented PSS, the provider maintains ownership of the product and consumers pay for access to it. In result-oriented PSS, consumers pay for a particular outcome rather than a specific product, such as clean clothing or a comfortable indoor climate, and the provider determines which products and services can best deliver this result (Tukker, 2004).

The research in this thesis falls within use-oriented PSS. Use-oriented PSS encompass several different types of business models including leasing, renting, sharing and pooling. Leasing, rental and sharing all entail sequential use of products by multiple users (Tukker, 2004). Different authors define these terms somewhat differently, but in this thesis, leasing and renting are both understood to involve granting consumers exclusive access to a product over a particular period of time. In other words, even if a consumer is not making use of a particular product during the leasing or renting period, it is still only theirs to use. Sharing, in contrast, focuses on making use of idle capacity (Curtis & Lehner, 2019), allowing users to access a product whenever someone else is not using it. Examples include car- and bike-sharing, as well as sharing of items such as tools or toys (Mont et al., 2020). Pooling refers to simultaneous access to a product by multiple users, such as with carpooling (Tukker, 2004). The research in this thesis focuses specifically on leasing and renting, as sharing and pooling are not as relevant for home furnishings. In practice, companies tend to refer to leasing and renting interchangeably, often also using the term subscription. For simplicity, the term rental is used in this thesis to represent any business model in which companies offer consumers exclusive access to products.

## 2.4 Rental

As described above, rental business models comprise those in which consumers pay for exclusive access to products, while ownership remains with the company providing the rental. This, in turn, creates several incentives that contribute to the environmental potential of rental. Researchers suggest that because companies make money from the continued use, rather than sale, of products, they are incentivised to prolong the life of these products (Tukker, 2015; Vezzoli et al., 2015). This can include providing services such as maintenance and repair, or designing products to be more durable or easier to disassemble, repair or refurbish

(Reim et al., 2015; Tukker, 2004). Cycling products between multiple users can also extend the length of time that products are used (Fishbein et al., 2000). At the same time, because companies are responsible for any costs that arise during the life of the products, they are also encouraged to reduce costs, such as by minimising the materials and energy required to provide the products and reusing products and parts where possible (Ceschin & Gaziulusoy, 2016; Mont et al., 2018). The fact that companies are responsible for the products' end-of-life also encourages the development of take-back systems, which can facilitate reuse (Mont, 2002b; Reim et al., 2015). All of these factors can, in turn, contribute to extending product lifetimes, keeping items out of the waste stream and reducing the need for new production (Baines et al., 2007; Fischer et al., 2015).

From a consumer perspective, rental represents an alternative mode of consumption (Goedkoop et al., 1999), providing consumers the opportunity to meet their needs through ways other than purchasing products. Rental can be especially appropriate for consumers who have changing or unpredictable needs (Rexfelt & Hiort af Ornäs, 2009), such as moving frequently.

This thesis uses the term “rental business model” in a general sense to describe many different business model configurations – e.g., whether rental providers are manufacturers or platforms, what specific products they offer, and who their target consumers are. It also assumes that rental encompasses multiple use cycles, rather than products being sold or disposed of after the first user. Finally, this thesis focuses on rental models in which ownership stays with provider, as opposed to rent-to-own models.

## 2.5 Reuse

Much of the research on reuse falls within the literature on waste management. Reuse is seen as a strategy to prevent and reduce waste, and is frequently linked to discourses of sustainable consumption (Gregson et al., 2013; Maitre-Ekern & Dalhammar, 2019). The EU Waste Framework Directive defines reuse as “any operation by which products or components that are not waste are used again for the same purpose for which they were conceived” (European Commission, 2018), including direct reuse (second-hand), repair, refurbishing and remanufacturing. To this, others add activities such as upcycling, which does change the purpose but does not break the products down to the material level (Gelbmann & Hammerl, 2015; Kirchherr et al., 2017). In this thesis, the term reuse is used to represent all of these activities.

Reuse activities can also include a number of different actors. For example, repair often takes place in community- or municipally-led repair cafés (Bradley & Persson, 2022). Municipal waste authorities prepare items for reuse and sometimes

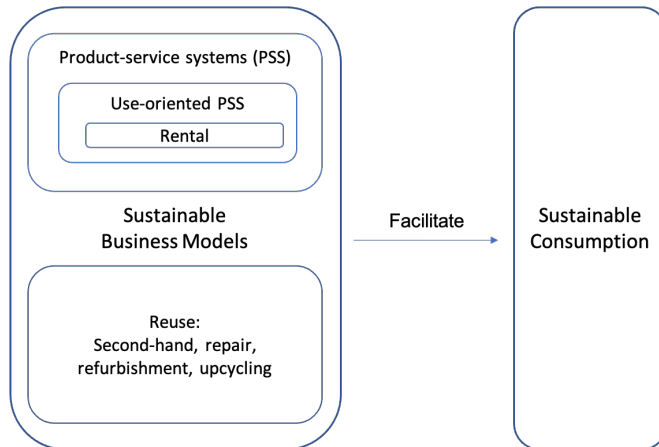
participate in reuse directly (Zacho et al., 2018). Third-sector actors, including NGOs and social enterprises, are often facilitators of reuse, such by as running reuse centres (Alexander & Smaje, 2008; Curran & Williams, 2010; Milios & Dalhammar, 2020) or performing repair or refurbishment (Costa et al., 2015; Gelbmann & Hammerl, 2015; Ongondo et al., 2013).

Reuse is not itself a business model but can be supported by a number of different business models. These include brick-and-mortar second-hand stores, online exchange platforms, municipal and third sector reuse centres, upcycling businesses, social enterprises, and professional repair and refurbishment services (Ertz et al., 2019; Fortuna & Diyamandoglu, 2017b; Gregson et al., 2013; Williams & Shaw, 2017). Reuse activities can also play a role in other types of business models, including product-service systems. The research in this thesis highlights one particular business model that combines a number of different reuse activities, including second-hand sales, repair, refurbishment and upcycling: that of the ReTuna reuse-based shopping mall. Reuse activities also play a role in many of the rental models explored in this thesis. This thesis defines a reuse business model as any business model in which reuse activities take place.

The environmental benefits of reuse stem from its potential to reverse obsolescence and extend product lifetimes (T. Cooper, 2010; den Hollander et al., 2017). Obsolescence refers to the point at which a product is no longer perceived as useful by its user. While a product can become obsolete due to a loss of functionality, fully functional products can also be considered obsolete due to changing fashion and social trends, introduction of new technologies, and costs of maintaining the product (Burns, 2010; Cox et al., 2013). Changes in consumer needs, such as a child outgrowing the need for a crib, can also render products obsolete (Catulli, 2012). Obsolescence can often thus be temporary and reversible, as products considered obsolete by one user can be passed along to another for reuse (den Hollander et al., 2017).

Reversing obsolescence and extending product lifetimes can in turn reduce the number of items going to waste and decrease the need for new production (Fortuna & Diyamandoglu, 2017b; Williams & Shaw, 2017), thereby reducing landfill space, greenhouse gas emissions, raw materials use, and contamination of land and water (D. R. Cooper & Gutowski, 2017). As reuse activities themselves may entail some environmental impacts, such as transport between users or use of additional materials for repair or refurbishment, the environmental benefits of reuse are the net effect of processes needed to make an item reusable and processes that would have been required to produce a new product and dispose of the old one (D. R. Cooper & Gutowski, 2017). Specific to home furnishings, one study found that purchasing used home textiles could reduce CO<sub>2</sub> emissions by more than 90%, while refurbishing dining room chairs could reduce them by 70% (Kruse et al., 2021). (Kruse et al., 2021). Another study found sofas to generate the highest avoided impacts per unit sold versus purchasing new, as compared to other consumer

products (Castellani et al., 2015; WRAP, 2011). In addition to its environmental benefits, reuse also represents an opportunity to create and capture economic and social value (Zacho et al., 2018).



**Figure 2. Relationships between the foundations of this thesis**  
Author's sketch

Before continuing, it is important to acknowledge that rental and reuse models are not inherently sustainable and must be designed with product lifecycle impacts in mind (Bech et al., 2019; Corvellec & Stål, 2017; Kjaer et al., 2016; Pigosso & McAloone, 2015). Particularly for products with high use phase impacts, such as energy-using appliances, longer lifetimes may actually lead to increased environmental impacts as compared to replacing the products with newer, more efficient models (Fagnoli et al., 2018; Whalen, 2019). On the other hand, for products with low use-phase impacts, reuse is likely to have fewer environmental impacts than discarding the product and producing a new one (D. R. Cooper & Gutowski, 2017). Life-cycle assessments (LCAs) for furniture find that the majority of environmental impacts occur in the raw materials and production stages, while impacts from the use phase are negligible (Cordella and Hidalgo, 2016; Donatello et al., 2017). LCAs of textiles similarly find that most of the impacts come from the raw materials and production stages (van der Velden et al., 2014). Thus, business models that seek to extend product lifetimes hold promise for reducing the environmental impacts of home furnishings consumption.

# 3 Research Design and Methodology

This chapter presents the research positioning, approach, and methods for data collection and analysis.

## 3.1 Research Positioning

The way in which a researcher views the world in turn influences their research design and choice of methods (Guba & Lincoln, 1994). This thesis is framed within the paradigm of pragmatism. Pragmatism focuses not on grand discussions of the nature of reality but rather on practical applications and the nature of the problem the research is trying to address (Morgan, 2014). Aligning with this perspective, the research in this thesis is problem-driven, addressing the problem of a lack of rental and reuse business models in practice, and has a focus on the “anticipated consequences” (Cherryholmes, 1992, p. 13) and actionable knowledge (Kelly & Cordeiro, 2020), namely how the findings can be put into practice by companies and other actors. Pragmatism is also appropriate for both transdisciplinary and sustainability-related research (Popa et al., 2014), which characterise this thesis.

With regard to ontology, i.e., what is the nature of reality and what can be known about it (Guba & Lincoln, 1994), pragmatism foregoes the dualism of realism and relativism and acknowledges that reality can exist both independently of and within the minds of social actors (Morgan, 2014). This aligns well with the study of business models. While business models could be said to be socially constructed, in that they would not exist independently of the social actors that create them, they are still to some extent observable, and do have real and measurable impacts on the world in terms of consumption levels and environmental impacts. Corroborating this view, researchers note that business models can be both objective and cognitive (Bidmon & Knab, 2018; Massa et al., 2017), used to describe both actual structures and representations or ideal types (Baden-Fuller & Morgan, 2010; Perkmann & Spicer, 2010). Similarly, the barriers that business models face can be said to be both socially constructed and real in that, for example, waste policy (although itself socially constructed) does actually prohibit certain actors from accessing goods for reuse (Avfall Sverige, 2020).



In terms of epistemology, i.e., the relationship between the “knower” (researcher) and what can be known (Guba & Lincoln, 1994), pragmatism, in seeing knowledge as resulting from interaction (Morgan, 2014), implies an active role for the researcher. Given that the barriers business models face are constructed and arguably subjective – e.g., what is a barrier for one company or consumer may not be for another – one can only study them by seeing things from others’ point of view. However, the researcher is not an independent observer but also influences and interprets the findings. This was indeed the case in this thesis, such as through the choice of interview questions and development and use of analytical frameworks.

