IIIEE Theses 2021:08

Exploring consumers’ attitudes towards furniture rental in Shanghai:

drivers and barriers

Jing Lu

Supervisors

Andrius Plepys

Heather Schoonover

Thesis for the fulfilment of the
Master of Science in Environmental Management and Policy
Lund, Sweden, May 2021

Published in 2015 by IIIEE, Lund University, P.O. Box 196, S-221 00 LUND, Sweden,
Tel: +46 – 46 222 02 00, Fax: +46 – 46 222 02 10, e-mail: iiiee@iiiee.lu.se.

ISSN 1401-9191

Acknowledgements

First of all, I want to thank IIIEE, all the teachers, staffs, and classmates. These two years in this programme has been a brand new, exciting, and wonderful experience for me. In our institute, the diversity, the openness, the willingness to help each other, the relationships between teachers and students, between students and the students, really make IIIEE a good environment and a warm place for a foreigner to study and live in.

I would also like to express my special appreciations to my two supervisors. Andrius and heather have been very patient and supportive and provided very useful advice and suggestions throughout the whole thesis writing processes. I learned a lot during my time working with them. I also want to thank Oksana, who has helped me to narrow down my research focus at the beginning, which is very helpful to proceed with the thesis. I want to thank Bea for the patience and effort to read our every stage draft and the specific and individual feedback. Thank you, Naoko, for your effort in organizing IIIEE during such a pandemic.

Thank you, my parents, who have always been so supportive of my every decision, thank you for being so selfless and being proud of me, that gives me the confidence to move forward, you will always be my rock. Thank you, my partner, Zihe, for accompanying me throughout these six months, and for your encouragement and effort to cheer me up. Thank you Jiangcheng for being such a good friend who always cares about me. Thank you, Wanda, and Linh, I had a really good time and learned a lot from you two in these two years.

Time has passed by so fast, it has been an excellent journey, thank you all for being part of it.

Abstract

In the transition to a society with more sustainable production and consumption patterns, the shift from the "take and throw" linear business model to a more circular one is of great importance. Business models like product-service systems (PSSs), which provide an alternative option to decouple the value from the numbers of products sold are applied to various product types. Consumers serve as an important factor for the success of a business. However, the study on consumers' attitude towards these PSS business models is scarce, especially for furniture products and in a Chinese context. Therefore, this study aims to research consumers' current attitudes and the reasons for such attitudes, as well as to identify the drivers and barriers perceived by consumers towards furniture rental in Shanghai, China. A mixed-method approach was used to collect empirical data through consumer interviews and an online consumer survey. The results show that in Shanghai, though the unfamiliarity of furniture rental exists in a certain proportion of the consumers and the many consumers have poor renting experience, there is an overall positive attitude. "Satisfy temporary need" and "Hygiene issue" is deemed the most important driver and barrier for consumers in Shanghai. While sustainability is identified as the least important driver in this study. It also shows that the perceptions of the drivers and barriers are closely connected to the consumption behaviour of consumers and greatly related to the context the consumers are in. The desire to own, the attachment to a tangible asset, cost of alternative options, development level of furniture rental, and some other factors will greatly influence consumers' perceptions.

Keywords: Product-service system (PSS), Use-oriented PSS, Furniture rental, Consumer attitude.

Executive Summary

Problem definition

Circular business models like product-service systems have been promoted to shift to a more circular economy. However, there is a significant gap between theory and practical implementation, in addition, the level of implementation remains low in different contexts and industries (Catulli et al., 2017). In today's highly globalised world, it is becoming very common to live in a new city/country for a short period, more and more people are having temporary living solutions or having temporary needs for certain products (Thomasson, 2019). Furniture rental, which applies the concept of use-oriented PSS could be a new solution to cater for this need. Though the market seems promising, current knowledge is not sufficient to fully understand the consumer acceptance level of furniture rental in different markets, especially in countries where this business model is just emerging. This lack of knowledge could largely hinder its development, as different groups of consumers may have distinctive views on property and different attitudes (Tukker & Tischner, 2006; Manzini & Vezzoli, 2003).

China is a representative example of these markets. As the furniture rental industry is only emerging in China, the public is still relatively new to this business model, which has led to many misconceptions of consumers (Liang, 2015). In addition, the communication between the companies and the consumers is poor, as these companies are usually start-ups and lack marketing funds. There are still a great number of consumers who do not know the existence of such services and how they should work. Yet most of the consumers who know furniture rental have an unconvinced attitude and have various concerns with regards to safety, hygiene, fees, and deposits issues (Lin et al., 2013). There is also a lack of understanding of the circular economy among consumers, who find it difficult to see the link between their chosen business model (e.g., furniture rental) and the circular economy (Ding, 2006). Consumers are a significant factor for a new B2C business model to thrive, therefore it is essential to understand consumers' attitudes. However, little has been researched on consumers' attitudes towards PSS, especially for furniture products (Borg et al., 2020; Gullstrand Edbring et al., 2016; Rexfelt & Hiort, 2009). And it is even scarcer in the Chinese market (e.g., Liang, 2015).

Aim and research questions

This research firstly aims to have a thorough understanding of PSS and its implementation furniture rental business. Secondly, by combining qualitative and quantitative research methods, this study aims to research consumers' current attitudes towards furniture rental in Shanghai. Thirdly, this study aims to identify the drivers and barriers for furniture rental perceived by consumers in Shanghai, as well as to find out which drivers and barriers they value the most and the reasons behind. In a broader sense, this study hopes to contribute to understanding the priorities of Chinese consumers when they choose an access-based business model like furniture rental and to help bridge a connection between services providers and consumers, and ultimately contribute to developing different PSS business models, especially furniture rental in China. Thereby the following questions are raised:

RQ1: What are consumers' attitudes towards furniture rental in Shanghai?

RQ2: What are the drivers and barriers perceived by consumers in Shanghai towards furniture rental?

RQ3: Why do consumers in Shanghai have such attitudes and why do they regard these drivers and barriers as important?

Research design, materials and methods used

To answer the research questions, an inductive and abductive approach was applied. For RQ1 and RQ2, an inductive approach was used to generalize what the consumers' attitudes are and what the drivers and barriers are for consumers to rent furniture through a literature review and the first phase of consumer interviews. By conducting an online survey, RQ1 and RQ2 are answered. Followingly, to answer RQ3, an abductive approach was used. It creates an opportunity to provide an understating of meaning and reasons of attitudes, drivers, and barriers towards renting furniture of consumers in Shanghai. In this study, a mixed-method approach was used to collect empirical data. It included qualitative semi-structured interviews and a quantitative survey of consumers. The sequence of this research to collect empirical data is 1) First phase interviews with consumers with different attitudes; 2) Survey on consumers' attitudes, drivers, and barriers towards furniture rental; and 3) Second phase interviews with consumers who filled the survey. The logic of such a sequence is to follow the procedure proposed by Churchill's (1979) for developing a measurement scale, which includes three stages: scale item generation, purification, and validation.

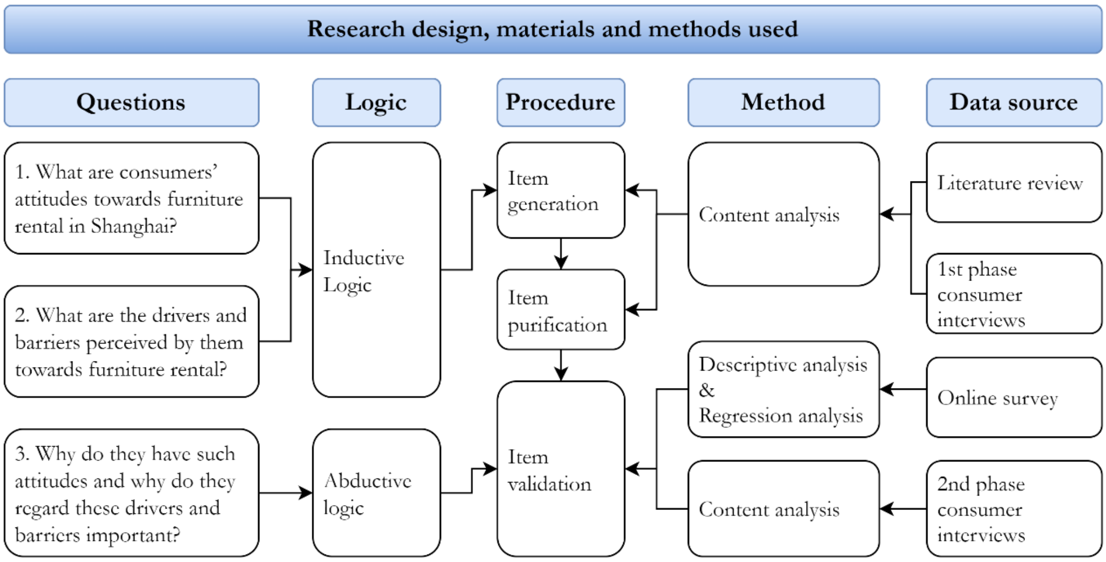

Figure I. Research design, materials and methods used

Main findings

RQ1: What are consumers' attitudes towards furniture rental in Shanghai?

27% of the sample population stated in the survey that they have never heard about furniture rental, around 59% of them said they have heard about furniture rental, but they have not tried it yet, and only 14% have tried it before. These results indicate that furniture rental still faces a problem of inadequate market dissemination and low popularity. In the group of people who have rented furniture before, 92% are satisfied with their experience and willing to do it again, yet 8% are not satisfied with their experience. In the group that has not rented furniture, 83% said they are willing to try, 15% stated they are unwilling to try it, and 2% are not sure how they feel about furniture rental. Nevertheless, the overall attitude tends to be positive.

RQ2: What are the drivers and barriers perceived by consumers in Shanghai towards furniture rental?

The results show that the drivers and barriers identified in the literature also applied to the market in Shanghai. With regards to the important ones, this study found that "Satisfy temporary need" are deemed very important with 144 votes, and it shows a distinctive position compared to other factors. "Ability to try different styles, brands" and "Diminish troubles when moving" are also deemed as key drivers for them to decide whether to rent furniture. As for the most important drivers, two drivers showed prominent positions: "Satisfy temporary need" and "Ability to try new styles and new brands", which both under the category of the "Advantage of furniture rental". Though the sample population agree furniture rental has potential sustainability benefits, it is not their top three or even an important driver compared to other factors.

As for barriers, the results show that the "Hygiene issue" is deemed very important by almost half of the sample population, and it shows a distinctive position compared to other factors. "Potential sanction fees if there are damages" and "Low trust in this business model" is also deemed as key barriers with 98 and 74 votes. As for the most important barrier, three barriers showed prominent positions: "Unfamiliar with furniture rental and how it works", "Low trust in this business model" and "Potential sanction fees if there are damages", which fill into the category of "Novelty and Low availability" and "Economic reasons".

RQ3: Why do consumers in Shanghai have such attitudes and why do they regard these drivers and barriers as important?

The reasons for the **unfamiliarity** could be manyfold. Firstly, the furniture rental business faces huge challenges and lacks success examples in China (Zhang and Wang, 2019). In addition, there is a lack of support from the government or investors. As a result, the already few furniture rental companies have become even fewer. Moreover, unlike bike-sharing or car-sharing, where the products themselves serve as an effective advertisement, furniture rental has fewer tunnels to get consumers acquainted with it, as the furniture companies are usually start-ups and lack marketing funds.

The results showed that consumers' attitudes tend to be very **positive**. However, at present, the core customer base for furniture rental is not the average consumer, but commercial consumers (EqualOcean, 2017). Furthermore, in the second phase of interviews, the interviewees showed a more negative attitude, saying that it might be a promising business, but the business model does not fit their circumstances. It can be seen that such attitudes do not necessarily lead to corresponding consumption behaviour. This positive attitude might be the direct reflections of the surveyed population on this business model itself, but not based on their practical scenarios or it might result from the social-desirability bias from the survey respondents. Thus, whether the furniture rental business will be prevailing in Shanghai in the near future is uncertain.

The perceptions of the drivers and barriers are closely connected to consumption behaviour in different contexts and relate to the prevailing consumers' cultures. The "advantage of furniture rental" is perceived as a very important **driver** in this study. This might because of the unfamiliarity and low prevalence of furniture rental, consumers find this alternative option for furniture which can provide more possibilities to their lives more novel and attractive. The result of this study shows that economic reasons are deemed less important compared to other categories (except for sustainability), which might because many consider renting furniture as a sunk cost. The **barriers** concern about hygiene issues and potential sanction fee may connect to the low trust and unfamiliarity of furniture rental and the issues themselves. Furthermore, the worry of dispute on the contract might also contribute to the concern about potential sanction fees. This low trust and unfamiliarity could result from the overall low trust between consumers and the business sector in China, especially for smaller enterprises or newly emerging business.

Conclusions and recommendations

This study focused on improving the current understanding of consumers' attitudes towards use-oriented PSS, specifically for furniture rental and in a new geographical perspective (Shanghai, China). The results showed that in Shanghai, regardless of the relative unfamiliarity with the furniture rental among certain consumer groups, there is an overall positive attitude towards it. To make furniture rental prevailing in Shanghai, it needs to cater to consumers' needs and only when consumers deem the benefits from the drivers outweigh the detriments the barriers could bring, will more consumers participate in this use-oriented PSS business model. Therefore, based on the results of this study, some implications and recommendations for practitioners are listed below:

For furniture rental companies and furniture companies who want to test the furniture rental model

- Identify target consumer groups, i.e., those who have temporary needs and those who might have high hedonistic needs for furniture. and consumers identified in this study have a higher willingness to try furniture rental: who move every 3-5 years, who live by themselves and who rent places, etc.
- Build stronger communication to increase publicity, to familiarise consumers with the benefits of renting furniture, and to show their guarantee on safety, hygiene, or quality issues.
- Connect furniture rental to consumers' familiar concepts, like renting furniture for an event, to reduce the resistance towards new notion.

In addition, relevant regulations are also identified as an issue, thus this study also recommends related government departments to create relevant regulations and market supervision system to reduce consumers concern about the safety and hygiene issues of rented furniture.

This study has focused on the consumers' perspective and in a geographical scope in Shanghai, but there are also other factors that determine whether a rental business model can be successful or not. Also, the connection between a rental business model and the environmental benefits still lacks the support of empirical evidence, therefore future research could look at the aspects listed below:

For future research

- Consumers attitudes, drivers, and barriers in another city/country.
- How to reduce barriers of consumers and how to communicate with drivers to promote furniture rental.
- Incentives and obstacles faced by furniture rental companies.
- How companies communicate to consumers and if their messaging aligns with consumer drivers.
- Changes in people's perceptions about the importance of ownership.
- An LCA analysis for furniture rental business to see if this business model is indeed more sustainable.

Table of Contents

List of Figures

List of Tables

Abbreviations

ANOVA	Analysis of variance
B2B	Business to business
B2C	Business to consumer
CBM	Circular business model
EFIC	European Furniture Industries Confederation
LSD	Least significant difference
OECD	Organisation for Economic Co-operation and Development
PSS	Product-service system
SD	Standard deviation
SDG	Sustainable Development Goal
UNDP	United Nations Development Program
WBCSD	World Business Council for Sustainable Development

1 Introduction

In the last century, the economy and society have made unprecedented progress (the United Nations, 2019), and the fast pace of globalization and popularization of consumer goods have led to remarkable consumption levels, especially in electronics, clothing, and some other sectors (Murray et al., 2017). Our daily lives are now closely connected to consumption for various purposes, some of which are highly energy and resource intensive. Additionally, as the global population continues growing and more people join the middle class, there will undoubtedly be more needs for consumer goods, thus the competition for resources will inevitably continually grow (WBCSD, 2009). This increment in consumption greatly contributes to the unconstrained natural resources exploitation and vast waste production. It is estimated that the depletion of natural resources such as biomass, fossil fuels, metals and minerals will double in the next forty years and the waste generation will increase by 70% by 2050 comparing to 2020 (OECD, 2019; Kaza et al., 2018). The global material footprint was 92 billion metric tons in 2017 and estimated to rise to 190 billion by 2060 (the United Nations, 2019). Unsustainable production and consumption hold great responsibility for more and more prominent problems like resources scarcity, and environmental issues like air and water pollution, biodiversity loss, etc. (the United Nations, 2019).

Towards all these problems we face today, much more urgent, and effective actions need to be taken to enable a transition of the economy and society. The Sustainable Development Goals (SDGs) were brought up by the United Nations in 2012 to tackle all types of challenges from environmental, social, and economic perspectives and to promote sustainable development and a brighter future (*UNDP*, n.d.). In all the 17 SDGs, SDG 12 specifies the importance of responsible consumption and production: more sustainable consumption and production are needed to decouple the economic development from resource usage and waste production, furthermore, to contribute to mitigating environmental and social problems, as well as to enable economic development.

To reach a more sustainable economy, designing sustainable products, empowering consumers, and public buyers, improving circularity in production processes should all be encouraged (European Commission, 2020). The enterprise should produce more durable products, the service life of products should be prolonged; the use of alternative materials should be promoted; the use of dangerous or hard to recycle materials should be reduced; products that are easier to maintain, update and recycle for remanufacturing should be developed (European Commission, 2015). Furthermore, innovative circular business models that are service-oriented instead of product-oriented should be promoted (European Commission, 2020). Consumers are also encouraged to shift the focus from the pursuit of goods ownership to the pursuit of the functionality that products bring. This consumption pattern and the circular economy concept can be effectively applied as a way to improve the quality of life but with lower environmental impacts (Zhu, 2017).

1.1 Background

Furniture rental business

In today's highly globalised world, it is becoming very common to live in a new city/country for a short period, for example as a student studying abroad or as an employee sent to work in a foreign country. Also, more and more people are having temporary living solutions to move more frequently and have temporary needs for certain products (Thomasson, 2019). It has a great possibility that there will be new purchase and disposal of furniture if the furniture is changed every time this need appears, which further leads to great resources usage and waste production. Furthermore, many consumers have the desire to use high-quality, durable furniture with good designs. But some of them have a great chance to move very often, which hinders them from making a long-term investment in good quality but relative expensive products because it can be troublesome to resell them when moving. Instead, they might turn to products that are cheap with low qualities and will not feel repentant when disposing of them, which is a waste of resources if these materials do not go back into the recycle loop (Springwise, 2018).