In keeping with a pragmatic approach, the methods in this thesis were chosen not based on broad conceptions of reality but rather based on what was most useful and appropriate for understanding the problems in question (Creswell, 2014; Leavy, 2017) – for example, interviews to understand companies’ experienced barriers, document analysis to understand how companies communicate about rental, and a mobile research lab to understand the development and context of ReTuna. Pragmatism also aligns with qualitative content analysis, in which knowledge is generated through interacting with the data, particularly when open coding (Corbin & Strauss, 2015). Pragmatism is often, although not exclusively, associated with mixed methods (Morgan, 2014) and while this thesis did not employ quantitative methods, they are certainly appropriate as a next step. For example, one could employ an exploratory sequential design (Creswell, 2015) in which the barriers found through the qualitative methods in Papers I and II could be used to develop a quantitative survey to reach a greater number companies and determine to what extent the barriers apply more widely.

## 3.2 Research Approach

### 3.2.1 Interdisciplinary and Transdisciplinary

The research in this thesis can be characterised as both interdisciplinary and transdisciplinary. Although both terms can be defined in different ways, here interdisciplinarity is understood to refer to the integration of different disciplines (Borrego & Newswander, 2010), while transdisciplinarity includes the involvement of non-academic actors in knowledge creation (Sakao & Brambila-Macias, 2018). Aligning with the pragmatic research positioning, both interdisciplinary and transdisciplinary research focus on solving real-world problems (Stock & Burton, 2011). They are also both appropriate for both business model (Lüdeke-Freund et al., 2021) and sustainability-oriented (Stock & Burton, 2011) research. Business models are an inherently interdisciplinary topic (Schaltegger et al., 2016; Teece,

2010) and involve practitioners, while complex sustainability challenges require a variety of both academic and practical knowledge to address (Sakao & Brambila-Macias, 2018).

From a broad perspective, the research in this thesis integrates the fields of sustainable business models and sustainable consumption to discuss business models for sustainable consumption. The individual papers also bring together different research fields. Papers I, II, and III bring together knowledge from product-service systems and consumer research. Paper II also applies the concept of consumer perceived value, from the field of marketing, to product-service systems. In drawing on the concept of technological innovation systems to study reuse, Paper IV integrates the fields of waste management and socio-technical systems.

In terms of transdisciplinarity, involvement of non-academic actors is a key aspect of both the Mistra Sustainable Consumption research programme in which the research took place, and the research in this thesis. Societal actors, including companies, municipalities and civil society organisations, have been involved in the Mistra Sustainable Consumption research programme since the beginning, helping to determine research and practice needs and contributing to knowledge development in the research itself. This, in turn, influenced the four papers in this thesis. Research for Papers I, II and IV drew on ongoing engagement with many of the companies and other actors through programme workshops, meetings and conference sessions, beyond the methods that contributed directly to answering the research questions in these papers. Findings from all of the papers were also communicated and discussed with societal actors through reports and presentations.

### **3.2.2 Research Purpose**

Social research can be undertaken for a number of different purposes, which in turn determine the types of knowledge the research will produce and the types of research questions that are asked (Blaikie & Priest, 2019). Given pragmatism's focus on practical applications, it is wise to reflect on the purpose of the research in this thesis.

Blaikie and Priest (2019) present a classification of research purposes, four of which are relevant to this thesis. *Exploratory* research tends to be undertaken when very little is known about a topic, often to determine what research questions to ask or methods to use (Blaikie & Priest, 2019; Leavy, 2017). *Descriptive* research seeks to describe phenomena, often from the perspective of people experiencing it (Leavy, 2017). Descriptive research involves the use of concepts, can be informed by theoretical assumptions, and often involves the development of categories (Blaikie & Priest, 2019). Both exploratory and descriptive research tend to ask "what" questions. Research geared toward *understanding* aims to establish the reasons for a particular phenomenon, again from the perspective of social actors, and tends to

ask “why” questions (Blaikie & Priest, 2019). Finally, research aimed at *change* seeks to bring about change in the social world by intervening in the world and asking “how” questions (Blaikie & Priest, 2019).

As noted in the Introduction, the first part of the objective of this thesis is to understand *why* we do not see more rental and reuse business models in practice, which is addressed through the research question of *what* barriers these business models face. This reflects a research purpose of both understanding and description, and aligns with the fact that detailed description is needed to form the basis for understanding (Blaikie & Priest, 2019). The research also aligns with a descriptive approach in drawing on concepts and theoretical assumptions from related research fields – namely barriers and drivers for product rental more generally for Papers I-III and the technological innovation systems framework for Paper IV – and in developing categories through the data analysis process. The second part of the objective of this thesis is to understand *how* these business models can become more prevalent, which is addressed by the research question of *how* the barriers can be overcome. This suggests a research purpose focused on change. While change-oriented research often involves direct interventions (Blaikie & Priest, 2019), research focused on description and understanding can also contribute toward change (Leavy, 2017). Indeed, all four of the papers in this thesis sought to generate knowledge that can be applied in practice to bring about change. Finally, the research questions and methods in the individual papers came about through an exploratory research process. The novelty of both home furnishings rental and the concept of a reuse-based shopping mall, and the lack of literature on these specific topics, necessitated consulting a range of research fields and related topics in order to determine how best to position each of the papers and what research questions to ask.

Related to the primary research purposes of understanding and description, all of the research in this thesis employed a qualitative approach. Qualitative research is appropriate for gaining in-depth understanding based on people’s subjective experiences (Leavy, 2017) and from the perspective of participants (Efron & Ravid, 2019).

### 3.3 Methods for Data Collection

Aligning with the pragmatic positioning of the research, a number of different methods were used for data collection, depending on the research questions in each of the papers. The following text provides an overview of the methods used. More specific details can be found in each of the appended papers.

### 3.3.1 Literature Reviews

Narrative literature reviews were performed for all four of the papers. In contrast to systematic literature reviews, which seek to identify all possible studies relating to a pre-determined and focused research question, narrative literature reviews are appropriate when research questions may not be as defined, sufficient literature on the topic may be lacking, or sources related to the topic may encompass different types of studies, perspectives or disciplines (Efron & Ravid, 2019; Jesson et al., 2011). With respect to rental business models, although the research began with the intention of performing a systematic literature review on drivers and barriers for home furnishings rental, only one published study directly addressing this topic was found at the time (Gullstrand Edbring et al., 2016). Similarly, regarding reuse, while one academic study was found that explored a subset of the shops in the ReTuna reuse-based shopping mall (Hedegård et al., 2020), no studies were found that considered the concept of a mainstream commercial business built on municipal waste collection. Given the novelty of both of these concepts, a narrative approach was deemed most suitable.

Literature reviews can serve different purposes, including setting the context for a study, informing the research design and methodology, and identifying research gaps and areas for advancing knowledge (Efron & Ravid, 2019). The literature reviews in the research for this thesis spanned all of these purposes. For Papers I, II and III the literature reviews were first used to synthesise the current state of knowledge on the broader topics in question, namely barriers to consumer goods rental business models and consumer drivers to engage in product rental. Because of the lack of existing research on home furnishings rental, the literature search criteria included rental of other consumer goods including clothing, electronics, and consumer goods generally, as well as sustainable furnishings consumption outside the home including rental, reuse, repair and refurbishment by the private, public and non-profit sectors. The barriers and drivers found in these papers were then used to develop initial analytical frameworks with which to approach the empirical data collection and analysis, as described below.

The literature review for Paper IV was primarily used to determine how to position the paper and what research questions to ask. The decision to study ReTuna as an example of an innovative business model that had seemingly overcome many barriers to reuse was made early on, and early literature searches focused on business model literature, with an aim of identifying similar types of business models and how they had addressed barriers to reuse. However, the uniqueness of ReTuna's business model meant that it did not really align with any of the business models discussed in this literature. This raised the question of why there were not more examples of this type of business model and what factors enabled it to be successfully developed and implemented. This, in turn, suggested consulting literature on enablers of innovation, which ultimately resulted in the focus on

technological innovation systems and use of the established TIS framework employed in the paper.

### **3.3.2 Semi-structured Interviews**

Semi-structured interviews were the primary source of data for Papers I, II, and IV. Interviews are one of the most common methods of data collection in qualitative research, as they allow researchers to understand the phenomenon in question from the perspective of the participants (Bryman & Bell, 2015). Interviews can take different forms, ranging from unstructured interviews that may start with only a general topic in mind to highly structured interviews in which predetermined questions are asked in a specific order (Flick, 2014). Semi-structured interviews represent a middle ground, in which the researcher has particular questions but may also divert from and expand on these questions based on the interviewees' responses (Bryman & Bell, 2015). They thus allow for the exploration of specific topics and consistency between interviews while also remaining open to pursuing interesting or unexpected points raised by interviewees (Justesen & Mik-Meyer, 2012).

Given that Papers I, II and IV focus on companies' and other actors' experiences in practice, interviewees were selected based on their practical experience with the topics addressed in each of the papers. For Paper I, which focused broadly on company barriers to home furnishings rental business models, this comprised individuals working most closely with the development and implementation of these business models, including the founders of small start-ups and business model developers in larger companies. For Paper II, which focused on companies' experiences with consumer-related barriers, interviewees included those in functions closest to consumers, namely marketing and sales. Since Paper IV sought to understand both how ReTuna came about and the challenges it has faced since then, interviewees included key individuals involved in ReTuna's initial conceptualisation, development and implementation, as well as those currently engaged in ReTuna's operations. This included current and former mall managers, representatives from the local municipality and municipally-owned waste company, entrepreneurs who came up with the idea of ReTuna, and shop owners and employees.

Interview guides were developed for each of the papers. In keeping with the semi-structured format, interview questions were open-ended, with no predetermined answers (Leavy, 2017), and included primarily "how" and "what" questions (Justesen & Mik-Meyer, 2012). All of the interview guides began with broad questions to build rapport and collect background information to provide context for the rest of the interview (Leavy, 2017). For example, questions for Paper I began by asking about the interviewee and their role in the company, the history and vision of the company, and the characteristics of their business model. Subsequent interview questions were informed by the analytical frameworks resulting from the

literature reviews in each paper. For Paper I, this included open-ended questions about the barriers companies have faced and how they have overcome them. Questions for Paper II focused on consumer-related barriers as well as the different types of value companies communicate to consumers. Given the diversity of actors interviewed for Paper IV, interview questions were adapted based on each interviewee's role in ReTuna but largely focused on the motivations and processes behind the establishment and development of ReTuna, the stakeholders involved and decisions made, and the challenges encountered in ReTuna's establishment and ongoing operation.

While in-person interviews were preferred and carried out when feasible, due to the COVID-19 pandemic, a number of the interviews had to be done online via Zoom. Interviews were carried out in English except in cases where interviewees were not comfortable speaking English, in which case they were done in Swedish by another of the paper's co-authors. Interviews were recorded whenever possible, and after consent had been given by the interviewees. All of the interview recordings were transcribed using automatic transcription software, after which the transcriptions were checked and edited for accuracy by re-listening to the recordings. Interviews carried out in Swedish were transcribed in Swedish and then translated into English by one of the co-authors. In the few instances in which interviewees were not comfortable being recorded or where conditions were not conducive to recording, extensive notes were taken. In order to ensure these notes were as comprehensive as possible and to allow the person leading the interview to focus on the conversation, this was usually done by another co-author.

### **3.3.3 Document Studies**

Documents were the primary source of data for Paper III and also played a prominent role in Paper IV and a somewhat lesser role in Paper II. Documents are often used in social research and span a wide range of text-based and visual materials, including reports and marketing materials produced by companies and other organisations, mass media outputs, and websites and other online sources (Bryman & Bell, 2015; Justesen & Mik-Meyer, 2012).

As Paper III focused on how companies communicate about their home furnishings rental offers, data collection focused on marketing materials, specifically company websites. The documents analysed in Paper IV were primarily historical, including feasibility studies, meeting notes, and newspaper articles regarding the initial concept, development and opening of ReTuna between the years of 2011-2015. These documents were provided by one ReTuna's founders, who considered them important for understanding ReTuna's early stages, and were used to supplement the data gathered in the interviews. Documents for Paper II comprised marketing materials produced by the interviewed companies, including websites and reports, that were also used to supplement the interviews. Background information about the

companies included in all four of the papers was also gathered through documents, including company websites, grey literature and news articles.

### **3.3.4 Mobile Research Lab**

A mobile research lab was carried out for Paper IV. Mobile research labs are a research methodology in which interdisciplinary teams of researchers collaboratively study a phenomenon in-situ, observing and interacting with the different stakeholders involved (Mont, 2018). Originally designed for studying organisations and individuals engaged in the sharing economy, mobile research labs enable understanding a complex phenomenon in the context in which it occurs and from the perspective of different societal actors (Mont, 2018). Some researchers consider mobile research labs to be an example of focused ethnography (Curtis, 2021), which is characterised by short field visits in which intensive data collection is carried out, usually supported with audio-visual recordings and preceded by extensive preparation to collect background information about the field and phenomenon that is to be studied (Knoblauch, 2005).

Given the uniqueness of the ReTuna reuse-based shopping mall, the many different actors involved in its founding and ongoing operations, and time limitations due to COVID-19-related travel restrictions, a mobile research lab was considered appropriate for studying ReTuna. The mobile research lab took place over the course of two days in November 2021 and included four researchers. Preparation for the mobile research lab occurred over the preceding nine months and consisted of extensive desk research about ReTuna, participation in a brief video tour of the facility, and online interviews with seven individuals involved in ReTuna's founding and current operations. During this process, research questions and interview guides were refined, and each researcher was assigned several themes to which to pay particular attention when visiting ReTuna. Once at ReTuna, activities included conducting twelve in-person interviews, going on a guided tour of the entire facility, making observations, taking photographs, talking with students engaged in ReTuna's reuse design educational programme, eating lunch at ReTuna's restaurant, and browsing the individual shops. At the end of each day, the researchers each wrote reflections about what they had seen and heard and discussed their reflections with each other.

### **3.3.5 Case Study**

All of the above methods were also part of the single in-depth case study of the ReTuna reuse-based shopping mall that comprises Paper IV. A single case study is appropriate for in-depth exploration of a unique phenomenon in a real-world context (Yin, 2014). More broadly, case studies are appropriate for investigating contemporary phenomena and for asking "why" and "how" questions (Yin, 2014).

This aligns with the objective of Paper IV, which was to understand why there are not more reuse-based shopping malls in practice and how ReTuna could be replicated elsewhere. Case studies include triangulation between different data sources (Bryman & Bell, 2015), which was done in the ReTuna case by bringing together data collected via all of the methods discussed above.

## 3.4 Methods for Data Analysis

### 3.4.1 Qualitative Content Analysis

All of the papers employed qualitative content analysis. Qualitative content analysis is a method for systematically analysing and describing the meaning of qualitative data (Schreier, 2012) and is appropriate for elucidating themes from text-based data (Bryman & Bell, 2015). Central to the method is the use of categories by which to classify the data, through the process of coding (Miles et al., 2014). Despite the use of a single method, the application of this method differed between the four papers in terms of the types of materials analysed, the analytical logic employed, and the coding processes used.

The materials analysed in each of the papers differed according to the data collected. This included interview transcripts for Papers I, II and IV; online marketing materials and company websites for Papers II and III; and feasibility studies, meeting notes, news articles, and researcher reflections for Paper IV.

With regard to analytical logic, coding approaches can be inductive, deductive, or a combination thereof (Miles et al., 2014). A deductive approach begins with a list of categories that are developed prior to analysis, usually based on theory. In contrast, in inductive coding, also known as open coding, categories are derived through an iterative process during analysis, based on the data themselves.

Papers I, II and III used a mix of deductive and inductive approaches. The initial analytical frameworks developed based on the literature reviews for each of these papers provided a preliminary list of categories for coding the data. For Paper I, this comprised barriers to rental business models found in other sectors, as reported in literature. For Paper II, this included consumer-related barriers to rental reported in prior studies, as well as categories of types of consumer value based on the theory of consumer perceived value (Sweeney & Soutar, 2001). The framework for Paper III consisted of consumer drivers to engage in product rental, also as found in literature. For all three papers, data illustrating different or more detailed examples than those found in literature were open coded, thus creating new categories. As the analysis proceeded, categories were combined based on shared characteristics, and subcategories were created, as is typical in qualitative content analysis (Miles et al.,



2014). The preliminary codes were thus expanded and changed as new examples emerged from the data. This follows Dubois and Gadde's (2002) idea of "tight and evolving" frameworks, where concepts are used as a guideline for empirical analysis but evolve based on the empirical findings. In contrast to the first three papers, Paper IV did not begin with developing an analytical framework, but rather employed an already established framework from the field of technological innovation systems. Coding proceeded in a deductive manner, with data from the interview transcripts, documents, and researcher reflections categorised according to the seven TIS functions.

For all four of the papers, coding was done manually, as opposed to automatically. Coding for Paper I was done in the computer-assisted qualitative data analysis software programme NVivo, which provides an efficient way for researchers to organise and manage qualitative data, and to create and arrange codes (Bryman & Bell, 2015). The coded data were then exported into Excel to provide an overview of the results. Visualising data through matrices and other graphics is a key component of qualitative data analysis, allowing researchers to see the overall picture and thus determine the need for future analysis and/or draw conclusions (Miles, Huberman, & Saldana, 2013). Coding for Papers II and III was done directly in Excel, both to better visualise the analytical process as the coding progressed and because coding websites and other online sources, while possible in NVivo, proved somewhat cumbersome. Due to the deductive nature of Paper IV, wherein the coding categories were established prior to much of the data collection and analysis, some of the content of the interview transcripts and researcher reflections was already roughly arranged by category. Hence, it was most straightforward to carry out the data analysis for this paper using Microsoft Word, in which these documents were written.

### 3.5 Reliability and Validity

Although primarily associated with quantitative research, reliability and validity are often used to assess the quality of qualitative research as well (Bryman & Bell, 2015). Reliability refers to whether the research could be reproduced by other researchers (Kvale & Brinkmann, 2009). Validity, often divided into internal and external validity, refers to whether the research is accurate (Bryman & Bell, 2015). A number of strategies were used to ensure the reliability and validity of the research in this thesis.

Reliability was ensured primarily by documenting the research process (Flick, 2014). Literature review search terms were specified in each of the papers. Interviews were recorded and transcribed whenever possible, and the accuracy of the transcriptions was ensured by re-listening to the recordings. Data analysis

procedures, including the development and use of analytical frameworks and the coding processes followed, were described in each of the papers. While reliability is also associated with replicability in quantitative research, given that qualitative research is inherently subjective and context-dependent, following the same research process is not expected to generate exactly the same results (Blaikie & Priest, 2019). For example, qualitative data require interpretation and different interpretations of the same material can be valid (Schreier, 2012).

Internal validity refers to the accuracy of the results, i.e., whether the research findings reflect what they intended to investigate and whether the methods capture what they intended to capture (Schreier, 2012). Internal validity in this thesis was addressed in a number of ways. Triangulation between different data sources, such as interviews and documents (Creswell, 2014), was done in the papers when possible and across the papers in this thesis. Coding categories, while initially developed based on literature, were adapted based on the empirical data (Schreier, 2012). Findings were shared with interviewees and other practitioners (Creswell, 2014), who confirmed that they resonated with them. The research was also subjected to peer review, both through academic journals and through conference presentations, departmental seminars, programme meetings, and PhD courses.

External validity refers to the extent to which the research results are generalisable (Bryman & Bell, 2015). Given the context-dependent nature of qualitative research, generalisation should be approached with caution. Some qualitative researchers propose transferability rather than generalisability as a more relevant criterion (Bryman & Bell, 2015; Flyvbjerg, 2011) – in other words, whether the knowledge produced can be transferred to other relevant situations (Kvale & Brinkmann, 2009). As discussed in the Contributions to Theory section below, the research in this thesis is transferable in that the proposed frameworks of barriers and strategies to overcome them, while based primarily on findings from empirical research in the home furnishing sector, are broad enough to be applied to other sectors. Similarly, the ReTuna case study (Paper IV) illustrates how non-corporate actors can help facilitate sustainable business models and discusses how the findings from this case could be applied elsewhere.



# 4 Key Findings

In this chapter, the key findings of the research are grouped according to the research questions and synthesised across the papers.

## 4.1 What Barriers Do Rental and Reuse Business Models Encounter?

A number of barriers encountered by consumer goods rental and reuse business models were identified in Papers I, II and IV. In Paper I, an initial analytical framework of barriers was developed based on a literature review of papers pertaining to consumer product rental. This framework grouped the barriers into six broad categories: finance and economics, design, capabilities, relationships, end-users, and policy. This framework was then applied to, and updated based on, the empirical study in Paper I. As rental and reuse models share a number of characteristics, particularly in terms of logistics needs and the inclusion of not-new goods, the framework is applied here to synthesise and summarise the empirical findings across all of the papers. It is also illustrated in Table 2.

The research found that both rental and reuse models face substantial *financial and economic* barriers. Common barriers cited by the interviewees include additional technical and labour costs for functions such as reverse logistics, storage, transportation, maintenance, repair, and refurbishment (Papers I, IV). Because these processes often take place on a smaller scale than original manufacturing and distribution processes, cost inefficiencies, such as from transporting small quantities of goods, can also occur (Paper I). These added costs can in turn pose challenges for the economic viability of reuse models, as consumers often expect to pay low prices for not-new goods (Paper IV). Rental models were noted to struggle with cash flows, as many of the costs are incurred up front while revenues are earned over time (Papers I, II). Uncertainties regarding how long consumers might rent their products, and thus how long it will take to recoup their investments, were also found to pose financial risks for rental companies, including securing financing (Paper I). Rental companies also cited increased marketing costs needed to promote a relatively unfamiliar concept (Papers I, II). The ReTuna reuse-based shopping mall needed financial support to build the facility and, for an initial period, to subsidise

the rent for entrepreneurs willing to take a chance on an unfamiliar concept by opening a shop there (Paper IV).

Product *design* was also found to be a barrier for both rental and reuse business models. As both types of models include multiple cycles of use and often include repair or refurbishment, products that are not designed for disassembly or are made of low-quality materials can pose challenges in terms of durability and the ability to repair or refurbish the products (Papers I, IV). On the other hand, especially for furniture, whereas durable items might be better able to withstand repeated use, their bulk and weight can make transport and storage more difficult and costly (Papers I, IV). One of the interviewed companies found renting out vintage furniture untenable for these reasons.

Another common barrier cited by interviewees is the additional *capabilities* needed to execute rental and reuse business models. For example, both models require getting products back from consumers, thus necessitating the development of collection and reverse logistics systems (Papers I, IV). Interviewees also encountered uncertainties regarding what, when and in what condition products might be received (Papers I, IV). Reuse models require systems for sorting the goods received, which ReTuna found needed to be tailored depending on the type of product (Paper IV). Inventory management was found to pose a particular challenge for rental models, as it must track not only the products in the company's possession but also which products are out in the market, what condition those products are in, and whether spare parts are available (Paper I). Companies accustomed to selling products and actors such as municipalities seeking to play a role in reuse activities may lack skills for maintenance, repair and refurbishment (Papers I, IV). ReTuna struggled to find people who had both a passion for sustainability and business experience, and thus could be successful in such a unique environment (Paper IV). Both rental and reuse actors also cited challenges regarding how to best market their offers, given the novelty of both (Papers I, II, IV).