Like many other manufacturing industries, the furniture sector consumes a great number of resources and generates enormous waste (Wicaksono et al., 2020). Take the EU as an example, it is estimated that there are 10 million tons of discarded furniture in the EU each year, 80%-90% of which is ended up in either landfill or incineration (Furn360, 2017). In the US, the furniture that gets incinerated or landfilled is also estimated to be 15 million tonnes a year (Ellen MacArthur Foundation, n.d.). A call for achieving circularity in the furniture sector has been raised. Like the practices mentioned before, the furniture sector is also trying to design for circularity, maximize the efficiency of material use, close the production loop, and use chemicals responsibly. More importantly, circular business models like product-service systems (PSS), a system that combined the products and services that can stratify consumers' needs and provide value for companies and at the same time reduce environmental burden are promoted (EFIC, 2020).

Furniture rental, which applies the concept of use-oriented PSS could be a new solution to solve the situation of more and more current living solutions and temporary need for furniture without compromising the call for a society with more sustainable production and consumption. In particular, consumer mindsets and attitudes are changing with the prevalence of the circular economy. According to IKEA, 90% of its German customers are ready to change their behaviour (Thomasson, 2019). Companies are also making their efforts to be more sustainable by providing take-back schemes, using recycled materials, or proposing renting offers, etc. For instance, according to Eleonora Tieri, the leader of IKEA's circular supply chain project, IKEA has been testing out furniture rental in more than 30 countries since 2017 (Thomasson, 2019).

Context in China

China is a major manufacturing country and the most populous country in the world (Chinese National Bureau of Statistics, 2021; Chinese Information Centre, 2019). Therefore, the application of circular business models in China will greatly contribute to the progress of sustainable production and consumption. The fast-growing pace, changing socio-demographics, the potential market and differences in values make China an interesting case to research. Promoting a circular economy and reducing the burden on the environment has become an important development priority for China. Achieving a circular economy has been incorporated into its five-year development goal since 2006 and it declared to become carbon neutral by 2060 in 2020 (Zhu, 2017). With the development of the economy and the increase in the income of the population, the structure of consumption has changed, which has led to the rapid development of China's service industry (Chinese Information Centre, 2019). Innovations in information technology and industrial revolutions have driven a variety of new consumption models, the most representative of which is the sharing economy (Chinese Information Centre, 2019). There is also a changing consuming pattern from tangible-products-oriented to intangible-service-oriented and the consumer group involved has also shifted from just millennials to the public at large (Chinese Information Centre, 2019).

For the furniture sector, in 2018, the total output value of furniture in the world was $460 billion, of which China and the United States contributed $1060/78.2 billion respectively, accounting for 40% of the world in total. In 2018, China remained the largest exporter and net importer with an export/net import value of US $54.2/50.9 billion (China Galaxy Securities, 2019). Despite being number one in the world in terms of production value, China plays a low-end furniture manufacturing role in the global furniture market. High-end equipment and furniture brands are concentrated in countries such as Europe and the United States. In the future, the furniture industry may see a transformation and upgrade (China Galaxy Securities, 2019). Therefore, China, as the largest furniture manufacturer, should not only create a green, closed-loop production strategy for the reusing, recycling, and remanufacturing of furniture. As the second-largest economic entity in the world, it should also focus on the change of consumption patterns (Zhu, 2017).

1.2 Problem definition

As mentioned earlier, circular business models like product-service systems have been promoted to shift to a circular economy. However, there is a significant gap between theory and practical implementation, and the level of implementation remains low in different contexts and industries (Catulli et al., 2017). For example, renting furniture is not a new concept - this service has been around for decades, but previously it was mainly a business-to-business (B2B) business model (Zhang and Wang, 2019). Product-service systems are now also emerging in the business-to-consumer (B2C) market. Though the market seems to be promising, current knowledge is not sufficient to fully understand the consumer acceptance of furniture rental in different markets, especially in countries where this business model is just emerging. This lack of knowledge has largely hindered its development, as different groups of consumers may have distinctive views on property and different attitudes and habits. (Tukker & Tischner, 2006; Manzini & Vezzoli, 2003).

China is a representative example of these markets. Some examples achieved economic success like bike sharing and car sharing in China (Chinese Information Centre, 2019). However, the results of promoting circular business models in different sectors can be unsatisfactory. Although China's circular economy practices and policies are increasing, theoretical research, especially on some fundamental issues, is insufficient (Zhu, 2017). Furthermore, China's efficiency in resource use has not increased in line with economic development (Ding, 2006). In the last few decades, the focus in China has been on what to do with and how to reuse and recycle waste, but little attention has been paid to reducing waste generation in the first place (Ding, 2006). Moreover, the developing progress of the circular economy in China is mainly from top-down measures (Zhu, 2017). Comparing to some bottom-up measures in Europe, it lacks motivations from the whole society. From the corporation and industry perspectives, there is a lack of closed-loop from material input, production, retail, take-back to reuse and remanufacture (Zhu, 2017). More effort should be made to encourage industry and consumers to join the transition to a circular economy.

Furniture rental and consumers' perception in China

Furniture rental is becoming increasingly established in Europe and the US (Lin et al., 2013). In China, however, the furniture rental market is still incomplete and immature. According to the report by Home Link Research Institute (2016), the number of people needing to rent in China will reach 270 million by 2030, which implies there could be a huge market for the furniture and furniture rental business. However, without rules and regulations to govern business processes and a leading company to guide the market, furniture rental companies have had to figure things out on their own, which has led to many failed cases (Lin et al., 2013).

Therefore, the furniture rental business is still not prevalent in China and the current furniture rental companies mainly have a small range of furniture, low-cost performance and limited service areas (Ciweek, 2019). Many obstacles have hindered its development and these barriers can be very different from other sectors or in different contexts.

As the furniture rental industry is only emerging in China, the public is still relatively unfamiliar with this business model, which has led to many misconceptions of consumers (Liang, 2015). In addition, the communication between the companies and the consumers is poor, as these companies are usually start-ups and lack marketing funds. There are still a great number of potential consumers who do not know the existence of such services and do not know how they should work. Yet most of the consumers who know it have an unconvinced attitude and has various concerns with regards to safety, hygiene, fees, and deposits issues (Lin et al., 2013). There is also a lack of understanding of the circular economy among consumers, who find it difficult to see the link between their chosen business model (e.g., furniture rental) and the circular economy (Ding, 2006). However, consumers are a significant factor for a new B2C business model to thrive, so it is of great importance to understand consumers' attitudes. But little has been researched on consumers' attitudes towards PSS, especially for furniture products (Borg et al., 2020; Gullstrand Edbring et al., 2016; Rexfelt & Hiort, 2009). And it is even scarcer in the Chinese market (e.g., Liang, 2015).

1.3 Aim and Research Questions

This research firstly aims to have a thorough understanding of PSS and its implementation in the furniture sector, i.e., the furniture rental business model. Secondly, by combining qualitative and quantitative research methods, this study aims to research consumers' current attitudes towards furniture rental in a Chinese context, more specifically, in Shanghai. Thirdly, this study aims to identify the drivers and barriers for furniture rental perceived by consumers in Shanghai, as well as to find out which drivers and barriers they value the most and the reasons behind. In a broader sense, this study hopes to contribute to understanding the priorities of Chinese consumers when they choose an access-based business model like furniture rental and to help bridge a connection between services providers and consumers, and ultimately contribute to developing different PSS business models, especially furniture rental in China.

Thereby the following questions are raised:

RQ1: What are consumers' attitudes towards furniture rental in Shanghai?

RQ2: What are the drivers and barriers perceived by consumers in Shanghai towards furniture rental?

RQ3: Why do consumers in Shanghai have such attitudes and why do they regard these drivers and barriers as important?

1.4 Scope and Delimitations

The focus of this research falls under use-oriented PSS for furniture, more specifically, furniture rental. Furniture rental provides a novel way for consumers to get access instead of ownership to the furniture by renting out new or second-hand furniture on a fixed time-based contract. This research only focuses on the consumer's perspective because, as mentioned, consumer acceptance is of great importance for the success of a business. Though it would be interesting to investigate the drivers and barriers for diffusing furniture rental from a company perspective, this is beyond the scope of this study.

Shanghai is chosen as the geographical scope of this research, because, as mentioned, there is a huge potential for furniture rental in China and Shanghai has always been a pilot city for novel business in China (Cushman & Wakefield, 2019). It would be interesting to see what consumers' attitudes are towards renting furniture within a context like China where people greatly value the ownership of products. The target consumer groups include the locals and the migrants as long as they are resident in Shanghai. The target group could be any potential customer, therefore in this study the sample was not selected based on any criteria, but on a random principle with the assistance of an online survey platform. 253 valid responses of the survey that included different age group, occupation and other demographic characteristics are collected. Furthermore, 7 consumers are interviewed. Four consumers with different attitudes (willing to try; unwilling to try, and already tried) were interviewed beforehand to verify the drivers and barriers found in the literature and to identify new factors to include in the survey. Three were interviewed as a follow-up to the survey to understand the reasons for their choices. The time frame of the empirical data collection is approximately two months from March to April 2021.

With regards to definitions and terminologies of PSS, there are many different wordings. In this study, PSS is understood as a system that combines products and services to satisfy consumers' functionality needs and provide positive either economic, social, or environmental value or all three. Access-based consumption is used to describe a model where the only access is provided to consumers and the products can be used in sequential order by different customers. In this study, the author chose the taxonomy introduced by Tukker (2004). Use-oriented PSS is used as the reference to the PSS type of furniture rental and words like "furniture sharing" are avoided to reduce confusion between sharing and renting.

1.5 Ethical considerations

This research has been reviewed against the criteria for research requiring an ethics board review at Lund University and was found to not require a statement from the ethics committee. All participants are voluntary take part in this research. Permissions were obtained before conducting interviews and surveys from the participants. The purpose of the study and how their participation will contribute to the research are clearly and truly stated. Participants will not receive any kind of risks and harms by attending this study. Before interviews, permissions were asked from the interviewees for recording and all their private information will be kept only for the author. Interviewees have been distributed a unique identifier and remain anonymous throughout this paper. The material gathered from interviews and data collected from surveys were stored in the author's private laptop and will only be used for this research.

This study was not funded by any companies or associations; thus, the results are not influenced by any stakeholders that might be of interest to this study. The data was analysed against existing standards and interpretation of the results is maximized to avoid personal bias.

1.6 Audience

First of all, as a master thesis work, the teachers at the International Institute for Industrial Environmental Economics at Lund University will be the primary audience.

This study aims at providing a thorough literature review and straightforward summary of drivers and barriers for furniture rental in a general geographical scope and research on consumers' attitudes towards furniture rental in the Chinese context. Therefore, this study could be of interest to academia who want to explore the use-oriented PSS, especially for its drivers and barriers perceived by consumers. This study could also be relevant to furniture companies that want to explore this business model. Furthermore, it can serve as market research for furniture companies and furniture rental companies in China to understand consumers' thoughts regarding renting furniture, which may contribute to forming their market strategies and adjusting their business models.

It may also be relevant for non-academics like consumers by bridging the connection between consumers and academia and business. Consumers can have a better understanding of this business model, what are its advantages and disadvantages, which could be helpful to increase the acceptance level of this business model.

1.7 Disposition

This thesis progresses as follows:

Section 1 introduces the background of this research and defines the research problem. Following, research aims and questions are raised. The research scope is also stated.

Section 2 provides a literature review on the understanding of the concept of PSS, its characteristics, benefits, types, etc. It also includes the implementation of PSS in the furniture sector, specifically furniture rental. Further, paralleling with the research aim, the main part of this section provides a summary of drivers and barriers for consumers for furniture rental, which is used to design the survey for empirical data collection.

Section 3 describes how this research was designed and the rationale behind it. It explains why literature review, interview, and survey are used in this research and the methods and tools used to analyse them.

Section 4 presents the results and analysis from the interviews and surveys. It identifies the attitudes of consumers in Shanghai towards furniture rental, the most important drivers, and barriers, and analyses the correlation between them and different demographics.

Section 5 discusses the main findings of the research. It also includes some implications of the results and overall reflections of this research by connecting the results in section 4 and the literature review in section 2. The reflections on the limitations of this research are also included in this section.

Section 6 concludes the main findings of this research, and also provides some recommendations for practitioners and future research.

2 Literature review

2.1 Theoretical foundations

2.1.1 Circular economy and circular business models

The development of the economy without a doubt needs the support of natural resources, but the natural resources are finite, therefore, the efficiency of their utilizing must be maximized. In the traditional linear economy, however, many natural resources are simply converted to waste, either ended in landfills or incinerators (Geissdoerfer et al., 2017). The simple mindset of "take and throw" not only largely stimulates the consumption level, but also continuously consumes virgin resources (Gullstrand Edbring et al., 2016). Pressures are coming from various perspectives, for example, the gradually scarcer resources, the increment of waste and environment problems, and the ever-rising consumption level are all pushing the transition towards a more sustainable production and consumption society (De Angelis, 2018). In other words, the way of the traditional linear economy that wastes enormous resources needs to be altered (De Angelis, 2018).

The emergence of the concept of the circular economy has the potential to provide a way out Different from the linear economy pattern, in a circular economy, production and consumption processes are restorative or regenerative systems. These systems aim to maximize the utility of materials and minimize waste generation and energy use by having new design strategies and closing or slowing the material loop (Geissdoerfer et al., 2017; Ellen MacArthur Foundation, 2013). The circular economy also makes a step further to obtain value besides the utilization of resources by promoting the idea of reuse, repair, and upcycling of materials and products (Ellen MacArthur Foundation, 2013). Moreover, more circular business models are promoted to partly substitute unnecessary purchasing therefore reducing resource use.

Circular business models (CBMs) are indispensable to shift to a circular economy, and they serve as a critical means for companies to take part in this transition (De Angelis, 2018). Rashid et al.(2013) also identified the circular business model as a precondition for economic and environmental sustainability. A business model is defined by Osterwalder and Pigneur (2010, p. 14) as " a business model describes the rationale of how an organization creates, delivers, and captures value". Build on that definition, many researchers added the "circular" part as: "within closed material loop"(Mentink, 2014, p. 24), or "improve resource efficiency through contributing to extending useful life of products and parts and closing material loops" (Mont et al., 2017, p. 12), or "Slowing loops (reuse), closing loops (recycling) and narrowing loops (efficiency)"(Bocken et al., 2016, p. 5).

While Geissdoerfer (2020, p. 7) included a more practical part into the definition: "circular business models can be defined as business models that are cycling, extending, intensifying, and/or dematerializing material and energy loops to reduce the resource inputs into and the waste and emission leakage out of an organizational system", which concludes the four important strategies in a circular business model. These strategies are: 1) cycling: creating a circle for material and energy in one system; 2) extending: prolong the life of the products by better design and better maintenance; 3) intensify: promoting sharing economy to intensify the use phase of products; 4) dematerializing: substituting tangible goods with intangible services or software to reduce material and energy use (Geissdoerfer, 2020). Vermunt (2019) defined four common types of circular business models: "product-service system" and "product life extension models" that aim at slowing down the resource loop, "resource recovery" and "circular supplies" that intend to close the material loop. Since the focus of this study, furniture rental, is a product-service system that aims to substitute tangible goods with intangible services, thus PSS will be further introduced in the next section.

2.1.2 Product-service system

Definition

The definition of a product-service system has been given by many academics (Cherry & Pidgeon, 2018; Halme et al., 2006; Manzini & Vezzoli, 2003; Mont, 2002; Morelli, 2006; Tukker, 2004). Goedkoop et al. (1999) stated that PSS is "A marketable set of products and services capable of jointly fulfilling a user's need […] And product and service can be equally important for the function fulfilment". Another widely cited definition is given by Mont (2002, p. 239), She defined PSS as "A system of products, services, supporting networks and infrastructure that is designed to be: competitive, satisfy customer needs and have a lower environmental impact than traditional business models". Regardless of all the different definitions given by academics from various fields, in general, it is accepted that PSS is a multidisciplinary concept that different fields are interested in, although with diverse foci.

Annarelli (2016, p. 1016) has briefly summarized the main aspects that might be included in PSS definitions: concepts of system, market proposition/customer needs, tangibility and intangibility, networks and infrastructures, effects on the environment, and social aspects and partnership (see Figure 2-1 for the main elements of PSS definition). It can be seen that a PSS needs to combine "product" – the tangible commodity and "service" – the intangible activity into a dynamic system or a complete network that can meet consumers' requirements and can provide added value to the environment, economy or social development (Tukker, 2015). As Tukker and Tischner (2006) specified, the foundations of a PSS are to focus on what functionality consumers want from a product instead of the product itself and to reduce the environmental burden while providing such functionality.

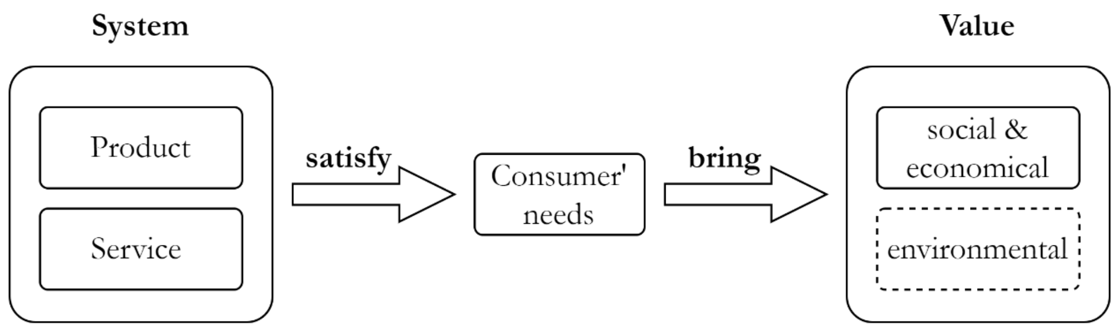

Figure 2-1. Main elements of PSS definition.