Closely related to capabilities is the need for new *relationships* among value chain actors for both rental and reuse business models. As described below, many companies partner with other actors to acquire new capabilities. However, this was found to introduce additional challenges regarding distribution of responsibilities, flows of information, and incompatibilities between different actors (Paper I). For example, several of the interviewed home furnishings rental companies had considered partnering with each other, but found they differed too much in terms of their target consumers, quality of their products, and scale of their operations. The initial conceptualisation and development of ReTuna brought together a diversity of actors, not all of whom agreed on the what the concept should be or who should carry out which functions (Paper IV). For reuse models, the supply chain is often dependent on other actors, such as individual consumers, to supply the goods, which contributes to unpredictable supplies (Paper IV). For example, the shop owners at ReTuna do not know specifically what products they will receive, making it difficult

for them to define their businesses, arrange their shops, and plan their work. Interviewees also mentioned difficulties determining when to partner with others versus develop new capabilities themselves (Paper I).

End-users, in this case *consumers*, also pose a number of challenges for consumer goods rental and reuse business models. Modifying slightly the analytical framework of consumer barriers developed in Paper II to also account for reuse, these barriers can be grouped by those related to economics and costs; novelty and uncertainty; and desire for ownership of (new) products.

Regarding costs, interviewed rental companies noted that many consumers perceive rental to be more expensive than purchasing, especially over the longer term (Papers I, II). Although the relative financial cost depends on the length of the rental period and to what rental is being compared, comparing costs is difficult in practice, as consumers may not be able to predict how long they will need certain products and rental often includes services such as maintenance and take-back that purchase prices do not (Papers I, II). Companies also found that some consumers regard paying over time to be riskier than purchasing items outright (Paper II). Reuse models similarly face consumer cost concerns, as consumers may consider the prices of second-hand, repaired or refurbished products to be too high as compared to buying new (Paper IV). This is especially true for ReTuna, which has sought to position itself as more high-end than traditional second-hand shops and thus tends to have prices higher than nearby second-hand retailers (Paper IV). At the same time, availability of second-hand items was mentioned as a barrier to rental (Paper I).

Consumer concerns stemming from uncertainties associated with both rental and reuse business models were also found to present barriers. Because consumers do not know the history of the products, concerns can arise regarding the products' quality, functionality and cleanliness (Papers I, II, IV). Given that consumer goods rental models are a relatively new and unfamiliar concept, companies also found consumers to express worries about rules and responsibilities regarding damage, and hesitancy about entering into contracts (Papers I, II). For some of the newer home furnishings rental companies, lack of consumer awareness of the concept of home furnishings rental posed challenges for attracting customers (Paper I). Similarly, the uniqueness of ReTuna's concept, in terms of being something between a conventional mall selling new items and a second-hand shop selling inexpensive items, has generated a number of consumer misperceptions regarding what it is and what appropriate prices for its goods should be, in turn influencing whether consumers choose to visit (Paper IV). Ease of use was cited as a barrier for rental models, with some companies mentioning that consumers with a multiplicity of rental needs found selecting individual items cumbersome (Paper I).

The above factors likely also contribute to the preference for ownership of (new) items that some of the interviewees encountered with respect to consumers. Related

to the novelty of consumer goods rental, companies mentioned the challenge of going against established norms, noting that renting items such as home furnishings and eyeglasses is not yet normal (Papers I, II). Others found that some consumers feared losing flexibility in choosing rental over ownership, such as not being able to keep a product to which they had become attached during the rental period (Paper II). Although consumers engaging with reuse models acquire or retain ownership, selecting reuse over the purchase of new items is still far from mainstream (Paper IV).

Finally, both rental and reuse models encounter barriers regarding broader issues of *policy*. High labour taxes were noted to contribute to the costs of labour-intensive processes including maintenance, repair, and refurbishment (Paper I). Several of the interviewees from ReTuna mentioned that the need to pay value-added tax (VAT) on second-hand sales puts ReTuna's shops at a competitive disadvantage compared to non-profit second-hand retailers who are exempt from VAT (Paper IV). Waste policy that allows only actors officially responsible for waste management to handle goods designated for disposal or recycling can hinder other actors from engaging in reuse (Paper IV). Both rental and reuse actors also highlighted the need for policy to drive broader systemic changes regarding economic growth and natural resource use (Paper I, IV).

**Table 2. Framework of barriers encountered by rental and reuse business models**

Type of Barrier	Examples from Empirical Research
Finance and economics	Additional technical and labour costs; cash flow issues for rental models due to payments being spread over time; economic viability for reuse models due to consumers expecting low prices for not-new goods
Product design	Products not designed for disassembly or made from poor-quality materials hinder repair, refurbishment and durability; bulk and weight of furniture make transport and storage difficult and costly
Capabilities	New capabilities needed regarding reverse logistics, inventory management, storage, sorting, repair, refurbishment; uncertainties regarding what, when and in what condition products might be received
Relationships	Partnering with others can create challenges regarding distribution of responsibilities, flows of information, and incompatibilities between actors; reuse supply chains dependent on consumers and other actors lead to unpredictable supplies; difficulties determining when to partner versus develop own capabilities
Consumer-related	Economics and costs: rental perceived to be more expensive than buying; consumers expect to pay less for not-new goods Novelty and uncertainty: concerns about the quality, functionality and cleanliness of not-new products; worries about liability; hesitancy to enter into contracts Desire for ownership of (new) products: need to go against established norms, fear of losing flexibility or control
Policy	Tax on labour leads to high costs for labour-intensive processes such as repair and refurbishment; need for some second-hand retailers to pay VAT puts them at a competitive disadvantage versus those that do not

## 4.2 How Can These Barriers Be Overcome?

All four of the papers found ways that companies and other actors involved in consumer goods rental and reuse business models have addressed the barriers discussed above. Table 3 presents a framework of four strategies that rental and reuse actors were found to have used.

One strategy that was found to address many of the barriers identified above is *to reduce or eliminate the barriers directly through the design of the business model*. For example, some rental companies have addressed the unpredictability of cash flows by establishing minimum rental periods (Paper I), often aligning them with the expected use cycle of their products – e.g., one academic term for student furniture and two years for eyeglasses (Paper II). In terms of design-related barriers, offering modular furniture was found to help address storage and transport challenges associated with furniture’s bulk and weight, facilitate maintenance by increasing ease of disassembly and compatibility between products, and offer consumers more flexible furnishing options (Paper I). Regarding capabilities, limiting the number or types of products available for rent was noted to reduce demands on inventory management and, in the case of rental companies that are also manufacturers, need for new product design (Paper I). Some furnishings rental companies sought to develop new capabilities by first focusing on the more established business-to-business market, before expanding to include private consumers (Paper I). ReTuna addressed capability challenges by designing the facility to optimise logistics, including co-locating the donation, sorting and sales areas.

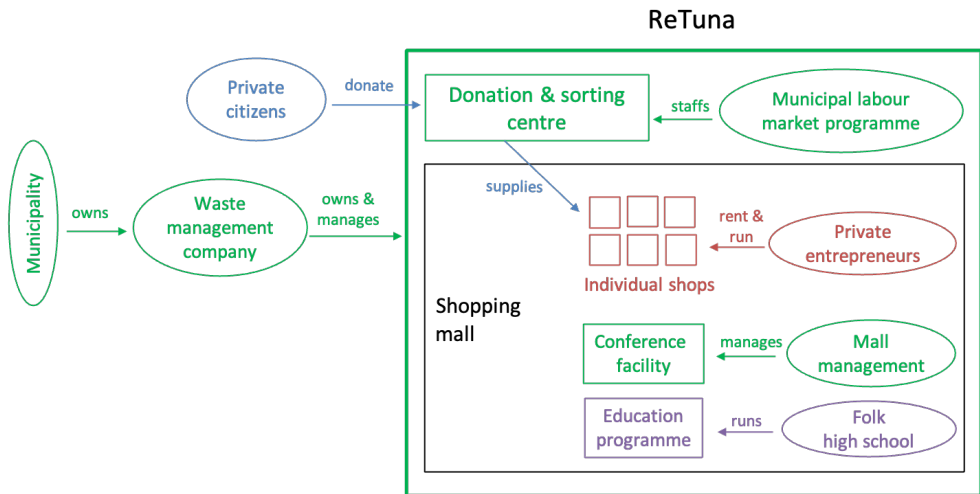
In terms of consumer barriers, flexible contracts and one-time rentals were used to attract consumers who may be hesitant to try rental (Papers I, II). Most rental companies include services such as insurance, maintenance, repair and cleaning in their offers, which can help reduce concerns about liability, quality, functionality and hygiene (Papers I, II). Rental companies were also found to address consumer barriers by tailoring their offers based on both their products and target consumers. For example, furniture rental company Hemmlis, which was established by and for students, began by offering fixed combinations of furniture based on what was most needed in student accommodation and acquired from second-hand sources to keep prices within a student budget (Paper II). Children’s clothing rental company Hyber includes free exchanges whenever a change in sizing is needed, while both of the interviewed eyeglass rental companies offer new lenses in case of changes in eyesight (Paper II). Some rental companies allow consumers to buy out the products either during or at the end of the rental period (Paper III), thus addressing barriers regarding desire for ownership. Bundling products or services together is one way companies sought to increase ease of use, e.g., by offering packages of furniture or children’s clothing rather than individual items, in response to consumer requests (Papers I, III). Similarly, some of the shops at ReTuna offer services such as IT



repair and upgrades and customised tailoring or furniture refurbishing in addition to second-hand sales (Paper IV).

A second strategy that was found to address many different barriers to both rental and reuse business models is to *involve other actors*. This involvement can take a number of different forms, ranging from partnering with other firms to acquire needed capabilities to integrating non-business actors into the business model. For example, some of the interviewed rental companies work with third party providers of functions such as transportation, storage, reverse logistics or managing subscriptions (Papers I, II), thereby eliminating the need to develop these capabilities themselves. Other companies forgo the need to manufacture their own products by serving as platforms to rent out products manufactured by others (Papers I, II, III). Interviewed rental companies also discussed the potential of partnering with actors such as housing associations, property managers and universities to both increase awareness of and scale up their offerings (Paper I).

ReTuna (Paper IV) presents the most extensive example of involving other actors, as illustrated in Figure 3. In ReTuna's case, it is the municipality, rather than a single firm, that developed and manages the overall business model. ReTuna's supply chain comprises donations from private individuals, which are collected on-site by the municipal waste management company and sorted by employees of a municipal labour market programme. The shops that sell these goods are run by private entrepreneurs. ReTuna also works with a local educational institution to offer a training programme in product design for re-used goods, and runs a conference facility, overseen by mall management, that hosts public and private events. This diversity of actors in turn helps address several barriers to reuse business models. For example, the involvement of the municipal waste management company in collecting items for reuse allows access to these goods, which, due to waste policy assigning responsibility for waste to municipalities, would not be possible for a private actor. On the other hand, the involvement of private entrepreneurs means that the municipality does not need to develop capabilities regarding repair, refurbishing, maintenance or sales of products. The educational programme and conference facility attract people to ReTuna who might not otherwise visit it. The engagement of an array of actors with different experience, knowledge and expertise was also key to envisioning the ReTuna concept and gaining support for its development and implementation (Paper IV).