The shift from a traditional business model is often achieved with the help of innovative strategies, and the advanced knowledge of designers and manufactures to reduce material use and other costs in a PSS system (Baines et al., 2007). Furthermore, PSS is deemed to have the potential to reduce environmental burdens, for example, previous LCAs of furniture have found that the biggest impacts are in the raw materials and production phases, if less furniture is produced because of PSS, the environmental burden is lessened (Cordella & Hidalgo, 2016; European Commission. Joint Research Centre., 2017). But it should be noted that sustainability is not an indispensable attribute of PSS.

Types

Under PSS, there are three widely accepted subcategories of PSS. According to the extent of value are determined by the "product" or "service" part, they are categorized as "product-oriented PSS", "use-oriented PSS", and "result-oriented PSS" (Tukker, 2004). (see Figure 2-2)

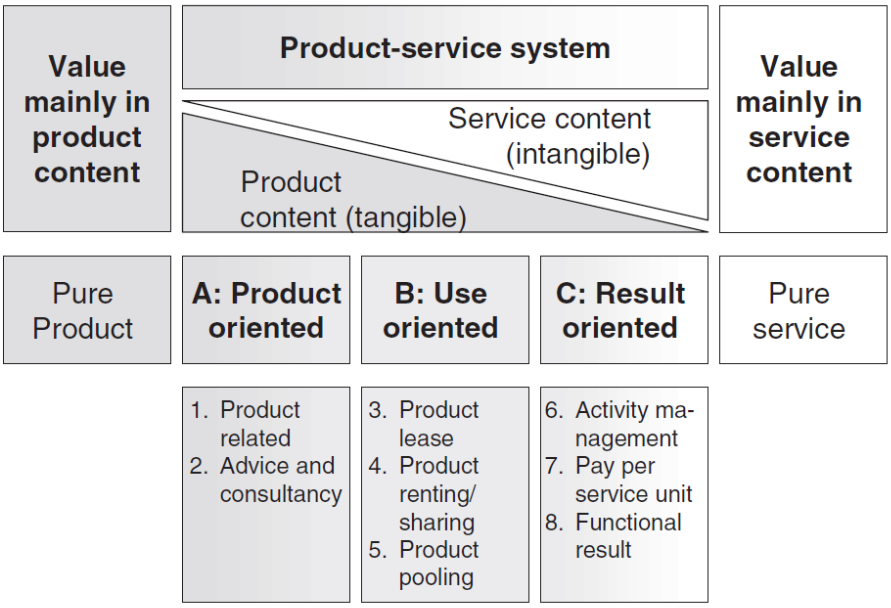

Figure 2-2. Main and subcategories of PSS *(adapted from Tukker, 2004, p.248)*

The first main type is product-oriented PSS. This type has the least incorporation level of service in a business model. In product-oriented PSS, the focus of business is still centred on selling products, but at the same time, the seller will provide additional services like maintenance, repair, take-back agreement, training and consulting etc. alongside the products (Baines et al., 2007; Tukker, 2004). Through these services, the functionality and durability of products can be guaranteed for a longer time. Further, by offering more durable and functional products, and designing for products whose end-of-life can be easily taken care of, companies can largely reduce their cost. Typical application examples include maintenance, take-back services, etc.(Sakao et al., 2013)

The second type is use-oriented PSS. In use-oriented PSS, the only motivation is no longer to sell as many products as possible, the designs of products aimed for increased durability, easily maintaining, upgrading, and remanufacturing, as well as reliable associated services (Reim et al., 2015). Instead, the ownership of products remained with the provider but the service will be provided to customers through different forms (Tukker, 2004). In this case, companies will endeavour to maximize the utility of products to meet consumer's demands (Baines et al., 2007). Typical application examples include furniture renting or leasing, carpooling, etc.(Tukker, 2015)

The last type is result-oriented PSS. In result-oriented PSS, customers and service providers agree on what the result would be in one deal, thus no pre-determined tangible products are included in the process (Tukker, 2004). Companies will retain the ownership of the products and provide more customised services to consumers (Baines et al., 2007). For example, selling the result of laundered clothes instead of washing machines. This type of PSS commendably represents the interpretation of the concept to combine products and services and has the biggest potential to reduce environmental burden (UNEP, 2002, p. 9). Typical application examples include catering services, copying services, etc. (Tukker, 2015).

Furniture rental is one genre of product renting, so the focus of this study will be use-oriented PSS. In a use-oriented PSS, products are still the centre of the value transmitting from service providers to consumers. Though the ownership of the products is not sold to consumers, their access to the products can be ensured during their paid period (Baines et al., 2007; Meier et al., 2010).

Rationale and benefits of PSS

In all the CBMs, PSS provides a novel concept to shift from a traditional ownership business model to an access-based model (Tukker, 2015). Providing only access to a product, like lending or sharing tools is not a new notion and people have been using this model throughout human history (Hamari et al., 2016). But as a society getting more servitization, there are increasing needs for such access-based services. The development of information technology and online platforms also creates a possibility to connect the users and service providers in a broader scope and make it a true business (Mont, 2002; Kim & Jin, 2020). The ever-rising consumption level and the unwillingness to consume less call for a change of business model that can minimize environmental burden and at the same time meet consumers' demand without sacrifice their level of welfare (Mont, 2002). Thus, since the 1990s, PSS has been regarded as a potential solution for moving to a more circular and resource-efficient economy, because of its nature that value could be created and received through non-material or less-material products (Tukker, 2015; Mont, 2002). Though the regulative recommendation has been lacking in this field, more and more manufacturers are trying to create value besides products, by providing services.

Promoting PSS can bring benefits from many perspectives. Traditional manufactures had realized the potential of integrating services and products to make higher profits and create competitiveness. Since nowadays, simply offering the designed and manufactured products has become the basic function of a traditional manufactural firm. To enhance their competitive advantage, they need to provide unique service, solutions, or experience to increase their market share, attract more customers, and enhance customer relationships (Pine & Gilmore, 2011; Tukker, 2015). More importantly, the incorporation of the sustainability concept into a company's strategy has become one critical criterion to validate if a company is taking up the responsibility of sustainable development by consumers (Turunen & Halme, 2021). This shift from a product-based to a service-based business model can not only enable businesses to cater to consumers' more personalized and evolved needs to remain competitive, but also make more companies maintain a core focus on sustainability (Beuren et al., 2013; Morelli, 2006). More and more firms that adopt access-based business models have emerged to take part in the trend of a circular economy (Annarelli, 2016).

For the firms that adopted PSS, as briefly mentioned, they can create a competitive position by 1) providing unique offers by combining products and service to satisfy the consumers' needs of functionality; 2) increasing the profits and reducing the costs by making more durable products, increasing reuse and recycling rate, and reducing change rate to be cost and material-efficient; 3) create a competitive position and restrain competitors because of the inimitable offers (Huang et al., 2020; Meier et al., 2010; Mont, 2002; Tukker, 2015). Because the nature of traditional product centred business models that only the increment in numbers of products sold can boost a company's turnover and generate profits does not exist in PSS business models (Tukker, 2015). The result of the shift ideally is to change the ownership structure and this change will provide a possibility to decouple the economic value from material consumption (Baines et al., 2007; Manzini & Vezzoli, 2003; Mont, 2002). Though, it also means manufacturers and service providers will undertake more responsibility and involvement for services like taking back, recovery, refurbishment, etc. (Mont, 2002).

From the perspective of the consumer, the emergence of PSS means 1) there is a more diverse choice of products in the market; 2) they have a chance to try more customised, higher quality or novel products with less cost; 3) they can fulfil their requirements more flexibly without the burden of ownership (Baines et al., 2007; Cook et al., 2006; Mont, 2002). As for the government and society, it promotes a novel concept of how to have a more sustainable consumption pattern and lifestyles, and with its successful application, it can provide more job opportunities which can offset the ones wiped out in traditional manufacturing (Manzini & Vezzoli, 2003; Mont, 2002).

Though sustainability is not included as an indispensable factor for PSS in some definitions, its potential to reduce environmental burden through dematerialization cannot be neglected. Companies that make profits through providing services are incentivized to prolong the product's life and material-efficient, thus the material used will be minimised (Armstrong et al., 2015; Cook et al., 2006; Tukker, 2015). Further, a higher ultimate usage level of products might be achieved by renting, sharing or pooling the products but with fewer resources used for production (Devisscher & Mont, 2008; Heiskanen & Jalas, 2003). Therefore, it has a great potential to reduce material use and environmental impact for the same usage level of products, because it can maximize the utility of products before they go back into the recycle loop (Mont, 2002; Thomasson, 2019). Correspondingly, the side or negative impacts from the extraction of natural resources to the end-of-life of products can be potentially reduced (Akbar & Hoffmann, 2018; Goedkoop, 1999; Williams, 2006).

2.2 Furniture rental and the importance of consumers

According to Tukker and Tischner (2006), products with characteristics like expensive, low use frequency, or requiring maintenance and repair are more suitable to apply a PSS business model. For use-oriented PSS, though there are many successful cases from well-known car leasing/renting and party supplies to a less-known product like baby prams (Mont et al., 2006), its implementation is more common in the B2B market. In the B2C market, there is a lower acceptance level and penetration degree (Zhang and Wang, 2019). Furthermore, many daily used products like clothing or furniture also have great environmental impacts with regards to material use, energy use, and other impacts from their lifecycles (Borg et al., 2020). Therefore, it is also necessary to promote more circular actions among the B2C market for daily used products. Furniture can be a good case within these products. Many furniture rental companies took off, especially in the western market. Various and customized services are provided, one can rent the furniture for short-time, long-time, or purchase it after renting. Payment can be completed by month, quarter, or year, and product types vary from basic furniture like bed, closet to decoration items like a vase (Lin et al., 2013).

Though consumers nowadays are more aware of the negative impact of excessive and unsustainable consumption, however, it cannot be neglected that the willingness of consumers to control and own products in the traditional consumption model is still prominent and is one of the biggest obstacles when promoting PSS (Svensk Handel, 2018). According to Brentani (2001), satisfying consumers' needs and assisting consumers to realize the distinctiveness and benefits are especially important to successfully start a novel service. As also pointed out by Wise and Baumgartner (1999), for a company to survive, it is essential to create customer allegiance and to build the strongest relationships with the most potentially profitable customers. Thus, either from a novel business or a normal business point of view, a business needs to put the needs and thoughts of consumers as one of the top priorities.

Knowing all the benefits PSS can potentially bring, but if consumers have poor experiences with PSS services compared to traditional products, the promotion and improvement of PSS will face great challenges (Tukker, 2015). Therefore, it is vital to incorporate consumers opinions and feedback from their experiences to the initial design for a truly useful PSS that can satisfy consumers' needs (Hirschl et al., 2003; Mont, 2003). More importantly, understanding what consumers' attitudes are and what the drivers and barriers are for them to accept the PSS business model is essential for both practitioners and scholars. Because the acceptance level of consumers is the key factor to empower the shift of consumption pattern (Annarelli, 2016).

However, consumers' perception regarding PSS can vary significantly in different cultural attitudes and their existing consumption habits (Annarelli et al., 2020). Consumers can also be too comfortable with their current living status and socio-cultural regimes (Verganti, 2009). A reluctance can be easily spotted when advocating them to shift their behaviour from ownership to non-ownership, especially when there is any form of sacrifice from inconvenience, financial cost, etc. (Armstrong et al., 2016). Therefore, as Reim et al. (2015) also summarized, for a use-oriented PSS to succeed, it is very important to identify the target customer group, to understand their habits and needs, in this way a trusting relationship can be built with them.

2.3 Understanding what is known about consumers' attitudes: drivers and barriers perceived by consumers for renting furniture

As mentioned in the previous section, the acceptance level of consumers is one of the determinant factors that determine the implementation of PSS. According to Blackwell et al. (2017) and Goldstein & Almeida (2000), when consumers make decisions or choices, there are two simultaneously conducted stages: searching for evidence of their benefits and making an evaluation of that purchase. Thus, incentives and information of PSS should be provided to assist consumers to understand how this business model works and what benefits it can bring. In this way, it can stimulate the public to change their current consumption behaviour and followingly to have a more sustainable living/lifestyle (D'Agostin et al., 2020; Patwa et al., 2021). Therefore, more communications with consumers through commercial or non-commercial channel regarding the benefits and drawbacks of PSS become essential (D'Agostin et al., 2020). To make the communication more efficient, one primary step is to understand consumers' attitudes, their needs and their perceived drivers and barriers towards a PSS business model, which in this study is furniture rental. Furthermore, few consumers are aware of the sustainable aspects of one product (Vermeir & Verbeke, 2006).

2.3.1 Overall attitude

Cherry & Pidgeon (2018) stated that consumers generally show a positive response to adopting PSS, but according to Armstrong et al. (2015) when comparing PSS offers and traditional purchasing models, consumers will in most cases choose the latter over the former. This indicates that a positive attitude does not necessarily contribute to a consistent consumption/behaviour pattern. The feeling of control and ownership will normally take the lead in consumers' evaluation system (Halme et al., 2006; Intlekofer et al., 2010; Mont, 2002; Tukker, 2015). The attitudes of consumers towards PSS largely depend on "consumer's social and personal factors, such as life stage, knowledge and economic conditions" (D'Agostin et al., 2020, p. 96). Most consumers still hold a sceptical or rejective attitude towards PSS, even with its cheaper offers (Tukker, 2015).

In the case of use-oriented PSS, though the concept has been introduced for decades and has been implied to several product types (e.g., clothes, eyewear, furniture etc.), the market share of which is still small in the consumer goods market (Borg et al., 2020). The acceptance level of use-oriented PSS among consumers also remains low (Tunn et al., 2019). Gullstrand Edbring et al. (2016) conducted a study about consumers' attitude towards alternative models of consumption, and the result showed that their attitudes vary among different consumption models and product types, but they show a positive attitude towards short-term renting while a negative attitude towards long-term renting. With regards to home furnishings, Gullstrand Edbring et al.(2016) and Baumeister (2014) showed that consumers' attitudes towards home furnishing rental are generally negative in the context of Sweden and Germany. In general, in the furniture renting field, research is lacking on consumer attitudes and the reasons behind those attitudes (Akbar & Hoffmann, 2018; Gullstrand Edbring et al., 2016).

2.3.2 Drivers

Consumers' perceived drivers for renting furniture identified in the literature are diverse and are from many aspects. Some drivers listed below are the drivers for PSS and for renting products in general, but they also apply to the case of furniture rental. They can be grouped into the following categories:

Freedom of non-ownership. Though the desire to own is a huge barrier to promoting PSS, some consumers would treasure the intangible values from freedom of non-ownership (Moeller & Wittkowski, 2010). Firstly, PSS can liberate consumers from the burdens like product management, repair, and maintenance that are associated with ownership (Catulli, 2012; Cherry & Pidgeon, 2018; Gullstrand Edbring et al., 2016). It can also liberate consumers from the obligations from emotional, social and property perspectives that ownership brings (Cherry & Pidgeon, 2018). Secondly, the concern of making wrong purchase decisions and the worry about products will be outmoded can to a large extend be alleviated (Cherry & Pidgeon, 2018). Thus, PSS can provide consumers with convenience and flexibility on how to deal with the furniture when it no longer fits their requirements or aesthetic needs (Rexfelt & Hiort af Ornäs, 2009). Furthermore, it diminishes the stress on how to deal with the furniture or the trouble of moving the furniture when moving (Lehner et al., 2020).

Advantages compared to the traditional business model. First of all, the nature of renting business means the products can have a more frequent update rate and thus can enable consumers to try different styles, brands and more expensive products (Borg et al., 2020; Gullstrand Edbring et al., 2016). Another prominent advantage is that PSS offers trialability for products and some companies provide a following offer to purchase the products if consumers are satisfied with it (Rexfelt & Hiort af Ornäs, 2009). Moreover, because rental companies often combine the products information from different brands and styles and normally provide other complimentary services like delivery or assembly, it can save the trouble for consumers to run between different furniture stores and the trouble of setting up, which saves their time and energy (Seiders et al., 2007). Customized service can also greatly reduce the searching and transaction cost for consumers (Tunn et al., 2019). For example, some furniture rental companies provide specific offers like "student furniture package". Lastly, it perfectly adapts the need for consumers who only have a temporary need for certain products because of their temporary living situations or certain life stages, for example, in the case of renting furniture, a crib or tables for a party (Borg et al., 2020; Hamari et al., 2016)

Consumers may also turn to furniture rental because of **economic reasons** (D'Agostin et al., 2020; Littig, 2001; Mont, 2004; Schrader, 1999). According to Tukker (2015), cost-saving is a prominent tangible advantage of a use-oriented PSS, to begin with, renting has low entry barriers, i.e., do not require a high initial outlay, which greatly encourages consumers to try it out (Mont, 2002; Tukker, 2004). In most cases, the cost of renting furniture is lower than buying in a short time frame which is more affordable and can fit various budgets. And at the same time, it enables consumers to choose higher quality but more expensive products (Borg et al., 2020; Fota et al., 2019). Renting also means financial risks resulted from making incorrect purchase choices can be averted (Cherry & Pidgeon, 2018). During the use phase, since rental companies are taking care of the maintenance and repair of products, the sudden costs from repair or replacement may come with ownership are no longer a concern for consumers (Botsman & Rogers, 2010; Catulli et al., 2013; Kim & Jin, 2020). On the contrary, it provides more predictable fixed monthly or yearly payments (Cherry & Pidgeon, 2018). This low cost of renting makes it easier for consumers to make decisions (Cherry & Pidgeon, 2018).