**Figure 3. Actors involved in the ReTuna reuse-based shopping mall**

Author's sketch. Green indicates municipal actors, blue indicates private citizens, red indicates private entrepreneurs and purple indicates educational institutions.

One strategy that was found to address consumer-related barriers regarding uncertainty for both rental and reuse models is to *link the new offerings to concepts with which consumers are already familiar*. This can be done through both marketing communications and the design of the business model. For example, one company that offers a subscription service for sheets and towels markets its offer as “a hotel experience at home”, likening it to the luxury of coming back to freshly laundered linens as one would do when traveling (Paper I). Another company talks about “streaming” furniture, similar to streaming movies or music (Paper I). As communicated by the interviewees, framing their offers in this way implies that they are not so different from things consumers do already, even if on the surface they may appear to be.

Using familiar distribution channels, such as offering eyeglass rental at traditional brick-and-mortar stores or establishing physical showrooms where consumers can preview clothing items that are available to rent, is another way companies were found to limit the degree of change consumers needed to make to engage with their offers (Paper II). ReTuna was designed to mimic a traditional shopping mall specifically to make it attractive to and convenient for mainstream consumers who might not otherwise visit second-hand shops (Paper IV). Through offering a variety of individual shops in a welcoming environment with a restaurant, seating areas, and multiple floors, shopping at ReTuna feels much like shopping at any other mall. Interestingly, the IKEA store at ReTuna is laid out in the same way as other IKEA stores, only on a much smaller scale. Whereas IKEA could have differentiated its first second-hand store, it has instead chosen to retain the familiar format of

grouping its products by “room”, with arrows on the floor directing shoppers between them. Images of ReTuna can be seen in Figure 4.

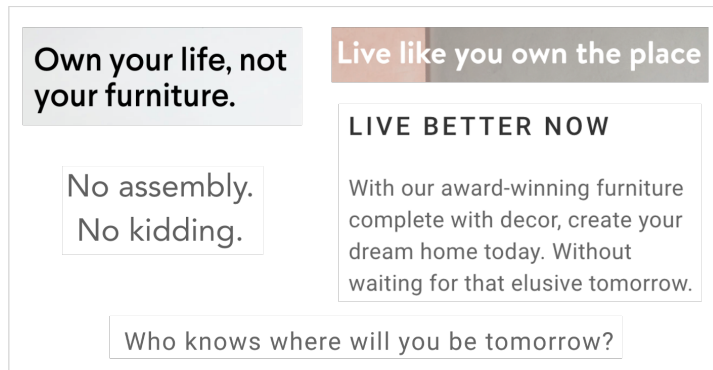


**Figure 4. The entrance to and shops at the ReTuna reuse-based shopping mall**  
Photographs by the Author

A final strategy that was found to address consumer-related barriers is to *outweigh or offset the barriers by emphasising added benefits*. This strategy was found primarily in the case of rental. For example, whereas interviewed companies cited cost concerns as a barrier for consumers (Papers I, II), few companies communicate the cost of renting. Rather, they tend to emphasise other *economic benefits*, such as access to products one otherwise could not afford, freeing up resources for other things in life, or the security of predictable payments (Papers II, III). In contrast to consumer barriers regarding desire for ownership, a number of companies communicate *freedom from burdens of ownership*, emphasising the flexibility of rental to meet unpredictable needs and highlighting aspects of their offers such as the ability to change products or return them at any point (Papers II, III). Both economic benefits and freedom from burdens of ownership are often framed in terms of *aspiration*, with messages such as “...create your dream home today. Without waiting for that elusive tomorrow” or “Embrace life’s opportunities without letting furniture weigh you down” (Paper III). The ability to change products is also reflected in messaging around *novelty* and, relatedly, *self-expression*, especially the possibility to experiment with new styles or keep up with current trends (Papers II, III).

Many companies also emphasise *convenience*, e.g., stating that renting makes furnishing one’s home hassle-free or assuring consumers that everything, including delivery, assembly, cleaning, and take-back, is included (Papers II, III). This could address barriers regarding consumer uncertainties. Finally, benefits regarding *sustainability*, such as keeping products from being thrown away or contributing to a more circular economy, appear in some rental companies’ messaging. However, with the exception of a couple of companies, they tend not to be prominent (Paper III). Several of the interviewed companies noted that although they have entered the rental market for sustainability reasons, sustainability tends not to be a primary

driver among their consumers and thus is not the main message they convey (Papers I, II). Examples of messaging by home furnishings rental companies can be seen in Figure 5.



**Figure 5. Examples of home furnishings rental company messaging**  
 Images from theeverset.com, fernish.com, cort.com, and furlenco.com

**Table 3. Framework of strategies to overcome barriers to rental and reuse business models**

Type of Strategy	Examples from Empirical Research
Reduce or eliminate the barriers directly through the design of the business model	Companies offer modular furniture to make transport, storage and refurbishment easier; limit the number of products available to reduce demands on inventory management; or use flexible contracts to attract consumers hesitant to try rental
Involve other actors	Companies partner with other providers for reverse logistics, transportation, or storage; rental companies serve as a platform to offer products manufactured or owned by other companies; ReTuna integrates municipal and private actors in its business model
Link new offerings to concepts with which consumers are already familiar	A company that offers a subscription service for sheets and towels promotes its offer as “a hotel experience at home”; ReTuna mimicks a traditional shopping mall
Outweigh or offset the barriers by emphasising added benefits	Rental companies use messaging reflecting economic benefits, freedom from burdens of ownership, aspiration, novelty, self-expression, and convenience



# 5 Discussion

This chapter places the empirical findings in the context of broader literature, discusses developments since the research took place, and reflects on the choice of research design and methods.

## 5.1 Barriers to Rental and Reuse Business Models

A number of the barriers that were found in the empirical research to hinder rental and reuse business models align with those found in previous literature. For example, higher technical and labour costs associated with developing, managing, and performing processes such as reverse logistics, maintenance, repair and refurbishment have been identified for both rental and reuse models more broadly (Besch, 2005; Forrest et al., 2017; van Loon et al., 2018). Cash flow challenges for rental models are a prominent theme in literature on PSS (Mont, 2002a; Tukker, 2015). Design-related barriers, in terms of products not being conducive to repair, refurbishment, or multiple cycles of use, are also found (T. Cooper, 2010; Prendeville et al., 2017). The need to develop new capabilities and build relationships with different actors, and the challenges therein, are considered a key characteristic of business models for both rental (Manzini & Vezzoli, 2003; Reim et al., 2015), and reuse (Vermunt et al., 2019). Consumer-related barriers are also frequently cited, particularly concerns about the quality, functionality and cleanliness of not-new goods (Armstrong et al., 2015; van Weelden et al., 2016; Whalen et al., 2018), and the relative costs of engaging in rental or reuse versus buying new (Day et al., 2020; van Loon et al., 2018). Additional examples of how the barriers found in the research compare to literature can be found in the appended papers.

However, the empirical research also found that home furnishings do pose some unique barriers to rental and reuse business models as compared to other goods. For example, as has been identified for office furniture (Besch, 2005), the bulk and weight of furniture products can make reverse logistics and storage both difficult and costly, especially as compared to other consumer goods such as clothing and eyeglasses that were explored in this thesis. In addition, whereas office furniture may experience some economies of scale due to furniture being replaced in large quantities (Parker et al., 2015), home furnishings rental and reuse tend to be more

dispersed, making activities such as transport less cost efficient (Paper I). ReTuna (Paper IV) had to develop a separate sorting system for furniture because it was too large to place in the individual shops' storage areas, as is done for other donated items. Size constraints also limit how much furniture ReTuna can accept, which means it cannot accommodate all of the donations it receives and must send some of them to recycling or incineration. The inconvenience of transporting furniture poses further challenges for reuse. Although ReTuna has worked with the local municipality to increase bus service to the mall, consumers are still limited by the ability to transport large items by bus. Prior literature similarly finds the size and weight of furniture to hinder consumers from donating products for reuse (Fortuna & Diyamandoglu, 2017a).

Home furnishings also encompass a wide variety of product types, ranging from sofas to dining tables to throw pillows. This, in turn, reduces the compatibility between products, especially as compared to products made of more similar materials and components, such as clothing or eyeglasses. Compatibility is particularly important for refurbishment, as parts can be shared between products (Sumter et al., 2018). Interviewees also noted that home furnishings can pose greater demands on inventory management and the need for spare parts than products such as office furniture, which tends to have a smaller range of product types (Paper I).

The relative newness of home furnishings rental, and resulting uncertainties about consumer use patterns, pose further challenges for inventory management and other processes, including knowing when products might be in need of repair or refurbishment (Paper I). While unpredictability about when and in what condition providers may receive products has previously been identified as a barrier to both rental (Besch, 2005) and reuse (Singh et al., 2019), this is potentially exacerbated in the case of home furnishings. Increasingly mobile lifestyles (Jansen, 2019) and the fact that home furnishings purchases often align with life events, such as moving in with someone or having a child (Ponder, 2013), suggest that home furnishings is a sector in which consumer use patterns may be particularly difficult to predict. Company messaging such as "who knows where you'll be tomorrow?" (Paper III) also reflects this.

Other findings conflict somewhat with previous research. For example, desire for ownership has long been considered a key barrier to rental models (Baines et al., 2007; Gullstrand Edbring et al., 2016; Mont, 2004; Tukker, 2004, 2015). However, ownership was not identified as a substantial barrier by the home furnishings rental companies interviewed in Paper I. The number of companies offering home furnishings rental, including many that have entered the market in the past five to seven years (Paper III), also suggests that desire for ownership may not be as great a barrier to rental as in the past. In contrast, the companies interviewed in Paper II did cite desire for ownership as a continuing barrier. At the same time, companies were found to both promote rental as a way to avoid burdens associated with ownership, and allow consumers to purchase rented items (Paper III). Company

taglines such as “live like you own the place” (Paper III) further send mixed messages about the value of rental versus ownership.

These findings suggest that the concept of ownership is complex, and thus worthy of further consideration. Rather than taking desire for ownership as a barrier to rental in and of itself, understanding what factors might underlie this barrier would shed light on whether and under what conditions it may be a barrier and, in turn, how to address it. Previous studies suggest that ownership gives consumers control over their belongings and their lives, and that moving away from ownership can mean giving up freedom, flexibility and control (Cherry & Pidgeon, 2018; Tukker, 2015). Ownership has also been found to contribute to a person’s sense of identity, image, and self-esteem (Catulli et al., 2013), something that previous literature has suggested is not the case for rental (Tukker, 2015). Moreover, giving up ownership is perceived as going against well-established norms (Gullstrand Edbring et al., 2016; Vezzoli et al., 2015). Other consumer-related barriers to rental found in both previous literature and the research in this thesis, including concerns about costs, liabilities, and characteristics of not-new products, could also contribute to a preference for ownership over rental.

Considering these underlying factors could explain why desire for ownership seems not to pose as big a barrier as previous studies suggest. For example, with regard to freedom, flexibility and control, company messages such as “Hello, Furniture Freedom”, “Live flexibly”, and “Embrace life’s opportunities without letting furniture weigh you down” (Paper III), imply that rental can also provide these benefits. In fact, emphasising freedom from burdens of ownership suggests that it is actually ownership that poses limitations to freedom, flexibility and control. While freedom from burdens of ownership has been identified as a benefit of rental generally (Berry & Maricle, 1973; Moeller & Wittkowski, 2010), it seems particularly pertinent for home furnishings, which, as some company messaging implies (Paper III), pose literal burdens when moving.