Furniture rental can also bring **extra emotional value**. Tunn et al. (2019) pointed out that if PSS wants to diffuse, it needs to provide extra value to satisfy consumers' intangible/emotional needs besides the tangible functional needs. Cherry & Pidgeon (2018) also stated that consumers now want more from products than their basic functions, for example, user experience. As mentioned above, renting enables consumers to try products from different styles, price levels, brands, and in vogue, which greatly satisfies the hedonistic or novelty needs of certain consumers (Borg et al., 2020; D'Agostin et al., 2020). If consumers realize the potential of PSS can result in fewer environmental burdens, they might have a feeling of doing good and have a sense of belonging to a sustainable lifestyle community or a sense of participation in the trend of sharing (Borg et al., 2020; Möhlmann, 2015). Choosing a collaborative consumption model could provide them with a feeling of being more responsible for other people, society and the environment (Borg et al., 2020)

Sustainability reasons are also an incentive factor to choose to rent, though it is perceived less important compare to other factors mentioned above (Botsman & Rogers, 2010; Hamari et al., 2016; Littig, 2001; Meijkamp, 1998). Some consumers with strong sustainable awareness would consider "environment friendly" as an important factor when making purchasing decisions and will bear other costs or barriers, as long as they are aware of their chosen products/business models have less environmental impacts and can avert rapid product obsolescence (Akbar & Hoffmann, 2018; D'Agostin et al., 2020; Gullstrand Edbring et al., 2016). Especially, for consumers who also have a strong aspiration of trying different products, choosing this business model can satisfy their needs without feeling bad about it (Gullstrand Edbring et al., 2016). Meanwhile, more and more people are liable to choose access-based consumption because of their increasing environmental concerns and preferences for more sustainable consumption (Akbar & Hoffmann, 2018; Kim & Jin, 2020).

2.3.3 Barriers

Many barriers also hinder consumers to try furniture rental.

The desire to own. First of all, psychologically, some people attach stronger personal feelings to their belongings and prefer to own the products (Pal Kapoor & Vij, 2021). They value more about the ownership itself than the access to products (Du, 2019; Gullstrand Edbring et al., 2016). Furthermore, ownership also means consumers can have complete control and power over their products, thus they can use, modify, or sell them as they want and do not need to worry about the sanction fees from accidental damages (Cherry & Pidgeon, 2018; Tukker, 2015). Especially for products placed at home where a sense of security is very important, this anxiety and insecurity can be greatly averted with ownership (Gullstrand Edbring et al., 2016). Ownership is also perceived by consumers as an adding value since it can symbolize social status and thus offers additional emotional value (Cherry & Pidgeon, 2018; Tunn et al., 2019).

Novelty and Low availability. Though renting furniture is not new in the B2B market, it is still novel in the B2C market. Some consumers may never hear about it and are unfamiliar with how it works (Gullstrand Edbring et al., 2016). This firstly is because the scale of the rental business, like furniture rental, is comparatively small, and secondly is because the communication between services provider and different types of the consumer is poor (Du, 2019; Mont, 2004). Low accessibility to the service, products, or product information could also hamper its development (Rexfelt & Hiort, 2009; Tunn et al., 2019). Furthermore, because of this unfamiliarity, consumers may have low trust in this business model and have fears about potential risks of contract-based services as well as uncertainties with regards to costs or responsibility, which are all obstacles to its diffusion (Borg et al., 2020; Cherry & Pidgeon, 2018; Mont, 2004; Tunn et al., 2019). Lastly, consumers' behaviour is largely determined by context which incorporates diverse factors like infrastructure, values, price relations etc. (Hirschl et al., 2003). The supports from the socio-cultural structure and normative institutions determine it is easier and more convenient to purchase than to rent products (Mont, 2004; Rexfelt & Hiort, 2009).

Cost is another concern of consumers. It is from three aspects. The first one is from the financial perspective. Since product renting is based on a contract, there can be some invisible fees that do not show directly. Consumers may be worried there will be additional costs like 1) sanction fees when damages occur; 2) fees for other add-on services and 3) fees for membership if they want special services (Borg et al., 2020; Tunn et al., 2019). The feeling that renting is not more economical than buying, in the long run, is another obstacle (Gullstrand Edbring et al., 2016). The second aspect is when choosing a PSS business model, it will have transaction costs, though of which also exist in purchasing. (Akbar & Hoffmann, 2018; Borg et al., 2020). The transaction costs include: 1) searching cost and loss of time to find the service because of its novelty and low availability; 2) technical cost to learn how to rent and to find products that suit their needs; 3) sunk cost because renting fee is sunk costs that cannot be recovered (Akbar & Hoffmann, 2018; Borg et al., 2020; Tunn et al., 2019). The third aspect is emotional cost. It can result from the uncertainty about the access of their required products, the anxiety of worrying about damaging the products when using, and the unwillingness to change their consumption behaviour (Akbar & Hoffmann, 2018; Cherry & Pidgeon, 2018; D'Agostin et al., 2020; Gullstrand Edbring et al., 2016; Meijkamp, 1998; Tukker, 2004).

Consumers also have **concerns regarding the product itself**. Though some rental companies offer brand new products, some products are second-hand (Lin et al., 2013). Many studies revealed consumers' concern on the hygiene issue of second-hand products, especially for products like furniture. For example, there can be pests and bugs that cannot be easily spotted and these concerns are especially evident when it comes to children products (Cherry & Pidgeon, 2018; Gullstrand Edbring et al., 2016; Tunn et al., 2019). Since the rented products can be used for sequential renters, they might be damaged or worn out because of long time use, thus it cannot be guaranteed that the condition of the products can meet consumers' requirements (Zhang and Wang, 2019). Furthermore, some studies identified that some consumers show low acceptance for second-hand products just because only prefer to use new products, for example (Du, 2019).

Incompatible current living conditions and environmental aspects. Specifically for renting furniture, in many cases when renting an apartment, the landlord will provide the basic furniture like bed, desk, closet, etc. Further, tenants will gradually purchase their furniture. So, there is no need for them to replace the furniture if they are satisfied with it (Zhang and Wang, 2019). Moreover, how to deal with the old furniture is also considered a problem for consumers if they rent furniture (Zhang and Wang, 2019). From the environmental perspective, some consumers do not think renting is more environmentally friendly because it stands as a good incentive for consumers to have a higher changing rate for products, thus it is associated with more material use and more emissions from transporting (Gullstrand Edbring et al., 2016).

2.3.4 Summary

The drivers and barriers are summarized in the tables below, which provides a framework to form interview and survey questions.

Table 2-1. Drivers identified in the literature

Freedom of non-ownership	Liberate from the burdens like product management, repair, and maintenance
	Liberate from the obligations from emotional, social and property perspectives of society
	Avoid making wrong purchase decisions
	Avert concern that products will be outmoded
	Diminish stress on how to deal with the furniture when moving
Advantages compared to the traditional business model	Ability to try different styles, brands, and more expensive products
	Trialability for products
	Ability to purchase satisfying products after renting (in some cases)
	Combination of products information from different brands and styles
	Complimentary services like delivery or assembly
	Save time and energy to run between furniture stores
	Save time and energy of setting up the furniture (in some cases)
	Customized service like "student furniture package"
	Satisfy the temporary need for certain products, like a crib
Economic reasons	Do not require a high initial outlay
	Renting furniture is cheaper than buying in a short time frame
	Avert financial risks of incorrect purchase choices
	Avoid sudden costs from repair, maintenance, or replacement
	Predictable fixed payments
Extra emotional value	Satisfaction of hedonistic or novelty needs
	A feeling of doing good
	A sense of belonging to a sustainable lifestyle community
	A sense of participation in the trend of renting
	A feeling of being more responsible
Sustainability reasons	Less environmental impacts/environment-friendly product
	Satisfy hedonistic needs without feeling bad about it
	Increasing environmental concerns
	Preferences for more sustainable consumption

Table 2-2. Barriers identified in the literature

<table>
<tr><td rowspan="4">The desire to own</td><td colspan="2">Attach stronger personal feelings to his/her belongings</td></tr>
<tr><td colspan="2">Value ownership because it connects to social status or emotional value</td></tr>
<tr><td colspan="2">Lack of Complete control and power over products</td></tr>
<tr><td colspan="2">Anxiety and insecurity about the sanction fees from accidental damages</td></tr>
<tr><td rowspan="8">Novelty and Low availability</td><td colspan="2">Unfamiliarity</td></tr>
<tr><td colspan="2">The scale of the furniture rental business is comparatively small</td></tr>
<tr><td colspan="2">Poor Communication between services provider and consumers</td></tr>
<tr><td colspan="2">Low accessibility to the service, products, or product information</td></tr>
<tr><td colspan="2">Low trust in this business model</td></tr>
<tr><td colspan="2">Fears about potential risks of contract-based service</td></tr>
<tr><td colspan="2">Uncertainties of costs or responsibility</td></tr>
<tr><td colspan="2">More supports from the socio-cultural structure and normative institutions for purchase</td></tr>
<tr><td rowspan="11">Cost</td><td colspan="2">Invisible fees for a long-term contract that do not show directly</td></tr>
<tr><td rowspan="3">Additional cost</td><td>Sanction fees for damages</td></tr>
<tr><td>Fees for other add-on services</td></tr>
<tr><td>Fees for membership</td></tr>
<tr><td colspan="2">Renting furniture is more expensive in the long run</td></tr>
<tr><td rowspan="3">Transaction costs</td><td>Loss of time when search</td></tr>
<tr><td>Technical cost to learn rent furniture and find suitable products</td></tr>
<tr><td>The sunk cost of the irrevocable renting fee</td></tr>
<tr><td rowspan="3">Emotional cost</td><td>Uncertainty on the access to required products</td></tr>
<tr><td>The anxiety of damaging the furniture</td></tr>
<tr><td>Unwillingness to change consumption behaviour</td></tr>
<tr><td rowspan="3">Concerns regarding the product itself/characteristics of the products.</td><td colspan="2">Hygiene issue of second-hand furniture. E.g., pests and bugs</td></tr>
<tr><td colspan="2">Furniture can be damaged or worn out</td></tr>
<tr><td colspan="2">Only prefer new products</td></tr>
<tr><td rowspan="2">Incompatible current living condition</td><td colspan="2">No need because I have/landlord provides basic furniture</td></tr>
<tr><td colspan="2">How to deal with the old furniture if rent furniture</td></tr>
<tr><td rowspan="3">Environmental reasons</td><td colspan="2">The thought that furniture rental is not more environment friendly</td></tr>
<tr><td rowspan="2">Potential higher changing rate for furniture and</td><td>More material use</td></tr>
<tr><td>More emissions from transporting</td></tr>
</table>

3 Research design, materials, and methods

This chapter will present how this research was designed and followed what procedure to identify data type, collect and process data, and finally reach the conclusion. It will explain the logic and justify the author choices throughout the whole process.

3.1 Research design

To answer the research questions provided in section 1, an inductive and abductive approach was applied. An inductive approach starts with collecting data on certain characteristics and/or regularities and ends when the descriptions of these characteristics and/or regularities that are related to the "what" question were established (Blaikie & Priest, 2019).

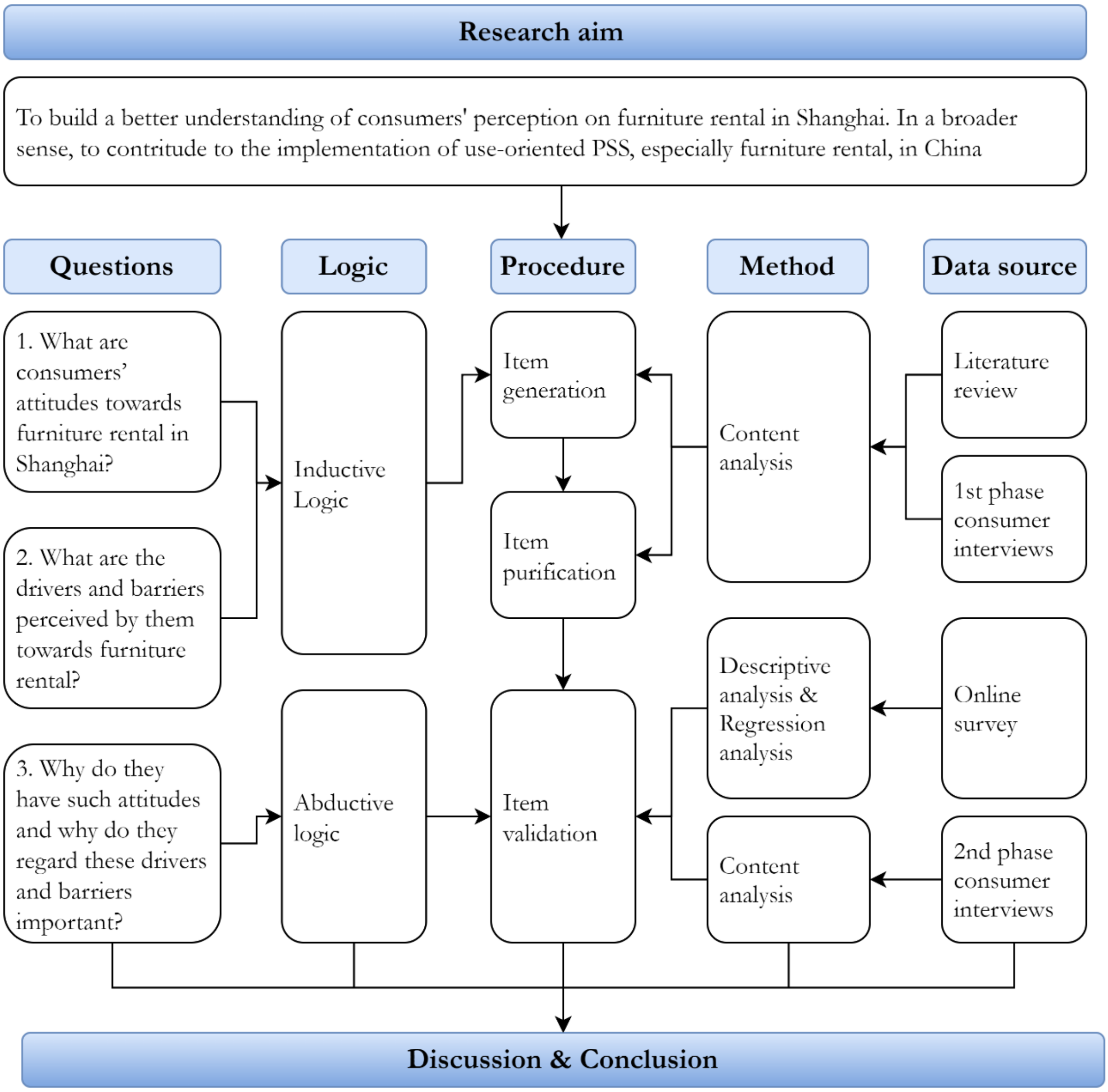

Table 3-1. The research framework

For RQ1 and RQ2, an inductive approach was used to generalize what the consumers' attitudes are and what the drivers and barriers are for consumers to rent furniture through a literature review. With limited literature falls in the furniture sector, some drivers, and barriers of consumers for the PSS and use-oriented PSS, in general, were also included after justifying. By conducting an online survey, RQ1 and RQ2 are answered. Followingly, to answer RQ3, an abductive approach was used. According to Blaikie & Priest (2019), abductive logic can be used to answer both "what" and "why" questions, and it can incorporate "the meanings and interpretations, the motives and intention, that people use in their everyday lives and which direct their behaviour" (Blaikie & Priest, 2019, p. 99). It creates an opportunity to provide an understating of meaning and reasons of certain motives of social actors, which in the case of this research, the motives would be the attitudes, drivers, and barriers towards renting furniture and the social actor would be consumers in Shanghai. It can offer a tunnel for consumers to reflect on their thoughts instead of imposing the researcher's idea. Thus, an abductive approach is ideal to answer RQ3: Why do consumers in Shanghai have such attitudes and why do they regard these drivers and barriers important? It will follow the two stages proposed by Blaikie & Priest (2019, p. 101): "describe activities and meaning and then deriving categories and concepts that can form the basis for and understanding of the problem at hand".

In this study, a mixed-method approach was used to collect empirical data. As Creswell (2014) stated, a mixed-method can to some degree overcome the weaknesses of an individual qualitative and quantitative form of data. By having mixed-method research, a more comprehensive and in-depth understanding of the research problem can be provided (Creswell, 2014). This study included qualitative semi-structured interviews and a quantitative survey of consumers. A difference from the ordinary research sequence is that this study combined the exploratory and explanatory sequential mixed methods. In other words, the sequence of this research to collect empirical data is:

- First phase interviews with consumers with different attitudes
- Survey on consumers' attitudes, drivers, and barriers towards furniture rental
- Second phase interviews with consumers who filled the survey.

The logic of such a sequence is to follow the procedure proposed by Churchill's (1979) for developing a measurement scale, which includes three stages: scale item generation, purification, and validation.

3.2 Methods used to collect data

3.2.1 Literature review

A literature review was first conducted to provide a basic understanding of the PSS concept and to gather what is already known about consumer attitude of furniture rental and the behind drivers and barriers contributing to it, which greatly contributes to the first stage of generating scale items. A literature review is an essential method to provide the author with a background and context for the research, and a connection between the research and what was already known about the research problem (Blaikie & Priest, 2019). To avoid spending endless time in searching the literature that can be relevant to the research, according to Blaikie & Priest (2019, p. 79), the solution is to "use the research questions to guide and structure the review of previous research and relevant theory". Having this in mind, the author proceeded with the literature review following the adapted steps recommended by Creswell (2014).

To find the most relevant studies, the author identified keywords as "circular business model", "product-service system", "use-oriented PSS", "furniture rental", "consumer attitude", and "consumer drivers and barriers". Following, these keywords were searched in the online database called Scopus. Scopus is a database that contains millions of peer-reviewed journal articles with their abstract and sources, which brings great convenience to researchers when they are looking for relevant literature. The initial search used the "Keywords" function for "circular business model" and "product-service system", which respectively led to 106 and 2060 documents. The literature was ranked by the "highest cited" sequence and the author scanned the titles and abstracts to define which articles are the most relevant, which are further grouped into different categories according to the keywords. Similarly, "furniture rental" and "consumer drivers and barriers towards PSS" were searched using the "Title, Abstract, Keywords" function and individually led to 6 and 17 documents. More literature was found using a snowballing strategy, which is a method to identify more relevant papers by consulting the bibliography of some key literature (Wohlin, 2014), and ended up with 162 papers in total.

3.2.2 Interviews

Next, interviews with consumers were conducted to complement what had been found in the literature, i.e., to identify if there were any new drivers or barriers for renting furniture that could be included to structure the framework of the survey, which completes the first stage, scale item generation. This step is necessary because the literature related to the research topic is mostly conducted in western contexts, while little was spotted in a Chinese context, so it is important to have interviews with Chinese consumers to see if their thoughts regarding renting furniture are aligned with those identified in other contexts.