Similarly, in contrast to findings that non-ownership is less likely than ownership to positively contribute to identity, image and self-esteem (Catulli et al., 2017; Cherry & Pidgeon, 2018; Tukker, 2015), the research found that home furnishings rental is in fact promoted as an avenue for self-expression (Paper III). This could reflect the particular product sector, as home furnishings have previously been linked to identity (Ponder, 2013; Reimer & Leslie, 2004). It could also reflect the increasing variety of home furnishings products that are available to rent. Industry sources citing the growth in the consumer goods rental market across a number of product sectors (Jones, 2019) and news articles proclaiming “Owning nothing is now a luxury...” (Maheshwari, 2019) also suggest that social norms regarding the superiority of ownership may be changing. A number of these sources cite factors including increasingly mobile lifestyles to explain the growth in consumer goods rental, including home furnishings (Jansen, 2019; Maheshwari, 2019). Increasingly mobile lifestyles might also help explain the contrast between earlier findings that



rental cannot provide a sense of “homeyness” in the same way as ownership (Durgee & Colarelli O’Connor, 1995) and the fact that home furnishings rental is now promoted with messages such as “make your house a home” (Paper III). This earlier study saw homeyness connected to security and putting down roots (Durgee & Colarelli O’Connor, 1995), while the current findings suggest that creating a sense of home may be achieved in other ways.

Relatedly, the research suggests that the image of both rental and reuse seems to be shifting as compared to previous literature. In contrast to earlier studies that found consumers to perceive rental and reuse as appropriate only for people who could not afford to buy new (Catulli et al., 2013; Forrest et al., 2017), both are now seen desirable. For example, rental is promoted as a way to gain access to current trends, as well as being trendy in and of itself (Paper III). ReTuna has attracted visitors from around the world, including both tourists and those interested in exploring whether such a concept could be implemented in their own cities (Paper IV). Second-hand clothing was proclaimed Sweden’s Christmas gift of the year in 2018, an honour that is given to a product that has aroused a high level of new interest, exhibited significant sales volumes and “reflects the time we live in” (HUI, n.d.).

To the extent that ownership is still valued by consumers, literature on psychological ownership (Baxter et al., 2015) suggests that it is possible to convey a sense of ownership even if the products are not actually owned. For example, Tunn et al. (2019) found that allowing consumers to temporarily customise rental bikes increased feelings of ownership among those consumers. Thus, it may be relevant to consider how *notions* of ownership might be used to address barriers to home furnishings rental.

Findings regarding hygiene also conflict somewhat with prior studies. While previous literature emphasises hygiene concerns as a barrier to not-new goods (Armstrong et al., 2015; Catulli et al., 2013), the findings in this thesis were mixed. Although some of the rental companies interviewed in Paper II did mention hygiene concerns, those in Paper I did not. This could reflect different product types, as, for example, children’s clothing was one product for which hygiene concerns were mentioned. This would align with findings that consumers find products made of soft materials such as fabric less appealing to rent than those made of hard materials such as wood (Gullstrand Edbring et al., 2016). However, several of the studied companies provide counterexamples. In contrast to previous findings that consumers do not find the idea of renting sheets and towels appealing (Gullstrand Edbring et al., 2016), one of the interviewed companies is successfully doing just that (Paper I). Another rental company focuses exclusively on home textiles including bedding, throw pillows and blankets (Paper III). Others include home textiles in addition to furniture and home accessories (Paper III).

The rental companies offering home textiles use different strategies that could help explain why hygiene concerns seem not to have hampered their business models as

much as previous literature would suggest. The first company, as referenced above, positions their offer as similar to staying in a hotel, thus linking it to a concept with which consumers are already familiar (Paper I). The second company has partnered with a popular clothing rental company (Paper III). While this was not one of the companies interviewed for this thesis, one might infer that this partnership allows the home furnishings company to reach consumers who are already comfortable renting textile products. Finally, one of the interviewed companies, which offers furniture rental for students, found that people relocating for a relatively short period of time also needed or wanted items for their home besides just furniture, preferably also on a temporary basis. This could explain why many home furnishings rental companies offer items including home textiles.

Hygiene concerns were not mentioned in the case of ReTuna. This could reflect ReTuna's positioning as a more upscale version of second-hand shopping. It could also reflect the fact that those coming to ReTuna know that all of the products have been used before and thus are already comfortable with not-new goods. One study of clothing rental interestingly found that whereas consumers did express hygiene concerns regarding clothing rental, they did not for shopping at second-hand stores (Mukendi & Henninger, 2020). The authors noted that the reason for this difference was inconclusive, although it could have reflected uncertainty about the rental companies' care practices (Mukendi & Henninger, 2020). Second-hand shopping, on the other hand, is more well-known, and thus potentially more accepted.

Finally, one additional difference between the empirical research in this thesis and previous literature concerns the characteristics of the business models discussed. In contrast to earlier literature on rental models that largely assumes ownership remains with the manufacturer (Fischer et al., 2015), many of the rental models encountered in the research are platform models, in which the rental provider offers products owned by other companies. This increases the complexity of the business model and thus potentially also the barriers. For example, interviewed rental companies cited challenges such as financial risks extending to multiple actors, difficulties getting feedback about product use to manufacturers given that the manufacturers do not interface with consumers, and mismatches between different actors' internal systems, ways of working, and scales of operation (Paper I). These challenges intensify those previously identified for rental models including actor roles, information and financial flows, and incompatibilities between different actors (Besch, 2005; Costa et al., 2015; Mont et al., 2006; Reim et al., 2015).

## 5.2 Strategies to Overcome Barriers to Rental and Reuse Business Models

Some of the ways in which the interviewees have designed their business models to address particular barriers reflect and expand on findings from broader literature. For example, companies' use of modular products expands on findings that these products can make refurbishment easier (Sumter et al., 2018) to also include facilitating storage and transport of bulky items, as well as giving consumers more flexible furnishings options. Limiting the choice of products available reflects previous findings regarding reducing demands on inventory management (Sumter et al., 2018) and, for companies that manufacture their own products, was also found to reduce the number of products that needed to be (re)designed to accommodate rental or reuse. Rental companies that chose to start in the more established business-to-business market echo findings about companies initially implementing less complex business models in order to develop their capabilities (Pieroni et al., 2019). Use of minimum rental periods to address issues of corporate cash flows reflects a similar suggestion by Besch (2005) for office furniture, but does, however, conflict with findings regarding consumers' hesitancy to enter into contracts (Cherry and Pidgeon, 2018) and could reduce the freedom from burdens of ownership that rental is often claimed to provide (Paper III).

One common theme revealed with regard to business model design was the continuous experimentation with, and evolution of, the business models in response to the barriers they encountered. For example, the use of modular furniture by one rental company came about after they encountered storage and transport difficulties with their original offering of vintage furniture (Paper I). Another company shifted from owning their supply to renting it from manufacturers, in order to better manage both their inventory and their cash flow (Paper I). One company that intended to rent furniture to students moved to a higher-end market after finding that they were unable to set prices that both covered their costs and were within a student budget (Paper I). Two of the shop owners at ReTuna found that the centralised donation sorting system did not suit their needs, so opted to do the sorting on their own (Paper IV). Such experimentation is indeed a key factor in business model innovation generally (Chesbrough, 2010; Evans et al., 2017; Geissdoerfer et al., 2017) and innovation more broadly (Bergek et al., 2008; Hekkert et al., 2007).

In terms of involving other actors, partnering with other actors is a prominent theme with respect to sustainable business models, including rental and reuse (Boons & Lüdeke-Freund, 2013). Much product-service system literature emphasises the importance of networks of actors (Reim et al., 2015). Literature on reuse highlights the synergies that can result from combining different actors and creating more integrated reuse systems (Cox et al., 2010; Curran & Williams, 2010; Fortuna & Diyamandoglu, 2017a). However, ReTuna presents a unique case in terms of the

extent to which it includes non-corporate actors in its business model. Although the importance of non-corporate actors has been addressed in literature on cross-sector, collaborative, and stakeholder-based business models (Freudenreich et al., 2020; Jonker et al., 2020; Pedersen et al., 2020), this literature still assumes that there is a focal firm that collaborates with these other actors. However, in ReTuna's case, there is no focal firm. Rather, it is municipal actors who are at the centre of the business model. Other sustainable business model literature claims that focal "firms" can also be non-profit or hybrid for-profit/non-profit organisations, but does not mention municipalities (Brehmer et al., 2018). Studies that have looked at the role of municipalities in furthering sustainable business models find many functions they can fulfil, including developing supportive regulations, providing infrastructure and financial support, building connections, offering services, and partnering with sustainability-focused organisations, but do not find examples of municipalities directly engaged in managing a commercial business (Voytenko Palgan et al., 2021). ReTuna thus represents both a new business model and a new role for municipalities in directly supporting sustainable business models.

The strategy of linking new offerings to concepts with which consumers are familiar aligns with findings from the field of behavioural economics that when faced with uncertainty or new information, people tend to reference their prior experiences and prefer things they already know (Baddeley, 2017). Studies of consumer acceptance of sustainable business models also suggest that the fewer behaviour changes consumers perceive they need to make to engage with these models, the greater the likelihood that the models will resonate with them (Rexfelt & Hiort af Ornäs, 2009; Tunn, Bocken, et al., 2019). By both reducing uncertainty and implying that little behaviour change is needed, positioning rental and reuse as similar to things consumers already do thus holds promise for reducing consumer-related barriers to rental and reuse business models. Associations with past experiences can, however, be negative. For example, Cherry and Pidgeon (2018) found that consumers were hesitant to enter into rental contracts due to past experiences with hidden costs and loopholes in other contract-based services. It is thus important that companies carefully consider how they present their offerings and what sorts of associations this might generate.

Underlying the strategy of outweighing or offsetting barriers by emphasising added benefits is the idea that consumers derive multiple benefits from engaging with a particular business model. This aligns with literature on consumption demonstrating the complexity of consumer decision-making, namely that consumers consider many different factors when making consumption decisions (Arnould & Thompson, 2005; Camacho-Otero et al., 2018; Sweeney & Soutar, 2001). Several PSS studies also note the importance of communicating to consumers the relative benefits of PSS compared to more conventional models, given the novelty of and uncertainties associated with PSS (Reim et al., 2015; Rexfelt & Hiort af Ornäs, 2009). One challenge, however, is that consumers value different things (Power & Mont, 2010).

Similarly, what might be considered a benefit by one person could be considered a barrier for another. For example, companies noted that spreading rental payments over time was considered by their consumers to be both less and more risky than owning. While, on the one hand, it can help to avoid large or surprise costs that are often associated with ownership, on the other, it can create concerns about the ability to pay the ongoing fees if consumers encounter financial hardship (Papers I, II). Novelty also had both negative and positive connotations, in terms of encouraging experimentation but also causing consumer uncertainties (Papers I, II).

### 5.3 Recent Developments

In the time since the research in the appended papers was carried out, new realities have emerged that will likely continue to affect home furnishings business models and consumption patterns. This, in turn, could generate both new barriers and new opportunities to further rental and reuse.

As much of the research took place during the global COVID-19 pandemic, it is relevant to reflect on the impacts of COVID-19 on the home furnishings sector. Home furnishings rental has seen a surge in demand during the pandemic. Company Fernish reported a 300% increase in orders for home office items and a 90% increase for home accessories and decorative items in the two months after the start of the pandemic (Verdon, 2020). Such trends have since continued amongst numerous home furnishings rental companies, attributed to both the flexibility of rental in the face of uncertainties posed by the pandemic and investments in people's living spaces as they spend more time at home (Chouinard, 2021). The rise in hybrid and remote work options suggests that there will continue to be less separation between work and home, which could further support demand for flexible interiors and, in turn, home furnishings rental.

On the other hand, revisiting the websites of the companies analysed in Paper III reveals that more home furnishings rental companies now seem to offer and promote ownership options, such as buying products at any point in a rental contract or even buying products outright without renting them at all. Company Feather even changed its tagline to reflect this, now stating "Furniture for now or forever" (<https://www.livefeather.com/>). One company interviewed in a recent news article stated that they added an ownership option because they found that their customers became attached to the items they were renting and wanted to keep them (Chouinard, 2021). This reflects previous findings that emotional attachment can hinder rental models by making people reluctant to return the items (Mukendi & Henninger, 2020; Petersen & Riisberg, 2017). It also suggests a potential role for hybrid rental/ownership business models in the future.

The COVID-19 pandemic also illuminated some of the risks associated with global supply chains. As many rental and reuse business models rely on the use of already produced goods to which they have access in their vicinity, these business models could potentially help make local economies and households less dependent on global supplies of new products, and thus more resilient to external shocks, going forward.

## 5.4 Reflections on Research Approach and Methods

The interdisciplinary and transdisciplinary approach employed in this thesis was appropriate given the pragmatic positioning of addressing the real-world problems and the complexity of the sustainability challenges this thesis seeks to address. It also allowed for learning about a number of different fields, including sustainable consumption, sustainable business models, product-service systems, waste management, consumer studies, and technological innovation systems. While such breadth necessarily comes with a trade-off in terms of deeper knowledge of any one field of research or practice, the challenges of changing current consumption patterns and systems of provision require a systemic approach, as well as the involvement of both academic and non-academic actors.

Given the novelty of the business models explored in this thesis, and the aim of understanding the breadth of rental and reuse barriers from the perspective of companies' own experiences, a qualitative approach to the research was appropriate. In addition, the use of qualitative content analysis for all four papers allowed for the development of in-depth knowledge and skills in applying this method. The qualitative approach and method do, however, represent a trade-off with learning and applying a wider variety of methods, particularly those of a quantitative nature. Engagement with other data collection methods, including surveys and workshops, and other data analysis methods, including descriptive statistics and regression analysis, did occur through work carried out as part of the Mistra Sustainable Consumption research programme that is not represented in the appended papers, as well as through supervising master's students using these methods in their theses. Such methods would be a suitable next step for much of the research in this thesis. For example, the barriers and strategies to overcome them identified in the research could be used to develop surveys to reach a greater number of companies and assess whether the findings apply more widely. A quantitative analysis of company marketing messages could provide insights as to what types of messages tend to be most frequent or how messaging might vary depending on companies' target consumers, geographic markets, or particular rental offers.

The research design and methods used in each of the individual papers all had their strengths and weaknesses. For Papers I and II, interview questions were informed

by the analytical frameworks that resulted from the literature reviews but did not ask about the specific company and consumer barriers that were identified in literature. Rather, they asked the open-ended question of what barriers the companies have encountered, followed by additional questions to better understand the barriers they named. This avoided limiting potential answers by pre-suggesting barriers and also allowed new barriers to come to light that were not found in literature. This was appropriate given that home furnishings rental was not specifically addressed in the previous studies (with one exception), and thus it was likely that different barriers might emerge. However, this approach also meant that it is possible companies encountered barriers that they did not mention. Hence, the absence of a barrier cannot necessarily be taken to mean that companies did not encounter it, only perhaps that it was not one of the most substantial barriers and thus not top-of-mind during the interviews.

For Paper III, while a qualitative content analysis of company websites enabled the analysis of messaging from a wide range of companies and provided valuable empirical examples of the different ways companies communicate their home furnishings rental offers, it did not allow for a more comprehensive analysis that could inform how to shape messaging to best resonate with consumers. Such an analysis could include understanding why different companies have chosen particular messages, who their target consumers are, and whether they consider their messaging to be effective. This would require engaging with companies directly, which, due to practical limitations, was beyond the scope of Paper III, but is recommended as a next step.

Compared to the other papers in this thesis, Paper IV is a bit of an outlier. Although it considers ReTuna to be a reuse-based business model, the paper is framed primarily from the perspectives of waste management and technological innovation systems. In keeping with a pragmatic perspective and also exhibiting an “emergent design” that is common in qualitative research (Creswell, 2014, p. 186), the research design for this paper evolved as more was learned about ReTuna. Despite this different framing, understanding how ReTuna came about does provide insights about overcoming barriers to reuse. Using the TIS framework and viewing the emergence of an innovative business model as the result of different TIS functions also represents a different way to address the overall thesis objective of understanding how such models can become more prevalent, as compared to looking at barriers and ways to overcome them. In retrospect, the TIS framework could also have been applied to the studied rental companies.

Finally, the COVID-19 pandemic influenced the research design and methods for all four of the papers. Lack of availability of interviewees contributed to a smaller than desired sample sizes for Papers I and II. Paper I was originally intended to include home furnishings rental companies beyond Sweden, while for Paper II, 18 Swedish consumer goods rental companies were contacted but only seven were available for interviews. Paper III was designed as a desk study using secondary

data largely to address the challenges of collecting primary data during this time period. Travel restrictions delayed data collection for Paper IV, which proved difficult to carry out digitally, and also limited the amount of time that could be spent at ReTuna once it did become possible to visit.





# 6 Conclusions

This chapter provides a brief summary of the key findings, outlines the contribution of the research to both theory and practice, and suggests areas for future research.

## 6.1 Summary of Findings

The objective of this thesis was to understand why we do not see more rental and reuse business models in practice, and how these business models can become more prevalent. The thesis did so by addressing two research questions: what barriers rental and reuse business models encounter, and how these barriers can be overcome. It focused specifically on the home furnishings sector (furniture and home textiles), while bringing in lessons from and for other consumer goods.

Through interviews with consumer goods rental companies, document analysis of company marketing materials, and a case study of Sweden's pioneering reuse-based shopping mall, ReTuna, the research found that rental and reuse business models encounter a number of barriers regarding finance and economics, product design, capabilities, relationships, consumers, and policy. While many of these barriers align with those found in prior studies concerning a variety of consumer goods, home furnishings were found to pose unique challenges given their bulky nature, variety of product types, and uncertainties about consumer use patterns. However, the research also suggests that consumer-related barriers regarding desire for ownership and hygiene concerns related to not-new goods seem not to be as prevalent as previous research would suggest.

The thesis also found ways that barriers to rental and reuse business models can be addressed. Companies were found to reduce or eliminate the barriers directly by altering the design of their business models, such as by offering modular furniture to make transport, storage and refurbishment easier; limiting the number of different products available to reduce demands on inventory management; or using flexible contracts to attract consumers who might be hesitant to try rental. One common theme regarding business model design was the continuous experimentation with, and evolution of, the business models in response to barriers that were encountered. Another strategy that was found to address the barriers is to involve other actors. This can range from partnering with other companies to acquire other capabilities

to integrating non-corporate actors into the business model, as ReTuna has done. One strategy that was found to address consumer uncertainties stemming from the novelty of the rental and reuse business models that were explored in this thesis was to link new offerings to concepts with which consumers are already familiar. This included using familiar distribution channels and, in ReTuna's case, mimicking a traditional mall. Finally, rental companies were found to outweigh or offset consumer-related barriers by emphasising added benefits, including economic benefits, freedom from burdens of ownership, aspiration, novelty, self-expression and convenience.

## 6.2 Contributions to Theory

This thesis makes several theoretical contributions. With respect to the field of sustainable business models broadly, the research contributes a framework, based on empirical evidence, of barriers encountered by rental and reuse business models (Table 2). These barriers concern finance and economics, product design, capabilities, relationships, consumers, and policy. Consumer barriers are further broken down into those regarding economics and costs, novelty and uncertainty, and desire for ownership of (new) products. The research also contributes a framework of four strategies, also based on empirical evidence, that can be used to address these barriers (Table 3). These include reducing or eliminating the barriers directly by altering the design of the business model, involving other actors, linking new offerings to concepts with which consumers are already familiar, and outweighing or offsetting the barriers by emphasising added benefits. While the empirical examples on which both frameworks are based come primarily from the home furnishings sector, the categories of barriers and strategies are broad enough that they could be applied to the study of other sectors, and potentially of other types of sustainable business models as well.

The research also provides insights on how non-corporate actors, particularly municipalities, can help facilitate sustainable business models. Although involvement of a range of stakeholders is considered by many researchers to be a key component of sustainable business models (Dentchev et al., 2018; Lüdeke-Freund & Dembek, 2017), there has been a stated need for more “insightful cases” illustrating the possibilities of collaborations between public, private and non-profit actors in contributing to sustainable business models (Pedersen et al., 2020, p. 9). ReTuna provides such an insightful case. The ReTuna case also expands previous literature on different roles municipalities can play in supporting sustainable business models (Voytenko Palgan et al., 2021) to include direct engagement in managing the business.

In terms of specific types of sustainable business models, the research adds new insights to the field of PSS. In contrast to earlier studies that found both desire for ownership and hygiene concerns to be key barriers to consumer goods rental (Baines et al., 2007; Catulli et al., 2013; Gullstrand Edbring et al., 2016; Tukker, 2015), the research finds that at least some rental companies have not found these factors to substantially hinder their business models. The increasing engagement by both companies and consumers in not only home furnishings but also clothing and eyeglass rental also challenges the earlier idea that products that are relatively inexpensive, used frequently, influenced by fashion, and require little maintenance are not as suitable for rental as products that do not exhibit these characteristics (Tukker & Tischner, 2006a).

The research also fills a gap in PSS literature regarding the promotion of PSS business models. To date, the majority of PSS studies have focused on topics including business model design (Besch, 2005; Mont, 2002a; Vezzoli et al., 2015) and consumer acceptance (Armstrong et al., 2015; Catulli, 2012; Cherry & Pidgeon, 2018). While the communication of PSS is crucial for their successful implementation (Day et al., 2020; Reim et al., 2015; Rexfelt & Hiort af Ornäs, 2009), few studies have explored how PSS, and specifically rental, have been promoted in practice (Chamberlin & Boks, 2018). Through an analysis of home furnishings rental company messaging from around the world and interviews with marketing and sales experts, Papers III and II make an empirical contribution in this respect. While the particular messages identified in the research are primarily from the home furnishings sector, the categories of benefits they reflect, including economic benefits, freedom from burdens of ownership, aspiration, novelty, convenience, self-expression, and sustainability, are broad enough to be applied to rental of other consumer goods.

With respect to reuse, the research contributes by elucidating an innovative business model that combines different actors and factors to address barriers to reuse. While prior studies have pointed out synergies that can be achieved by involving multiple reuse actors (Curran & Williams, 2010), the concept of a mainstream commercial business based on municipal waste collection is not one that has been explored in academic research. Cox et al. (2010), in their study on waste prevention including reuse, find a need for case study research of partnerships between local governments and other actors, including how they work and ways of overcoming barriers, to which the ReTuna case study responds. In applying the TIS framework to analysing ReTuna, Paper IV also answers calls to apply socio-technical approaches to research on waste management, including reuse (Andersson et al., 2019). This, in turn, makes modest contribution to the field of innovation systems by illustrating the how the TIS concept can be used to understand the emergence and development of a non-technical innovation. Although sustainability transitions literature, under which TIS falls (Markard et al., 2012), suggests that business models can themselves be sources of innovation, few studies have applied transition theories to business models

(Bidmon & Knab, 2018; Sarasini & Linder, 2018), particularly using the TIS approach.