Moreover, the second phase of interviews was conducted to dig deeper into the survey results, for example, to understand why people would rank convenience as their top priority compared to other factors, and to uncover distinctions that are not obvious in a simple formed survey answer, which contributes to the third scale developing stage, scale validation. Information like why a barrier was ranked very high or whether they have different answers when they are facing different types of products can be collected. But both phases of interviews serve as a tool to investigate consumer attitudes and have in-depth conversations to form an understanding of such attitudes.

Interviews were all semi-structured, and an interview guide was prepared (see Appendix A). A semi-structured interview allows interviewees to deviate from the interview guide and capture nuances that differ from it (Bryman, 2008). The interviews were all conducted online, due to the geographic distance of the author and the target group. The interviewees in the first phase were selected using a purposive sampling method by sending the interview invitation to a forum of people who live in Shanghai. As for the second phase, interviewees were chosen from the ones who filled the survey. All interviewees were selected based on a criterion to maximize the variety of the sample. This variety covers: whether they have rented furniture before, whether they want to rent furniture, different demographic characteristics, etc. Before each interview, a consent form was provided. 7 interviews were conducted, and each lasted around 30 minutes.

3.2.3 Survey

Based on the drivers and barriers identified through literature review and the first phase of interviews, a survey was developed. As Creswell (2014, p. 155) pointed out: a survey can provide a "quantitative or numeric description of trend, attitudes or opinions of a population by studying a sample of that population". This survey aimed to investigate the overall attitudes of consumers in Shanghai and to discover which factors are the most valued by consumers. By including those identified factors in the survey, those factors can be verified in a context in Shanghai, therefore, it greatly contributes to the third stage of scale developing, scale validation.

Since there are numerous factors identified in the literature review, in order to simplify the questions and to have fewer questions in the survey, not all those factors are included. The survey is formed by grouping the factors into bigger categories according to their occurrence frequency in literature. Some new factors identified from the interviews that might be valuable in the Chinese context are added. A description of the furniture rental business is provided at the beginning of the survey to reduce misunderstandings. The potential environmental benefit of furniture rental is excluded to reduce the possible social-desirability bias from the respondents. Social-desirability bias occurs when the respondents tend to choose the answer that seems more favourable (Podsakoff & Organ, 1986).

The type of survey is cross-sectional, meaning the data was collected at one point in time. The survey was published online on a survey platform called Credamo. The survey platform can facilitate the efficiency of the survey process by accelerating the speeding of getting responses benefiting from its database. It is beneficial to get more randomized samples compared to the author handing out the survey by herself. More importantly, it can limit the geographical scope to one district, which in this study, in Shanghai. With regards to the sample size, considering the population size of Shanghai is rather large, approximately 25 million, (Chinese National Bureau of Statistics, 2021), instead of selecting a fraction of the population, for example, 5%, this study followed Fowler's (2009) suggestion to look up the appropriate sample size. There are three elements required:

- margin of error/confidence interval: how accurate the answers given by the sample correlate to the answers given by the entire population;
- confidence level for margin of error: how confident the researcher wants to be that the actual mean falls within your margin of error; and,
- standard deviation: the estimated percentage of the sample that will respond in a given way.

These parameters were respectively determined as +/- 6%, 95%, and 0.5, which led to a necessary sample size of 267 for a statistically significant result (the rationale and calculation process can be found in Appendix B).

The survey was anonymous and was provided in Chinese (see English version in Appendix C). It compromises three main parts: demographic characteristics, drivers to rent furniture and barriers to rent furniture. For the drivers and barriers, a Likert scale question is used to investigate their agreeing level of the identified drivers or barriers. A Likert scale question is the most commonly used approach to have scaled responses in survey research and it is suited for research that aims to investigate attitudes and their agreeing level on a statement of the participants (Sachdev & Verma, 2004). This study used five scales, from scale 1 to 5 they are representing "strongly disagree, somewhat disagree, neutral, somewhat agree, strongly agree". A five-point scale can provide abundant options to distinguish between different attitudes but reduce the possibility to raise the frustration of respondents, thus it provides a more accurate result (Sachdev & Verma, 2004).

These two parts also respectively contain one ranking question that asks consumers to pick the top three drivers and barriers. An open question that asks respondents to specify what factors they regard as important that is not included is placed at the end. By using a similar question form, it eases the process of processing information thus decreases the whole time taken to complete the survey and increases the consistency. Before officially publishing the survey, a pilot-testing was conducted to test the content validity and improve questions, format, scales and estimate rough answering time.

3.3 Methods used to analyse data

3.3.1 Literature review

In this study, content analysis is used to analyse the results from the literature review by using a Synthesis Matrix, which is the main method for the second scale developing stage, scale item purification. The synthesis matrix in this study was conducted in excel. The author skimmed the articles to find the content that is most central to the topic and duplicate them to the Synthesis Matrix. The first row was used to record sources and the first column listed the sub-topics that are relevant to the research, for example in the PSS tab, the sub-topics are "benefits of PSS", "definition of PSS", "drivers and barriers for PSS", etc. It enabled the author to keep the gathered information in a more organised form and to sort and categorize the content that might contribute to understanding the current state of knowledge, which also made the writing process easier.

Followingly the author summarised the articles and assemble the literature review. After finalising the synthesis matrix, the author summarised the key concepts and thematically structured the literature review. In this stage, drivers and barriers identified for PSS, use-oriented PSS and furniture rental summarised to construct survey questions, i.e., the factors consumers would consider and to what extent they influence their choice towards renting furniture.

3.3.2 Interviews

All interviews were recorded under permission and were partially transcribed. For the first phase of the interviews, as mentioned in section 3.2.2, the intention is to verify the factors found in literature in a Chinese context and try to identify new factors to include in the survey. Thus, in this stage, what the author did is to review the recordings based on the notes taken to have a better impression of the interviewees' attitudes towards the probing questions, more importantly, to make sure the newly popped out factors were not missed. The places where the interviewees explained their rationales are partly transcribed to support the survey results. For the second phase of interviews, as mentioned in 3.2.2, the intention is to have a better understanding of the rationales of their choices in the survey. Thus, those interviews were partly transcribed, and the author scanned the materials to paralleling them to the questions in the survey, i.e., attitudes, drivers, and barriers. Following, the author categorized them to support the findings from the survey according to interviewees' demographics and their current status.

3.3.3 Survey

The analysis of the survey is the main part of this study. In total, 347 responses were received, in which 36 were conducted as a pilot survey and 58 were excluded as invalid responses, leading to 253 effective answers. In this study, if the respondents' 1) filling time is too long or too short compared to the suggested filling time: 7 minutes; 2) location is not Shanghai. 3) answers are too similar, e.g., all very agree; and 4) answers are conflicting[1], then that response will be considered as invalid and are excluded. All data are downloaded in an excel sheet, and the classified variable is replaced with a numerical variable using a corresponding mode, e.g., 1

[1] E.g., ranked convenience as top 1 driver, but only choose a 4 (somewhat agree) in the Likert scale question with other questions are answered with 5.

stands for male, 2 stands for male, and 3 stands for rather not say in the demographic questions. Then the excel is imported into IBM SPSS 26 to conduct the following analysis.

Demographic characteristics & attitudes

The descriptive method is used to summarize the demographic characteristics and attitudes of the sample population to have a holistic view. Followingly, cross-tabulation is used to analyse the relationships between the different demographic characteristics and attitudes. Cross-tabulation can help to draw parallel comparisons between different parameters. The principle is to compare the percentage of different attitude in each demographic type, for example, there are 48 women have never heard about furniture rental, then the percentage is 48/162 (number of women) =29.6%. Then compare this percentage with that in another demographic type, in this case, the male group. Groups that only have a few samples are excluded to avoid an evident biased conclusion.

Drivers and barriers

A Cronbach 'α analysis is firstly conducted for the driver and barrier questions. Cronbach 'α analysis is a method to test the reliability coefficient of the questions. If Cronbach 'α is above 0.8, it indicates that the internal consistency of each question is very good, the reliability of data is ideal and thus can be used for subsequent analysis (Tavakol & Dennick, 2011).

Most important drivers and barriers. For the Likert scale question, mean and standard deviation (SD) are used to analyse the results. In this study, if the mean value is greater than 3, it means the overall sample population agree on the provided description of the drivers. Otherwise, they disagree with it. SD is used to measure the dispersion degree of a set of data. For the ranking questions, frequency analysis by comparing the means and a bar chart to show the top drivers and barriers are used to analyse the results.

Correlations of demographic characteristics. To see whether some drivers or barriers are more important for particular consumer groups, independent-samples T-test (hereinafter T-test) and Analysis of variance (ANOVA) are used to analyse the correlations between demographic characteristics and drivers or barriers.

A T-test is used to analyse the difference between two variables, in the case of this study, the gender variable[2]. In the T-test, the confidence interval percentage is chosen at 95% and the significance level is 0.05. If the significance value is below 0.05, then there is a variance between different genders and if the t-value is positive, it means male agree more on that driver than female.

ANOVA is used to analyse the differences among different demographic types, where relevant factors are described by more than two variables (e.g., age groups, educational level, etc.). Like independent samples in the T-test, the confidence interval percentage is chosen as 95% and the significance level is 0.05. If the significance value is below 0,05, then there is at least one group that is different from other groups. But the result of ANOVA does not specify where the difference is and between which group. Thus, Fisher's least significant difference (LSD) analysis is used followingly to compare the difference within each demographic types. If the value of the mean difference (I-J value) is positive, it means one group agrees more on that driver than the other group (Williams & Abdi, 2010).

[2] The only responce that indicates rather not say was excluded.

Open question. The responses were gathered into an individual excel sheet. And first invalid answers like "I do not know", "no, I think they covered it very well", or those that are already mentioned in the Likert scale questions are excluded. Following the rest answers were categorized by different themes and inductive content analysis is used to summarize the new identified drivers and barriers, and some reasons for it.

4 Results and analysis

4.1 Demographic characteristics

In total, 347 responses were received, in which 36 were conducted as a pilot survey and 58 were excluded as invalid responses, leading to 253 effective answers. As mentioned in the methodology section, the survey intends to cover groups with different demographic characteristics (Figure 4-1 & Figure 4-2). In this survey, around two-thirds of the respondents identified themselves as female, and the other third as male, with one respondent prefer not to reveal the gender. Most of the respondents aged under 40, in which over half are aged 22-30, followed by 25% aged 31-40 and 16% aged 0-22. Among all the respondents, over 66% have a bachelor's degree, 20% received education above master programs. There are two main employment status, around 67% are employed and 30% are students. Furthermore, 67% have a salary below 10,000 CNY, and around 25% have a salary between 10,000 and 20,000 CNY, people with a salary above 20,000 only accounts for 5% and 3% prefer not to answer this question.

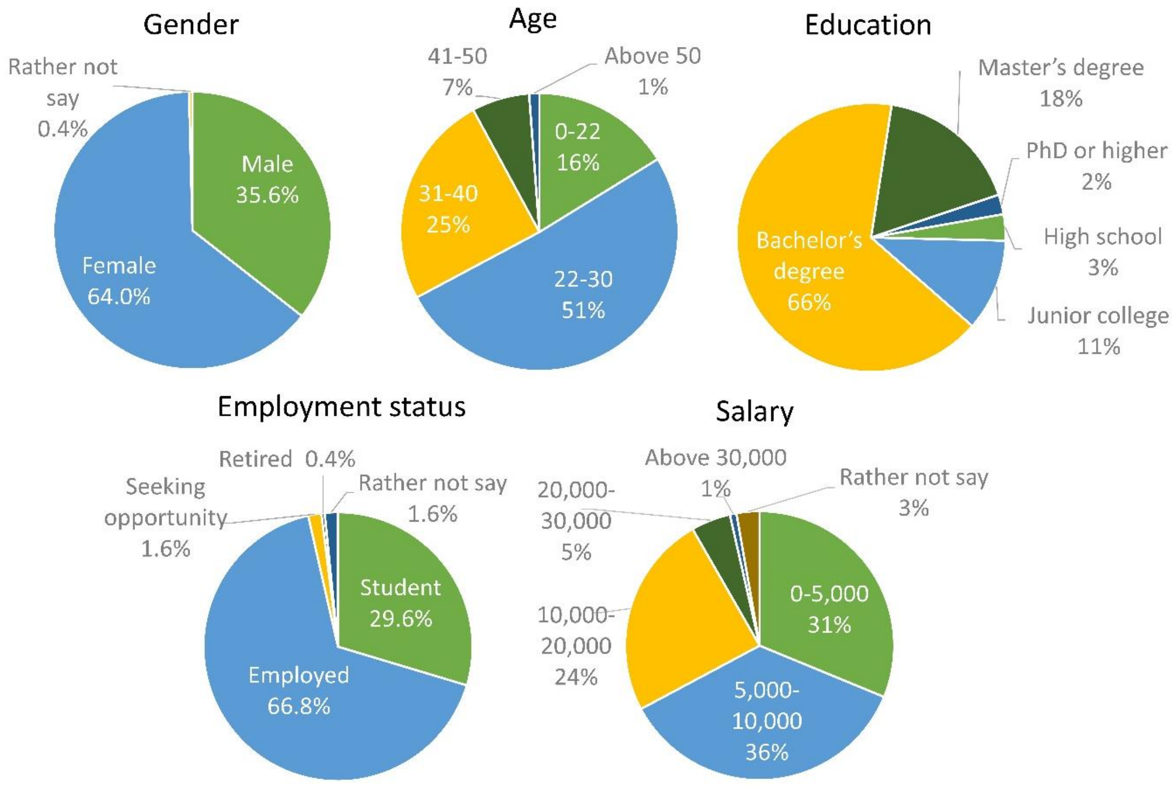

Figure 4-1. Basic demographic characteristics of the research population sample

More people in the sample rent their own place with a percentage at 42%. Participants whose place is offered by their schools or companies and participants who own their place are about the same number, respectively 27% and 28%. Most people live with others, with respectively 41% and 40% live with other tenants (friends, boy/girlfriend, stranger, etc.) and their family. 19% of the respondents live by themselves. Around 45% of the respondents move less frequently than every five years, but around 33% move every one to three years and 17% move every three to five years. Over half of them think they will stay in Shanghai for more than five years, but 18% are not sure whether they will stay or go to another city.

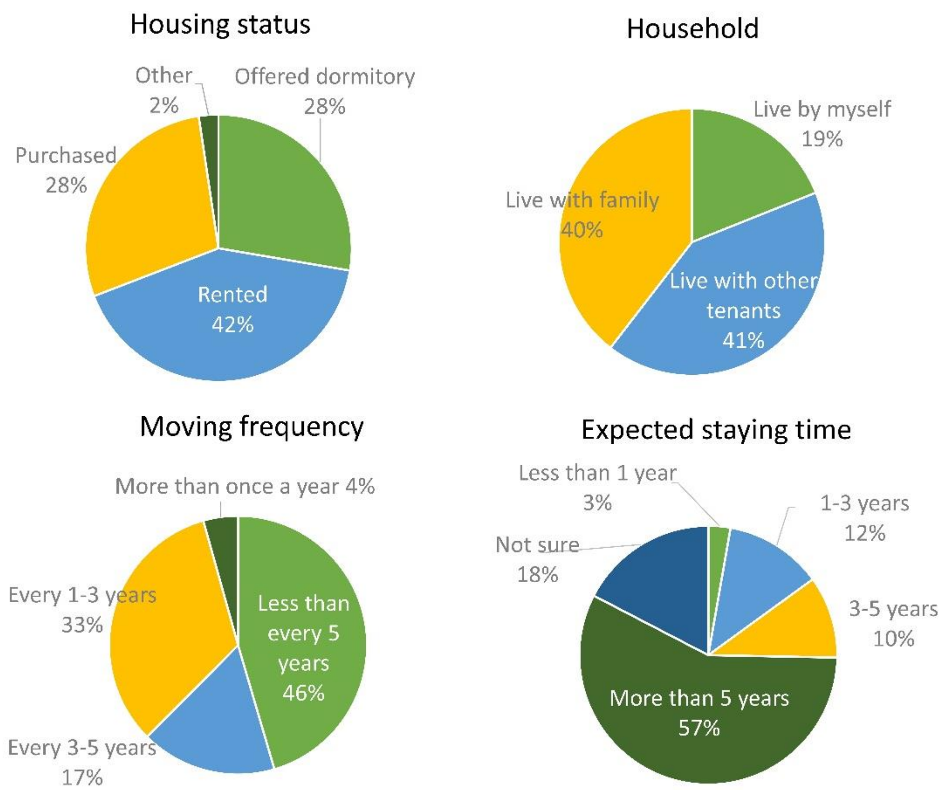

Figure 4-2. Related characteristics of the research population sample

4.2 Attitudes and their correlations to demographic characteristics

4.2.1 Attitudes

27% of the sample population stated in the survey that they have never heard about furniture rental, around 59% of them said they have heard about furniture rental, but they have not tried it yet, and only 14% have tried it before.

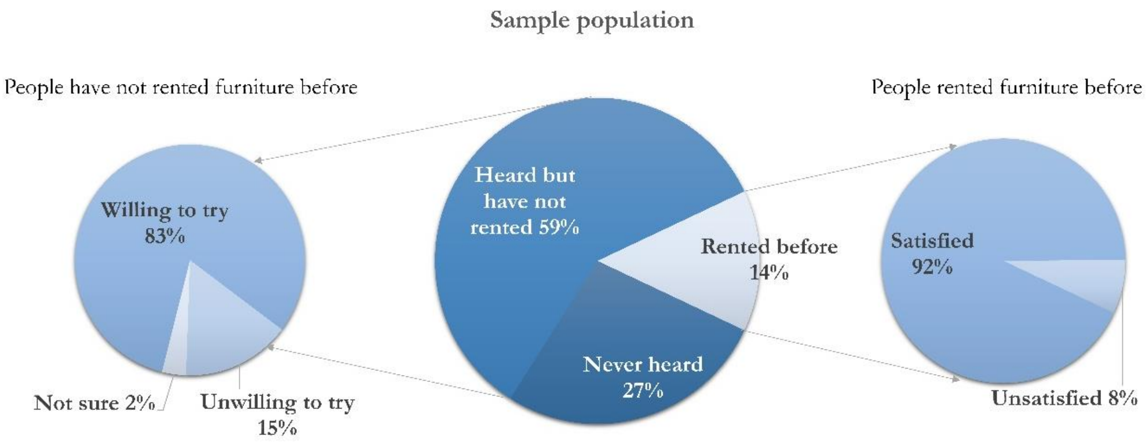

Figure 4-3. Overall attitude of consumers

In the group of people who have rented furniture before, 92% are satisfied with their experience and willing to do it again, yet 8% are not satisfied with their furniture renting experience. In the group that has not rented furniture, 83% said they are willing to try if there is a need, 15% stated they are unwilling to try it, and 2% are not sure how they feel about furniture rental. Nevertheless, the overall attitude tends to be positive (see Figure 4-3).

4.2.2 Correlations of demographic characteristics and attitudes

Consumers' attitudes can be influenced by many external factors besides their personality. In the case of this study, their moving frequency, household status can have a great influence on their choices. This section is trying to identify either there are such relationships between their attitudes and their demographic characteristics. Cross-tabulation is used to analyse the relationships between the different demographic characteristics and attitudes. Only apparent differences and obvious trends are included in this section. The groups with comparatively complex relationships will be provided with a table to help better understanding (see Table 4-1 and Table 4-2).

Gender. Among different genders, there is only a slight difference in their previous experience with furniture rental. The statistics show that male (26%) have a higher ratio of experience of renting furniture than female (8%). This result implies that compared to men, women might be more cautious when it comes to renting furniture. Their attitudes (positive or negative) do not have an apparent difference. Independent-samples T-test also verifies that difference does not exist in the attitudes for different genders.

Age. Groups aged 41-50 and 0-22 have the highest ratio of "never heard about furniture rental" in their own age group with a percentage at 41% and 34%, the reasons could be for the former age group they are already settled, and the latter is still live in the student dormitory provided by the school, thus they both have a low need for acquiring furniture and have low exposure to such information. Group aged 31-40 has the highest rate (21%) of the renting experience than other groups (6% to 12%). Furthermore, among people who have heard about furniture rental, the group aged 41-50 (89%) and the group aged 22-30 (86%) have a higher willingness to try compared to other age groups. It should be noted that the sample of the group aged 22-30 is more representative with a sample size of 129, yet the group aged 41-50 only has 17 samples.

Table 4-1. Cross-tabulation of age and attitudes

The ratio in each group	Never heard	Rented before			Have not rented, but heard about it			
	Sum	Sum	Satisfied	Unsatisfied	Sum	Willing to try	Unwilling to try	Not sure
0-22	34%	10%	75%	25%	56%	70%	26%	4%
23-30	25%	13%	88%	12%	62%	86%	13%	1%
31-40	22%	21%	100%	/	57%	81%	14%	5%
41-50	41%	6%	100%	/	53%	89%	11%	/
51-60	33%	33%	100%	/	33%	100%	/	/

Note: sums here are the total percentage of "Never heard", "Rented before" and "Have not rented, but heard about it". The other numbers are the percentages under each of those groups.

Education level. Except for disruption of education below Junior college with a sample size (8 in total), there is an overall upward trend of people's willingness to try furniture rental as the level of education grows. It might because that the more one gets educated the more likely one will have an open mind to accept new things and more likely to better understand the sustainability implications behind a use-oriented PSS business model, like furniture rental.

Occupation statuses. The occupation statuses of respondents are mainly two types: students (30%) and those who are employed full-time (65%). Compared to the employed, students have a higher unknowing rate (35% vs 23%) and a more negative attitude (15% vs 8%). Compared to western countries, Chinese students have a much lower need to rent their own apartments, since they are normally offered dormitories. Because of this low need, they will have lower exposure to such information and less probability to rent furniture.

Salary. In the group type of salary, those with salary ranged 10,000-20,000 CNY have an evident higher rate (27.4%) of furniture renting experience than other groups. In those who have not rented furniture, salary ranged from 0-5,000 showed a higher uncertainty about their attitude and a lower willingness to try (76.6%). All the other groups showed a higher willingness (around 85%), and the group of salary ranged 5,000-10,000 ranked the highest (88.5%). This result might have implications that in Shanghai, consumers with relatively lower income would be more careful of investing their money in an unfamiliar business. However, people with a salary of over 10,000 would be more likely to purchase the furniture directly rather than renting.

Housing status. Respondents who rent their place are more acquainted with furniture rental, with a lower rate of "I have never heard about furniture rental" at 24%, compared to around 30% in other groups. They also have a higher rate (19%) for the experience than people who are offered dormitories (8%) and those who purchased their place (14%). Furthermore, renters also have the highest willingness to try furniture rental (92%) compared to people who stay in dormitory (80%) and who purchased (75%). Hence, the renters are more likely to be the target consumer group of furniture rental, because they are more likely to have a more frequent moving frequency, thus, they will have a higher need for more flexible furniture.

Household. There is a higher rate (21%) of renting experience for respondents who live by themselves than those who live with their families (16%) and with other tenants (10%). Those who live by themselves also show the most positive attitude with a percentage at 93% of willingness to try. This might result from people who live by themselves have more flexibility when comes to choosing their furniture. People who live with their families might have already owned furniture and for those who live with other tenants, there might be concerns on negotiation problem of product selection or price sharing, especially for furniture in the public area.

Moving frequency. Regarding moving frequency, the degree of familiarity of furniture rental shows a "U" shape relationship with the moving frequency, which means people who move less than every 5 years and more than once a year have more sample who has never heard of furniture rental than the other two groups. Groups who move every 1-3 years and every 3-5 years have a higher rate (20.3% & 18.6%) of renting experiences than the other two ends. Overall, in the people who have not rented furniture, the sample population showed a high willingness to try. With an adequate sample number support (115 in total), there is a distinct lower ratio in the group that moves less than every 5 years (72.1%), the reason could be that they tend to have a lower need for renting furniture because of more settled staying plans. And the group who move more than once a year also has a lower willingness to try (71.4%) This might result from them have a more uncertain living solution and they do not want to be bound with the rented furniture which is contract-based, but it should be noted the sample size of which is small (7 in total).

Table 4-2. Cross-tabulation of moving frequency and attitudes

The ratio in each group	Never heard Sum	Rented before			Have not rented, but heard about it			
		Sum	Satisfied	Unsatisfied	Sum	Willing to try	Unwilling to try	Not sure
Less than every 5 years	32%	9%	90%	10%	59%	72%	25%	3%
Every 3-5 years	18%	19%	100%		63%	96%	4%	/
Every 1-3 years	24%	20%	88%	12%	56%	91%	9%	/
More than once a year	27%	9%	100%		64%	71%	/	29%

Note: sums here are the total percentage of "Never heard", "Rented before" and "Have not rented, but heard about it". The other numbers are the percentages under each of those groups.

Expected staying time. In the group type of expected staying time in the current city, people who tend to stay for less than 3 years have a higher unfamiliarity of furniture rental (75%) compared to 44% who plan to stay more than 3 years. Those who stay less than 3 years also have poorer experiences (10%) with furniture rental compared to those who expect to stay more than 3 years (41%). The reason could be that they are aware that they will move to another city, thus they will stick to the furniture they already had and have less attention to the information related to furniture. Respondents who plan to stay less than one year have no experience with furniture rental and higher unwilling to try (14%) compared to other groups. They are more likely to have more temporary living solutions, so they might find it more troublesome to rent furniture compared to those who will stay longer, but it should be noted the sample size is small, 7 in total.

4.2.3 Summary of representative group type for different attitudes

Frequency analysis is used in this section. To reduce the deviations, results with high rates but with a small sample size are excluded. Here the reference point is the mean frequency of each cross point. For example, in the group of moving frequency, there are 4 categories and 6 types of attitudes (categories and types can be found in Table 4-2), thus there are 4*6=24 results of the cross-references. In total there are 253 responses, thus if respondents in one cross point are under 253/24=10.5, then that type is excluded in the comparison of the most representative group type.

The unfamiliarity. The higher the percentage, the more people in that group type have never heard about furniture rental. The group that has the highest unfamiliarity is the respondents aged 41-50, with a percentage at 41%. The percentages of the following groups are very close, ranking from high to low they are students (35%), people who aged 0-22 and people who have master's degree (both 34%), and people who expect to stay in the current city for 1-3 years (32.3%).

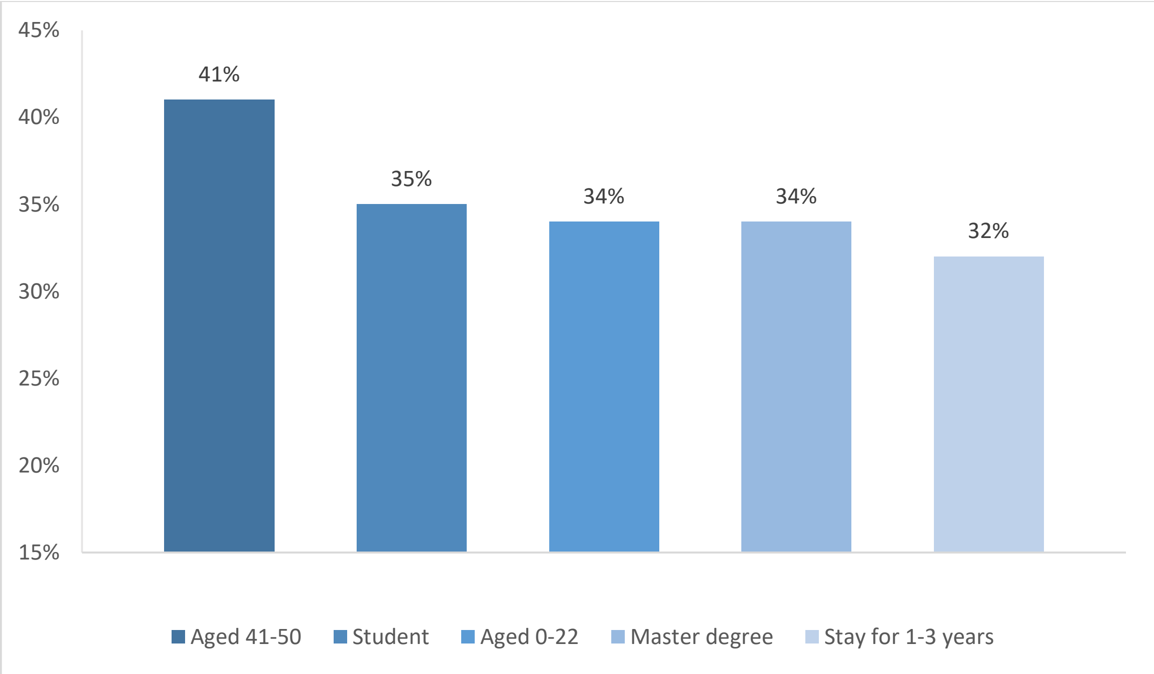

Figure 4-4. The percentage of respondents who never heard about furniture rental.

Renting experience. The higher the percentage, the more people in that group type have rented furniture rental before. Respondents whose salary ranged from 10,000-20,000 have the most experience of renting furniture (27%), and male also has more renting experience (26%). The percentages of the following groups are close, ranking from high to low they are people who expected to stay in the current city for 3-5 years (23%), people who live by themselves and people who aged 31-40 (both 21%).

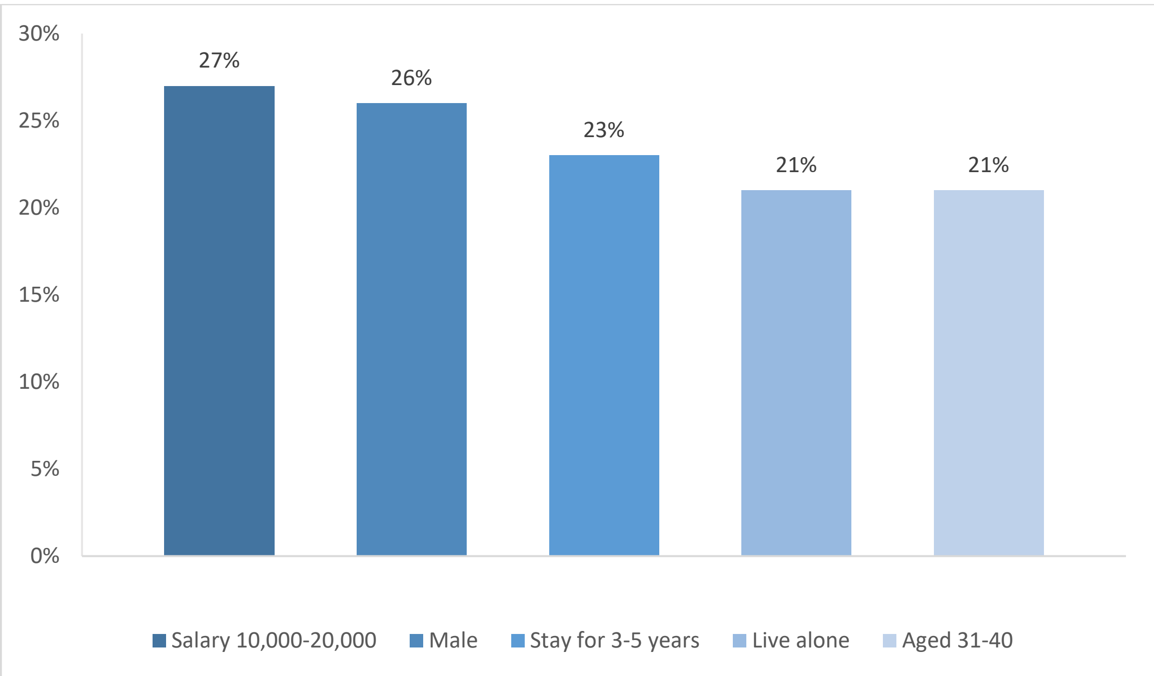

Figure 4-5. The percentage of respondents who have rented furniture before

Willingness to try. The higher the percentage, the more people in that group type are willing to try furniture rental. This value is the proportion of the people who are willing to rent furniture to people who have not rented before. People who move every 3-5 years showed the highest willingness (96%), followed by people who live by themselves (93%), people who rent their places (92%), people who move every 1-3 years (91%), and people who aged 41-50 (89%).

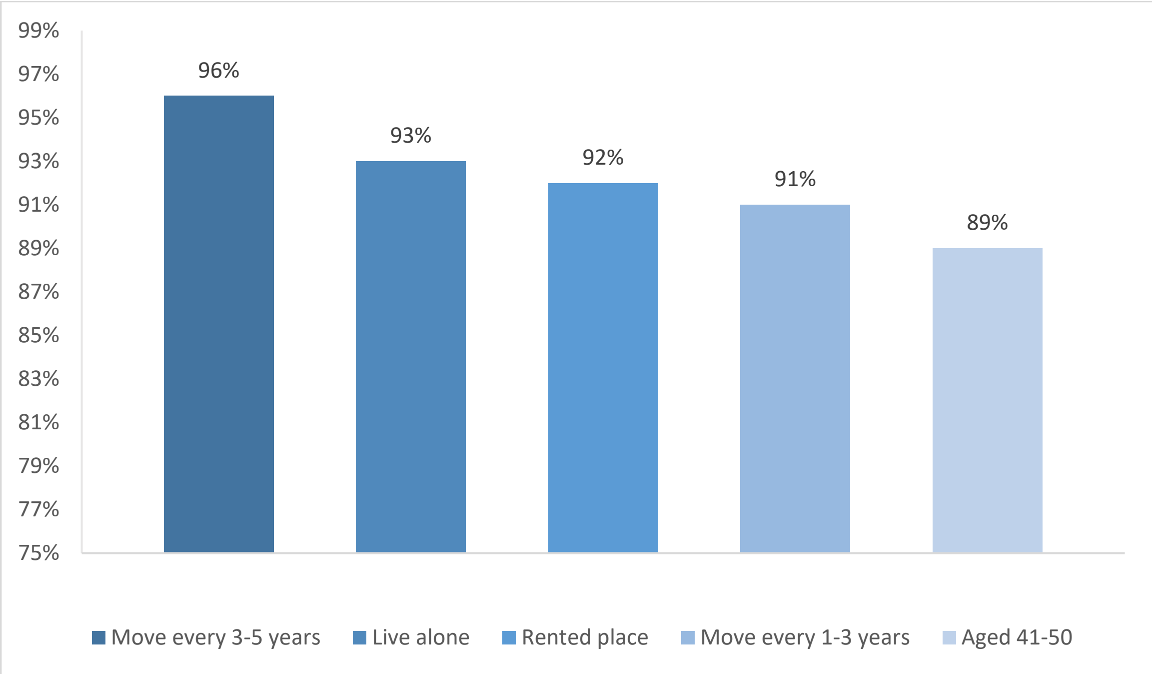

Figure 4-6. The percentage of respondents who are willing to try furniture rental

4.3 Drivers for renting furniture

In this and the following section, the results are from three types of questions. The first one is from the Likert Scale question of participants' agreement degree on the descriptions of the drivers or the barriers regarding furniture rental. On a scale of 1 to 5, as mentioned, they stand for strongly disagree, somewhat disagree, neither agree nor disagree, somewhat agree, and strongly agree. The second question is a ranking question in which respondents were asked to rank their top three drivers or barriers. The third one is an open question in which participants could add drivers or barriers that they regard as important, but which were not included in the survey choices.

4.3.1 Descriptive analysis of drivers

In this study, Cronbach 'α coefficient is used to test the reliability of the results. For the driver section, the Cronbach 'α coefficient is 0.86. The result indicates that the internal consistency of each question is good, the reliability of data is high, which suggests that further analysis can be performed with this set of responses.