From a sector perspective, responding to both the need for research that looks at how barriers to sustainable business models might differ by sector (Kirchherr et al., 2018; Vermunt et al., 2019), and a call for knowledge to support the creation and implementation of sustainable business models for home furnishings specifically, (T. Cooper et al., 2021), this thesis contributes empirical knowledge and insights about the home furnishings sector. In particular, while the research confirms that some of the barriers found to hinder rental and reuse business models for home furnishings align with those found in studies of other sectors, it also finds that home furnishings pose unique barriers to these models due to the bulk and weight of many home furnishings products, wide variety of product types, relative newness of the concept of home furnishings rental, and unpredictability regarding consumer use patterns. In focusing on the home furnishings sector, the research demonstrates that the barriers encountered by rental and reuse business models do, to some extent, depend on the sector in question. Thus, understanding why there are not more rental and reuse business models in practice, as well as how these business models can become more prevalent, requires going beyond the barriers faced by these business models generally to more deeply explore the barriers particular sectors encounter, as the research has done.

Finally, regarding the field of sustainable consumption, the research builds on the importance of systems of provision in influencing the choices consumers have available (Southerton et al., 2004; Spaargaren, 2003) and brings in a business model perspective to understand how more sustainable consumption choices can become more available to more consumers. By understanding the barriers that rental and reuse business models encounter and how these barriers can be overcome, the research contributes knowledge to support the development and implementation of systems of provision that can help drive consumption in a more sustainable direction.

## 6.3 Contributions to Practice

In keeping with the pragmatic approach of this thesis, much of the research was carried out in collaboration with practitioners, with an aim that it would generate knowledge relevant for practice. Previous research on sustainable business models has also noted the importance of creating knowledge useful to practitioners, particularly through empirical research highlighting examples of successful implementation and analysing how barriers encountered during this implementation have been overcome (Kirchherr et al., 2017; Tura et al., 2019). This thesis makes several contributions in this regard.

For companies and entrepreneurs interested in developing or expanding business models to facilitate rental or reuse, understanding the barriers these models encounter and possible opportunities to overcome them can help to anticipate and address the barriers. In particular, the frameworks and empirical examples of barriers (Table 2) and strategies (Table 3) presented in this thesis could be used to help determine which barriers and strategies might be most relevant for particular companies, corporate functions, sectors, or types of business models. This, in turn, can help inform both the design and promotion of the business models such that they are feasible for companies and resonate with consumers.

Municipalities, waste management authorities, and other public actors seeking to reduce waste and increase reuse could benefit from understanding the establishment and development of ReTuna, particularly how it has integrated public and private actors to develop the world's first reuse-based shopping mall. This is especially pertinent for home furnishings given the upcoming prioritisation of furnishings in EU legislation (T. Cooper et al., 2021). For example, although the EU Waste Framework Directive requires EU member states have waste prevention strategies, it does not specify who should be responsible for waste prevention activities (Zacho & Mosgaard, 2016). Prior research has emphasised the synergies that can occur from involving multiple actors in reuse activities. ReTuna provides an innovative example of the potential roles different actors can play.

For actors working to support sustainable consumption, such as municipalities and NGOs, the findings illustrate the importance of business models in providing more sustainable options for consumers to acquire, utilise and dispose of consumer goods. By understanding the barriers that hinder these business models from becoming more prevalent, these practitioners can determine whether and how they can play a role in addressing these barriers. Knowledge regarding consumer-related barriers and strategies such as emphasising added benefits and linking new offerings to familiar concepts might be particularly relevant in this respect. Policy also has a potential role to play in creating a more supportive environment for these business models, such as by addressing challenges related to labour taxes or VAT.

Specifically for ReTuna, the research helps to answer questions that ReTuna is frequently asked, namely why there are not more 'ReTunas' and whether it would be possible to establish a 'ReTuna' elsewhere. For the many people that visit ReTuna with an interest in implementing such a concept themselves, the findings regarding the enabling and constraining factors that contributed to ReTuna's development and implementation are informative. In particular, understanding the importance of entrepreneurial experimentation, knowledge development, knowledge diffusion, guidance of the search (incentives for engagement), resource mobilisation, market formation and legitimisation can help others explore the feasibility of ReTuna's concept in their own work. Those interested in emulating ReTuna need not start developing all of these functions from scratch as ReTuna did,

but likely do need the involvement of both municipal actors and entrepreneurs, as well as the opportunity and space to design the facility.

## 6.4 Future Research

The research in this thesis represents an initial investigation of barriers to home furnishings rental and reuse business models and the strategies that can be used to overcome them. Based on the findings, the following areas for future research are suggested.

The research in this thesis focused primarily on Sweden, based on the scope of the Mistra Sustainable Consumption research programme and the country's high levels of consumption, prominent home furnishings sector, and widespread support for sustainability. Expanding the research beyond Sweden would allow for larger sample sizes, as well as exploration of how geographic contexts might influence the barriers to and potential for home furnishings rental and reuse business models. Previous studies have noted the importance of geographic and related cultural and political contexts in both enabling and constraining sustainable business models (Bergek et al., 2015; Corvellec et al., 2013; Kissling et al., 2013), with some suggesting that Sweden and other Nordic countries present particularly favourable conditions (Aid et al., 2017; Khan et al., 2021). Looking beyond Sweden would allow for a better understanding of the potential for these business models in other parts of the world.

Future research could also expand the focus beyond home furnishings. The decision to focus the research primarily on one sector responded to both an academic research gap regarding whether barriers to sustainable business models differ by sector (Kirchherr et al., 2018; Vermunt et al., 2019), and a pragmatic aim of ensuring that the findings would be detailed enough to be useful for practitioners. While other sectors were included in the research to some extent through literature review, interviews with clothing and eyeglass rental companies, and the study of ReTuna as a whole, future research could expand the focus on these and other consumer goods sectors to better understand what is and is not unique about specific sectors. In particular, while the frameworks of types of barriers and strategies to overcome them developed in this thesis are broad enough to apply to other sectors, more research is needed to understand whether the specific barriers and strategies identified in the research apply more widely.

While this thesis looked at rental and reuse business models somewhat broadly, the analysed companies represent a variety of company structures, value creation and delivery mechanisms, and target consumers. Based on the ways companies have altered their business models to address the barriers they have encountered, it is clear that some of the barriers stem from the particular configurations of their

business models. For example, whether companies manufacture the products they rent out in turn determines whether they need to either develop new product design capabilities or find different product suppliers in response to design-related barriers. This echoes findings from other sectors regarding different target customers, supply chains, and financial structures posing different barriers (Kissling et al., 2013; Pieroni et al., 2019; Whalen et al., 2018). Future research could take a more detailed approach to understand how both the barriers and possible strategies to overcome them might differ depending on these different elements. This, in turn, could help inform the design and implementation of these business models to best reduce or avoid the barriers.

Although research directly with consumers was beyond the scope of this thesis, several of the findings could be enhanced by consumer-focused research. For example, the consumer-related barriers experienced by the companies in Papers I and II could be explored from the perspective of the customers of these companies to see whether they align with the companies' perceptions. Similarly, the analysis of company messaging in Paper III could be complemented by conversations with customers to understand why they have chosen to rent home furnishings and whether these reasons are in fact reflected in the messaging. Given that ReTuna has encountered consumer-related barriers regarding misperceptions of the ReTuna concept and differing expectations regarding appropriate prices for its products, future research could engage directly with consumers to better understand how they perceive ReTuna and why they do or do not visit it. Such knowledge could contribute to a better understanding of consumer-related barriers and drivers and thus help ensure that rental and reuse business models resonate with consumers.

In terms of increasing the prevalence of reuse business models, while ReTuna is the world's first reuse-based shopping mall, there has recently been one smaller mall similar to ReTuna developed in Norway, as well as several reuse-based business models "inspired by" ReTuna. Future research could explore these examples to understand the similarities and differences, both in terms of their business models and the factors behind their development and implementation. Future research could also focus on cases in which ambitions or plans to create a reuse-based shopping mall or related business model did not move forward, in order to understand what types of barriers they encountered.

More broadly, as noted in the Introduction, the environmental impacts of business models depend in part on how the business models are designed (Corvellec & Stål, 2017; Fischer et al., 2015). For example, one of the primary ways in which use-oriented product-service systems are thought to generate environmental benefits is by incentivising the design of longer-lasting products by manufacturers who maintain ownership of the products (Tukker, 2015). However, whether this happens in practice, especially in the case of platform models in which the rental provider may not own the products, has not been well explored. Similarly, what happens to products once they are deemed no longer suitable for rental (Fishbein et al., 2000;



Mont, 2002a), and how companies determine at which point this is the case, has implications for product lifetimes and environmental impacts. While this thesis looked at home furnishings rental models in a general sense, it did not dig deeply into the particular configurations of companies' different rental models. Future research could work more closely with companies to understand their business models in more detail and how this in turn influences the environmental impacts they generate. This could help inform the design of rental business models such that they provide the environmental benefits that they theoretically can.

Similarly, how consumers engage with business models also influences their environmental impacts (Lüdeke-Freund et al., 2018). For example, some studies suggest that consumers take poorer care of rented items than owned items (Fischer et al., 2015; Tukker, 2004), thus potentially reducing the lifetimes of those products. Other studies suggest that consumers might actually take better care of rented items due to worries about liability for damage (Cherry & Pidgeon, 2018). To the extent that rental might encourage more intensive use of products resulting from a greater number of users over time, this could potentially reduce product lifetimes (Fischer et al., 2015). Studies of both rental and reuse note that the environmental benefits also depend on how much rental and reuse replace rather than supplement new purchases (Castellani et al., 2015; Corvellec & Stål, 2017; Zacho & Mosgaard, 2016). Whether rental might incentivise consumers to change products more often than if they owned them is also a question that has arisen (Kjaer et al., 2019). Future research could explore how consumers engage with rental and reuse business models in practice, which could further inform how best to design and promote these models.

Finally, while an in-depth examination of the role of policy in encouraging rental and reuse was beyond the scope of this thesis, policy does have a significant influence through both supporting and hindering the development and implementation of these business models (Dalhammar et al., 2021; Forrest et al., 2017; Plepys et al., 2015). Policies with the potential to support rental and reuse business models include, among others, the EU Waste Framework Directive (European Commission, 2018), the EU Circular Economy Action Plan (European Commission, 2020), and Sweden's National Strategy for a Circular Economy (Government Offices of Sweden, 2020). Future research could explore how these and other policies could help to address the barriers encountered by rental and reuse business models and thus further support a transition to more sustainable consumption.

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It is widely recognised that society is consuming at levels and in ways that are unsustainable. Business models that facilitate activities such as rental and reuse, including second-hand, repair, refurbishment, and upcycling, can provide more sustainable options for consumers to acquire, utilise and dispose of products. Yet despite the potential of these business models, there are still relatively few of them in the business-to-consumer market. Why?

This thesis aims to understand why we do not see more rental and reuse business models in practice, and how these models can become more prevalent. With a focus on home furnishings and through interviews with rental companies, analysis of company marketing materials, and a case study of Sweden's pioneering reuse-based shopping mall, ReTuna, it finds that rental and reuse business models encounter a number of different barriers and highlights strategies that companies and other societal actors can use to address them. Such knowledge can potentially help increase the likelihood of successful business model implementation and drive consumption in a more sustainable direction.