Consumers' agreeing level of mentioned drivers

Mean and SD are used to analyse the results. These statistical indicators are usually used to analyse the central tendency and to measure the dispersion degree of a set of data. In the case of this study, they have deemed it important to measure the agreed level of consumers on the drivers. If the mean value is greater than 3, that means the overall sample population agree on the provided description of the drivers. Otherwise, they disagree with it. The result is presented in Table 4-3.

Table 4-3. Mean and SD values of drivers

Category	Survey question	Mean	SD
Freedom of non-ownership	Liberate from product management, repair, and maintenance	3.79	1.01
	Trialability for products thus can avoid wrong purchasing decisions	4.26	0.76
	Diminish troubles when moving, like selling or transporting furniture	4.20	0.85
	More convenient when having a short staying plan	3.40	1.14
Advantages compared to the traditional business model	Ability to try different styles, brands	4.13	0.74
	Ability to have higher quality or more expensive products	3.90	0.89
	Keep up with the furnishing trend	3.78	0.92
	Satisfy the temporary need for certain products, like a crib	4.30	0.84
	Combination of information from different brands and styles	3.84	0.95
Economic reasons	Do not require a high initial outlay, more manageable to pay by month/quarter/year	3.49	1.05
	Cheaper when having a short staying plan	3.37	1.13
	Renting furniture can replace the disliked furniture without spending a lot of money.	3.88	0.96
Sustainability reasons	Sustainable lifestyle and enhances participation in sustainable development	3.87	0.85
	Renting is more sustainable than buying, sustainability is important to me	3.84	0.92

In general, the mean values of all drivers are above 3, meaning that overall, the participants agree with these factors as drivers. In which, freedom of non-ownership stands out as an important category for consumers. Variable "Satisfy the temporary need" had the highest mean value at 4.30, which indicates that in general the sample population very agree on this factor as an important driver for them whether to rent furniture. Besides that, drivers "Trialability for products" and "Diminish troubles when moving" are also considered as very important factors. The results of SD are relatively small, indicating that responses are clustered around the mean.

Consumers' ranking for drivers

Frequency analysis is used to analyse the result of the ranking question. The bar chart below summarises the overall frequencies of the factors that are chosen as the top three drivers by order, i.e., the number above each bar is the sum of the votes of rank 1, rank 2 and rank 3 for that driver. The intention is to identify which drivers are considered important by consumers. It shows that "Satisfy temporary need" are deemed very important with 144 votes, and it shows a distinctive position compared to other factors. "Ability to try different styles, brands" and "Diminish troubles when moving" are also deemed as key drivers for them to decide whether to rent furniture. As for the most important drivers, two drivers showed prominent positions: "Ability to try new styles and new brands" (frequency[3]: 70) and "Satisfy temporary need" (frequency: 70), which both under the category of the "advantage of furniture rental".

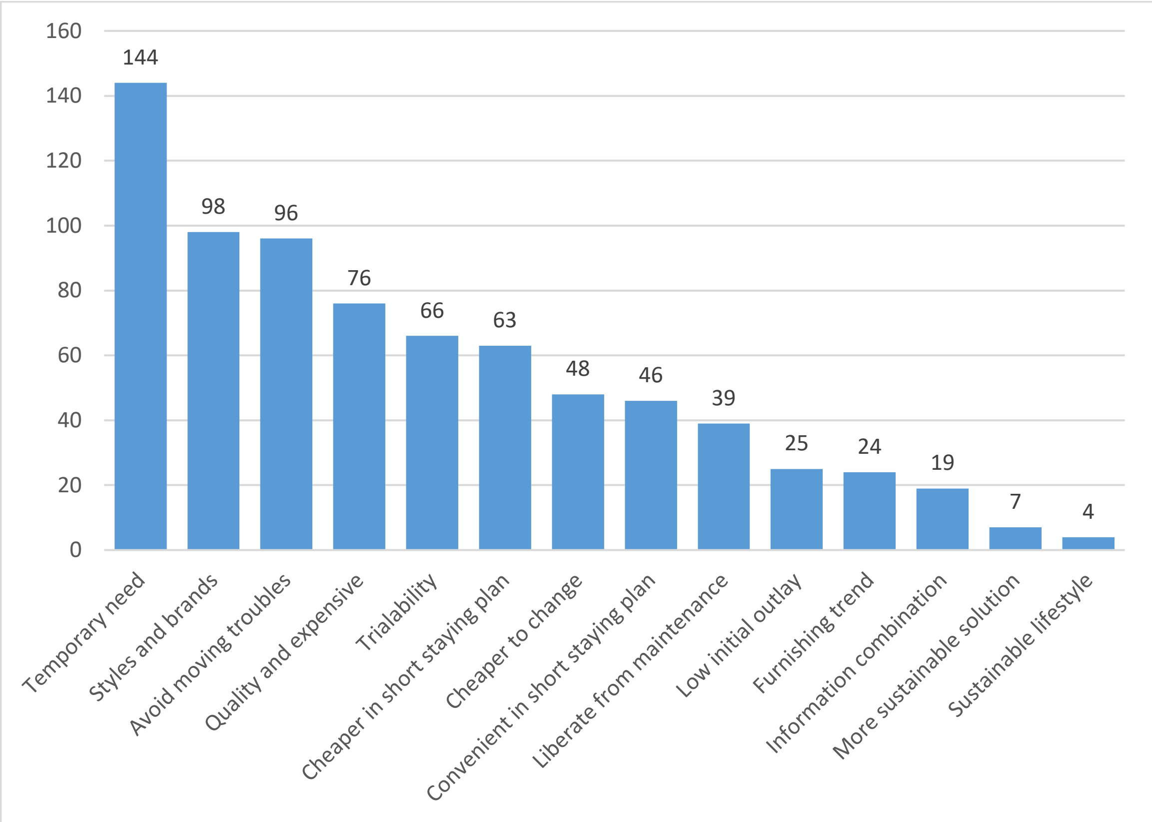

Figure 4-7. Sum of votes for the most important drivers

Important drivers perceived by interviewees

However, in the 4 first phase interviews, "Satisfy temporary need" was not brought up as an outstanding advantage. And in the second phase, one interviewee said, "*renting tables or chairs can be a very good option if someone wants to throw a big party, but in my case, I will just let them stand or sit on my sofa! Because it is just a one-time thing, I do not want to spend extra energy and money on it"* (P5). Instead, advantages of renting furniture like "diminish troubles when moving", "cheaper when having a short staying plan", "low initial outlay" and "liberate from maintenance" are more valued by them. It seems that they deem these drivers more important because these factors are more closely connected to their current living status. Interviewee 1 have to move quite often because of his jobs. He said, "*Since I move a lot, I can't afford to spend a lot of money on furniture*

[3] The frequency here means the number of survey sample who chose that driver as the most important driver.

every time I move […] another reason is it is more convenient when I move" (P1). And interviewee 3 is not sure about how long he will stay: "*I Rented furniture because I want to replace the existing old and outdated furniture and also because I don't know how long I will stay; I don't want to invest too much in it […] and I feel more relaxed that I don't need to worry about the cleaning or maintenance issue*" (P3).

From the results of the Likert scale question for drivers presented in Table 4-3, the mean values of the sustainability factors are over 3, indicating that consumers agree that furniture rental has potential sustainability benefits. However, from Figure 4-7, we can see that the two sustainability drivers only received 11 votes (also 11 samples) in total as the top three drivers for consumers, indicating that though the sample population think sustainability is a good intention to try this new business model, they would not consider it as a starting point to change their consumption patterns regarding furniture, and it is also not their prioritised driver on whether to rent furniture. This phenomenon/trend is also spotted in the two phases of interviews. All interviewees acknowledged the sustainability potential of renting furniture, but they think sustainability is just an add-on benefit and it will not influence their choices. Some statement include: *"I also think about sustainability, if I rent furniture, it can avoid producing new ones and they can be reused, but after all it's something I will use for a long time, my own convenience will still be my top priority"* (P3), *"if I value sustainability, I will use other sustainable products, other than something like furniture you will not replace that often"* (P7) and *"maybe younger people will have more sustainable conscious, for the people in my age(50), cost performance and practicability are the most important things"*(P5)

4.3.2 Relevance of drivers and demographic characteristics

This section intends to investigate the degree of correlation between the drivers and different groups in each demographic characteristic. In other words, to verify whether statistically significant differences exist in, for example, different age groups. The rationale of doing this analysis is to better understand the relationships between different drivers and different demographic characteristics and to reveal which groups have this difference and what their inner relationships are. It also has further implications on what demographic factors will influence the perception of one particular driver. As mentioned in the methodology, the T-test is used for groups that have only two variables, and ANOVA is used to analyse groups that have over two variables. The results are presented below.

T-test

Gender. In the gender aspect, the sig. values (p-value) from the T-test are all greater than the significance level, 0.05 (see Appendix D), which indicates that there is no evident difference towards the drivers for renting furniture between different genders.

ANOVA

Age. In the dimension of age, there is an evident variance in different age groups regarding the driver "Liberate from product management, repair, and maintenance" and "Ability to try different styles, brands". The result of ANOVA (see table 4-4) shows that groups aged 31-40 and 41-50 agree more on renting furniture can save their trouble regarding maintenance or repair than the groups aged under 31. Furthermore, groups aged 23-30, and 31-40 are more attracted to the offer that renting furniture can provide more opportunities to different brands and styles than group aged under 23.

Education. There is no evident variance between different education levels and drivers.

Table 4-4. The ANOVA results of the correlation between the drivers and age

Category	Survey question	Sig.	I-J
Freedom of non-ownership	Liberate from product repair, management, and maintenance	0.002	- 0.7 group 0-22&31-40 -0.93 group 0-22&41-50 -0.34 group 23-30&31-40 -0.57 group 23-30 &41-50
	Trialability for products thus can avoid wrong purchasing decisions	0.42	
	Diminish troubles when moving, like selling or transporting furniture	0.09	
	More convenient when having a short staying plan	0.17	
Advantages compared to the traditional business model	Ability to try different styles, brands	0.04	-0.38, group 0-22&23-30 -0.42, group 0-22& 31-40
	Ability to have higher quality or more expensive products	0.21	
	Keep up with the furnishing trend	0.052	
	Satisfy the temporary need for certain products, like a crib	0.11	
	Combination of products information from different brands and styles	0.14	
Economic reasons	Do not require a high initial outlay	0.54	
	Cheaper when having a short staying plan	0.45	
	Renting furniture can replace the disliked furniture	0.54	
Sustainability reasons	Sustainable lifestyle and enhances participation in sustainable development	0.45	
	Renting is more sustainable than buying, sustainability is important to me	0.96	

Occupation. In the aspect of occupation status, there is evident variance regarding the driver "Liberate from product management, repair, and maintenance" and "Keep up with the furnishing trend". Participants who are employed full-time agree more on these two drivers than the student group. The reason could be that people who are employed have more financial support for what they desired, for example in fashioned products and have a stronger will to free themselves from maintenance of the products than the student group.

Salary. In the dimension of salary, there is evident variance in different groups regarding the driver "Ability to try different styles, brands" and "Keep up with the furnishing trend". Sample population who rather not state their salary less agree on these two drivers than whose salary from 0-30,000 CNY.

Housing. In the dimension of Housing status, there is evident variance in different groups regarding the driver "More convenient when have short staying plan", "Ability to try different styles, brands", "Ability to have higher quality or more expensive products", "Do not require a high initial outlay, more manageable to pay" and "Cheaper when have a short staying plan". The results indicate that participants who rent places agree more on these drivers in general than groups who live in places offered by school or company, and who live in their own house. This could because people who rent places have more potential need to rent furniture in general, thus they are more attracted to these drivers.

Households. In the dimension of households, there is evident variance in different groups regarding the driver "Liberate from product management, repair, and maintenance" and "More convenient when have short staying plan". Participants who live with their families care more about the driver of maintenance of furniture than those who live with other tenants. Moreover, survey samples who live by themselves agree that it is more convenient to rent furniture when having a short staying plan compared to those who live with their families.

Moving frequency. In the dimension of moving frequency, there is evident variance in different groups regarding the driver "More convenient when have short staying plan" and "Ability to try different styles, brands". Participants who move every 3-5 years and 1-3 years agree more on these two factors than those who move less than every five years. Also, there is variance regarding driver "Satisfy the temporary need for certain products, like a crib" and "Cheaper when have short staying plan". Participants who move more than once a year have a more uncertain living situation so they might be less willing to commit to a contract. Furthermore, people who move less than every five years less agree on it is cheaper to rent furniture when having a short staying plan.

Expected staying time. In the dimension of expected staying time, there is evident variance in different groups regarding the driver "Liberate from product management, repair, and maintenance" and "Combination of products information from different brands and styles". People who will stay for more than 5 years agree more on these factors than those who will stay for 3-5 years. This might because furniture is more likely to need repair and maintenance after a long time and people who will have their furniture for longer care more about picking a brand or style they like.

4.3.3 Content analysis of survey open answers

Several survey participants have mentioned the potential increase of their enjoyment of life and vitality they would get from having the chance to change the furniture more often. According to the responses, it can solve the problem of visual fatigue and can experience a new feeling of life from new furniture, which will bring them great happiness. They can have a more splendid life decorating their places, for example, adapting the furnishing style to different seasons, without a high cost. One response even mentioned, if changing furniture is as easy as changing clothes, she can also follow famous furnishing bloggers to increase her aesthetic level. One respondent also says that renting furniture can be a chance for socializing.

Because renting furniture to a large degree reduces the responsibility for consumers, it is a good choice for people who always struggle when making choices, according to one response. It can not only satisfy one's hedonistic needs but also because of this levelled-down burden/responsibility, it will be much faster to rent furniture than buying, thus it can also satisfy one's urgent needs.

Compared to the furniture sold online that cannot be seen, respondents think furniture for rental to some degree can be guaranteed has better quality, because the furniture for renting is normally more durable and consumers can check when companies deliver. Besides better quality, renting furniture cannot only save the money of purchasing, if they rent unfurnished apartments, it would also save them a fortune. Moreover, some participants indicated their drivers as a landlord. They said that renting furniture can better suit different needs for different tenants, which will make the transactions easier. And if the furniture is second-hand, they will not be worried about the formaldehyde[4] problem of new furniture. Because of the disturbing news that exposed there is common formaldehyde exceeding standard issue in newly decorated homes have caused a sensation in the society years ago, now the Chinese public is being extra cautious when it comes to indoor furnishings.

[4] Formaldehyde: formaldehyde is an organic compound that is greatly halmful for human health, which is widely used in building materials and household products.

4.4 Barriers for renting furniture

4.4.1 Descriptive analysis of barriers

For the barrier section, the Cronbach 'α coefficient is 0.91. The result indicates that the internal consistency of each question is good, the reliability of data is high, which suggests that further analysis can be performed with this set of responses.

Consumers' agreed level of mentioned barriers

Except for the barrier "Purchased furniture can be sold to get some money back", the mean values of other barriers are above 3, meaning that overall, the participants agree on these factors as barriers. But compared to the drivers, the agreement degree is lower in general. "Concerns regarding the product itself" stands out as an important category for consumers. "Hygiene issues" have the highest mean value at 3.97, which indicates that the sample population mainly value hygiene issues when coming to furniture. Besides that, barrier "Unfamiliar with furniture rental and how it works" and "Quality issues" are also considered very important factors. The results of SD are relatively small, indicating that responses are clustered around the mean (see Table 4-5).

Table 4-5. Mean and SD values of barriers

Category	Survey question	Mean	SD
The desire to own	Complete control and power over products, like modify it	3.08	1.09
	Ownership of products makes me feel secure and happy	3.49	1.10
Novelty and Low availability	Unfamiliar with furniture rental and how it works	3.80	1.02
	Low trust in this business model because I think this business model is not mature yet.	3.03	1.07
	Low accessibility to the service, products, or product information	3.44	1.03
Economic reasons	Purchased furniture can be sold to get some money back	2.83	1.10
	Potential sanction fees if there are damages	3.64	1.10
	Fees with contract-based service agreements, like a membership fee	3.72	1.02
	Renting furniture is more expensive in the long run	3.57	1.20
Concerns regarding the product itself	Hygiene issue. E.g., pests and bugs	3.97	1.12
	Quality issues. E.g., furniture can be damaged or worn out	3.72	1.01
	Only prefer new products	3.23	1.16
Incompatible current living condition	No need because have/landlord provides basic furniture	3.58	1.10
	Concern on how to deal with the old furniture if rent furniture	3.49	1.10

Consumers' ranking for barriers

The bar chart below summarises the overall frequencies of the factors that are chosen as the top three barriers by order, i.e., the number above each bar is the sum of the votes of rank 1, rank 2 and rank 3 for that barrier. The intention is to identify which barriers are considered important by consumers. It shows that the "Hygiene issue" is deemed very important by almost half of the sample population, and it shows a distinctive position compared to other factors. "Potential sanction fees if there are damages" and "Low trust in this business model" is also deemed as a key barrier with 98 and 74 votes. As for the most important barrier, three barriers showed prominent positions: "Unfamiliar with furniture rental and how it works" (frequency[5]: 55), "Low trust in this business model" (frequency: 41) and "Potential sanction fees if there are damages" (frequency: 33), which fill into the category of "Novelty and Low availability" and "economic reasons".

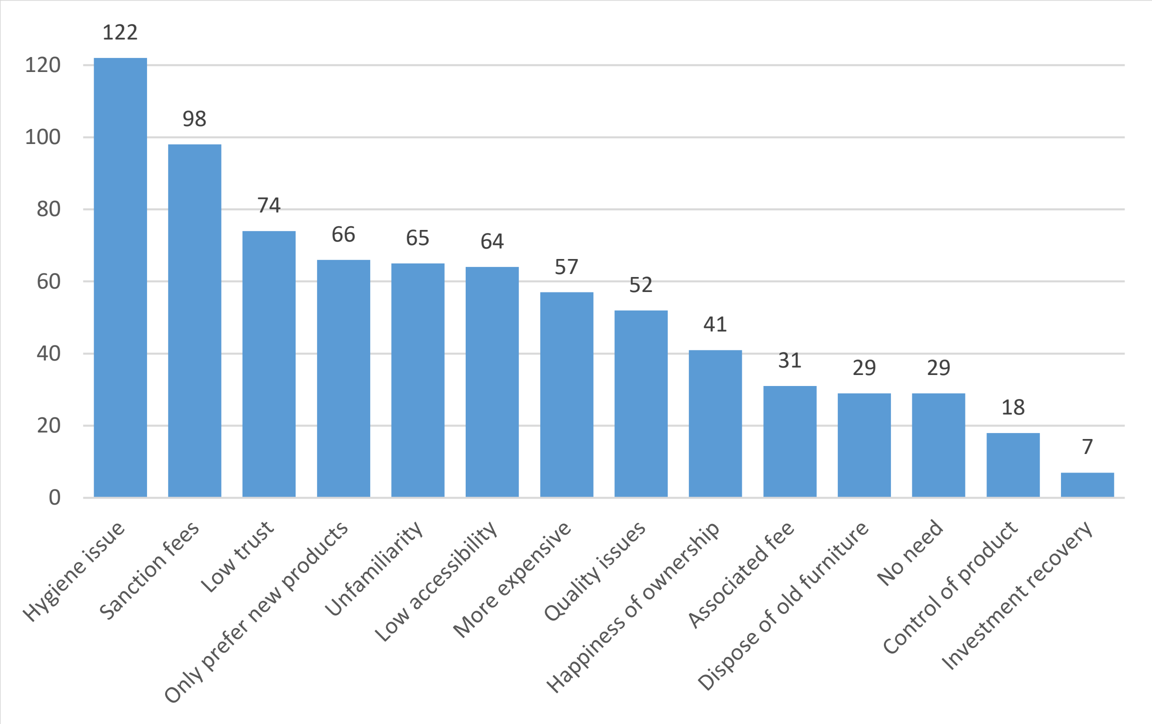

Figure 4-8. Sum of votes for the most important barriers

Important barriers perceived by interviewees

Important barriers deemed by interviewees are more diverse compared to drivers. Hygiene is regarded as very important by all interviewees, yet their attitudes are a little bit different. Interviewee 3 and 5 think if the furniture is fully disinfected, then there is no need to worry. However, interviewee 2, 6 and 7 expressed their concerns beyond the hygiene issues themselves. Interviewee 2 only prefers new products. *"It is the feeling that others have used it, so I think it's not clean, emotionally, but it might because I am extremely strict when it comes to hygiene issues"* (P2). Interviewee 6 has low trust in the furniture rental companies. *"Even though they said they would disinfect the furniture, I do not buy it, how thorough can it be? Furniture is something I will contact every day, so I want it to be completely safe"* (P6). Interviewee 7 mentioned furniture is strongly connected to his personal feeling. *"Furniture is very personal, it is not like a bike or a car, I want to feel comfortable*

[5] The frequency here means the number of survey sample who chose that barrier as the most important barrier.

and safe, so I want it to be clean and I do not want to continue worrying if there are bugs or some weird stuff on my sofa" (P7).

Furthermore, interviewees 6 and 7 expressed their higher desire to own and they described it as the traditional Chinese thought. Interviewees 6 think furniture is also another symbol of one's social status *"when your friends come to visit, it will show many things, your taste, your economical level. If my furniture is rented, that will make me look bad"* he said. He also connected the desire to own to why buying an apartment, which is considered very important for most of the Chinese. *"We want to own stuff, that is why so many Chinese spent most of their money on buying an apartment because if I buy it, it is my property then I can have complete control. You never know when will your landlord will kick you out, I do not like the insecurity and that is the same for rented furniture"* (P6). *"Even though the people in our age (24) are getting more education and can understand why we need a low consumption economy, the traditional thought of owning was inherited from the last generation"* (P7).

"No need to rent" is also frequently mentioned by the interviewees. "*It is not about the familiarity, even if I know it very well, I will not rent furniture, because I am all settled now, I have my own furniture*" (P5). Interviewee 7 stated from a perspective that it is very easy and cheap to just buy furniture. *"Furniture is not that expensive in China and even it is, you can always pay by instalments"* (P7). Moreover, "low accessibility" is also a big barrier for them. *"When I was trying to rent furniture, I tried to find furniture rental companies but it's very hard. I ended up renting furniture from an intermediary agent who is also a letting agency"* (P3). *"The scale of furniture rental is still so small, In Shanghai it is still uncommon, not to mention the smaller cities"* (P7).

4.4.2 Relevance of barriers and demographic characteristics

This section intends to investigate the degree of correlation between the barriers and different groups in each demographic characteristic. In other words, to verify whether statistically significant differences exist in, for example, different age groups. The rationale of doing this analysis is to better understand the relationships between different barriers and different demographic characteristics and to reveal which groups have this difference and what their inner relationships are. It also has further implications on what demographic factors will influence the perception of one particular barrier. As mentioned in the methodology, the T-test is used for groups that have only two variables, and ANOVA is used to analyse groups that have over two variables. The results are presented below.

T-test

Gender. Like in the driver section, an independent-samples T-test is used to analyse the variance between the genders. The sig. values (p-value), except the barrier "Unfamiliar with furniture rental and how it works", are all greater than the significance level, 0.05, which indicates that there is no evident difference towards the other barriers for renting furniture among different genders (see Appendix E,). The results show that female think higher of the unfamiliarity of furniture rental as a barrier than male. Barrier "Only prefer new products" also has a small sig. value, 0.06, and its t-value is negative, which indicates that female is less willing to use second-hand products than male. This might because, when coming to furniture rental, surveyed female is more cautious about their decisions and they prefer new products more for hygiene or other reasons.

ANOVA

Age. In the dimension of age, there is evident variance in different age groups regarding the barrier "Complete control and power over products, like modify it", "Ownership of products makes me feel secure and happy", "Unfamiliar with furniture rental and how it works", "Potential sanction fees if there are damages", "Renting furniture is more expensive in the long run", "Hygiene issue. E.g., pests and bugs" and "Only prefer new products". Overall, group aged 0-22 agree more on these factors as barriers when they decide whether to rent furniture than groups aged 23-30 and 30-40. It might because the group aged 0-22 has a lower need to rent furniture, thus they have a more passive attitude in general.

Education. In the dimension of education level, there is evident variance in different groups regarding the barrier "Unfamiliar with furniture rental and how it works", "Hygiene issue. E.g., pests and bugs", and "Quality issues. E.g., furniture can be damaged or worn out". In general, the group with higher school education level is less concerned about these barriers than other groups, which might indicate that the education level is one of the factors that determines consumers' acquaintance level of a new business.

Occupation. In the dimension of occupation status, there is evident variance in different groups among all the barriers. In general, students agree more on these factors as barriers when they decide whether to rent furniture than those who are employed full-time. Similar to the group aged 0-22, students have a lower need in general, so they might not be attracted to the idea of renting furniture.

Salary. In the dimension of salary, there is evident variance in different groups regarding barrier "Unfamiliar with furniture rental and how it works", "Hygiene issues", and "Quality issues". Participants whose salary ranged from 10,000-20,000 CNY are less concerned about these barriers than other groups. Further, there is also variance in the barrier "Complete control and power over products, like modify it", "Ownership of products makes me feel secure and happy", "Low trust in this business model", "Purchased furniture can be sold to get some money back", "Potential sanction fees, if there are damages", "Renting furniture, is more expensive in the long run", and "Only prefer new products" and "No need because have/landlord provides basic furniture". In general, the group with salary ranged 0-5,000 agree more on these factors as barriers when considering renting furniture than groups salary ranged 5,000-10,000 and 10,000-20,000. Though furniture rental can provide a cheaper option for a temporary need, it seems that group with salary ranged from 0-5,000 have more concerns about the reliability of furniture rental and it might because they want to avert potential financial risks as much as possible.

Housing. In the dimension of Housing status, there is evident variance in different groups regarding the barrier "Complete control and power over products, like modify it", "Ownership of products makes me feel secure and happy", "Unfamiliar with furniture rental and how it works", "Low accessibility to the service, products, or product information", "Purchased furniture can be sold to get some money back", "Potential sanction fees, if there are damages", "Renting furniture, is more expensive in the long run", "Hygiene issue", "Only prefer new products", and "No need because having/landlord provides basic furniture". In general, as shown in Table 4-6, the "I-J" value between groups who rent place and group who are offered dormitories or who purchased their places are all negative, which indicates that survey participants who rent places are less concerned about the barriers mentioned above than groups who live in a dormitory, and who live in their purchased places. Similar to the drivers, people who rent places have more needs in general, so when facing the barriers, they are more likely to have a higher acceptance level.

Households. In the dimension of households, there is evident variance in different groups regarding the barrier "Potential sanction fees if there are damages". Survey samples who live by themselves are less concerned about the sanction fee issues compare to those who live with their families or other tenants. This might because people who live by themselves feel more in charge of the products since it does not involve others.

Moving frequency. In the dimension of moving frequency, there is evident variance in different groups regarding the barrier "Complete control and power over products, like modify it", "Ownership of products makes me feel secure and happy", "Unfamiliar with furniture rental and how it works", "Low trust in this business model", "Purchased furniture can be sold to get some money back", "Potential sanction fees if there are damages", "Fees with contract-based service agreements, like membership fee", "Renting furniture is more expensive in the long run", "Hygiene issue. E.g., pests and bugs", "Quality issues. E.g., furniture can be damaged or worn out", and "Only prefer new products". The result shows that sample population who move less than every 5 years agree more on these barriers than those who move every 3-5 years and 1-3 years in general.

Table 4-6. The ANOVA results of the correlation between the barriers and housing

Category	Survey question	Sig.	I-J	
			Group Rent & offered	Group Rent & purchased
The desire to own	Complete control and power over products, like modify it	0.001	-0.63	-0.43
	Ownership of products makes me feel secure and happy	0	-0.68	-0.49
Novelty and Low availability	Unfamiliar with furniture rental and how it works	0.007	-0.42	/
	Low trust in this business model	0.052		
	Low accessibility to the service, products, or product information	0.002	-0.4	-0.48
Economic reasons	Purchased furniture can be sold to get some money back	0.042	-0.43	-0.36
	Potential sanction fees if there are damages	0.001	-0.61	-0.42
	Fees with contract-based service agreements, like a membership fee	0.089		
	Renting furniture is more expensive in the long run	0.007	-0.53	-0.53
Concerns regarding the product itself	Hygiene issue. E.g., pests and bugs	0.016	-0.46	-0.40
	Quality issues. E.g., furniture can be damaged or worn out	0.24		
	Only prefer new products	0.001	-0.50	-0.58
Incompatible current living condition	No need because have/landlord provides basic furniture	0.007	-0.46	-0.48
	Concern on how to deal with the old furniture if rent furniture	0.548		

Expected staying time. In the dimension of expected staying time, there is evident variance in different groups regarding the barrier "Complete control and power over products, like modify it", "Unfamiliar with furniture rental and how it works", and "Hygiene issue. E.g., pests and bugs". In general, people who will stay for more than 5 years are less concern about these barriers than those will stay for less than 5 years.

4.4.3 Content analysis of survey open answers

Compared to the drivers, more responses regarding barriers are received. Many have shown their concerns on the attribution of responsibility and liability. Consumers think in renting business, responsibility partition is blurry. For example, if there are hygiene issues, which are discovered after signing the contract, it is hard to assign accountability. Moreover, when consumers want to end the contract, it is hard to authenticate whether the degree of damage has reached the level for sanction fees or whether there is damaging/worn-out at all, because the criteria in the contract may not be completely clear.

This uncertainty is also shown in their concerns regarding the contract. Many are worried about there might be some hidden imparity clauses that might be ignored when signing the contract in the beginning. So, they suppose there is a possibility that they will be asked for fees for unjust causes. Several participants also mentioned, if the furniture can be purchased after renting is not included in the contract, they will have a lower willingness to rent. Furthermore, because of the necessity of the contract in this business model, the renting process can be more complicated, and it can also be troublesome when ending the contract. Though this low trust has been mentioned in the Likert scale question, some still emphasized it in this section. They think there is yet no complete supervision system and relevant legislation for furniture rental. Therefore, if there is any dispute, it is hard to defend their rights.

Safety issues are another concern. They are worried about there might be excess chemical substances, like formaldehyde, in the furniture. The reason is that they think the quality of the rented furniture cannot be guaranteed like other standard furniture companies. The responses also mentioned the safety issues related to privacy, especially furniture that is very close to one's personal life. Because second-hand furniture will have the intervention of other strangers, they are worried about there might be some privacy issues, like a pinhole camera installed in the furniture.

Besides, many also have concerns about who is responsible for the transportation of the furniture and whether there is an associated cost. Though compared to purchasing, renting furniture is already cheaper, the price of renting furniture could also be considered as not cost saving for some consumers. Ten responses have mentioned the concern about the renting price, in which two have mentioned their desire for cheaper renting price and different price levels for different consumer groups. Only one response said that he thinks the current price of renting furniture is relatively high and others might have the implications that they will not consider renting furniture if the price is beyond their acceptance level.

The negative feeling about the rented furniture or furniture rental business is also frequently mentioned. One response stated that he will feel upset when thinking the furniture is not owned by him. Another showed her concern about whether renting furniture will give others an impression of stingy or poor. This negative feeling can also come from the uncertainty of the last user. One participant said that she will feel very uncomfortable when thinking the last user might experience unfortunate things like passed away or commit a crime. Additionally, some think there is no need to rent furniture. For a start, there are always choices for cheaper furniture, like IKEA. Also, old furniture can be sold on an online platform, if it is not needed anymore. It will take a lot of time and effort to frequently changing the furniture. Lastly, they have worries about whether the landlord or their households would agree on replacing existing furniture with rented furniture.

5 Discussion

This study investigated consumers attitudes and their reasons for renting furniture in Shanghai by providing empirical evidence through interviews and a survey. As mentioned in the introduction, relevant studies are rather scarce in this field. Consumers' attitudes and their drivers and barriers in relation to furniture rental lack the support of an adequate number of studies, especially empirical studies and in the context of China. The acknowledgement of consumers' thoughts can provide essential implications for the development of furniture rental. A better understanding of these knowledge gaps can also contribute to the promotion of use-oriented PSS and can popularize the concept of access-based business models.

5.1 Results reflections

Unfamiliarity

As illustrated in the results and analysis section, the surveyed consumers in Shanghai have a certain proportion of unfamiliarity with furniture rental and several interviewees said they just heard about it but were not sure how exactly it works. Many furniture rental companies have entered the Chinese market since 2015, expecting to join the trend of the popularity of circular economy in China as they see a growing market (Equal Ocean, 2017). Yet in a megacity like Shanghai, the economic centre of China, about 30% of the surveyed population has never heard about it, not to mention in other smaller cities, which indicates that furniture rental still faces a problem of inadequate market dissemination. Except for sharing other items like bikes, cars, or power banks, other access-based offerings like furniture rental have lower popularity and lower acceptance level in the Chinese market.

The reasons could be manyfold. Firstly, the furniture rental business faces great challenges regarding building an industrial chain, identifying target customers, the need for large upfront investment and thorough logistics and storage systems, as well as long payback periods, which all lack successful examples in China (Zhang and Wang, 2019). In addition, relevant regulatory regime, support from the government or investors cannot keep up with the emerging speed of new business models/products. As a result, the already few furniture rental companies have become even fewer. Besides, even though the concept of circular economy has been introduced in Chinese academia for decades, its popularity among the public and its implementation are still limited. Moreover, unlike bike-sharing or car-sharing, where the products themselves serve as a highly effective advertisement, business models like furniture rental or china rental have fewer tunnels to get consumers acquainted with this business model. From the high unfamiliarity and low level of experience of furniture rental, in addition to the high willingness to try shown in the survey results, it can be seen that furniture rental needs more publicity and promotion.

Attitudes

Though furniture rental is not prevailing in China, according to the survey results, the attitudes of consumers tend to be positive. In those who have not rented furniture before, 83% stated they are willing to try if there is a need. This is different from the findings of research on consumers' attitudes towards home furnishing rental of Gullstrand Edbring et al.(2016) and Baumeister (2014) in Sweden and Germany, which stated that consumers attitudes are generally negative. Gullstrand Edbring et al.(2016, p. 13) pointed out that "attitudes differ considerably depending on the product being studied". The finding of this study is also aligned with this argument. Four interviewees indicated that their attitudes to a large extent depend on the product type, a more conservative attitude is shown for more intimate contact products.

But it should be noted that this positive attitude does not necessarily lead to corresponding consumption behaviour. Interviewee 5, who chose "I am willing to try" in the survey, stated in the afterwards interview that she does not need to change the furniture and even if she has the need, she will choose to purchase. This indicates that this high willingness to try will only convert to actual behaviour in a completely fit scenario when consumers have the need and furniture rental is the most congruent solution for their current status, e.g., move to a new city. This is also consistent with the argument in Cherry & Pidgeon (2018), in which they stated that consumers are generally positive towards adopting PSS, but it does not mean there will be consistent behaviour patterns.

From the correlations of attitudes and demographic characteristics, it can be seen that the willingness to try has high relevance to certain characteristics of the surveyed population. The first is the characteristics that determine whether there is a practical need to rent furniture. For example, people who move in an adequate moving frequency (every 1-5 years), and appropriate staying time (1-5 years) are more willing to try. Because if the timeframe is less than 1 year, renting furniture might be considered troublesome, and if it is longer than 5 years, people might tend to buy furniture directly. Furthermore, people who live in a rented place are more willing to try. They are more likely to have higher potential needs to rent furniture compared to a group like students who do not need to change their furniture because Chinese students are normally offered furnished housing.

Secondly, the attitudes are also relevant to the characteristics that determine one's value or mindset, as age and education level. The younger generation showed a high willingness to try with adequate sample size support, though groups aged 0-22 should be excluded because they have a lower need for changing furniture as mentioned above. Also, as the education level grows, people are more willing to try. This might because the more education one received, the more likely one will have a better understating and a more open mind to a new concept or a product. Lastly, the flexibility of living status is also relevant, for example, people who live alone are more willing to rent furniture, which might be because there is a concern of negotiation with their cotenants.

Drivers

The findings of this study support the previous studies included in the literature review. Because in the survey all drivers received a mean value over 3 in the Likert scale question, this indicates that the factors identified from literature are also deemed as drivers for consumers in Shanghai.

Regarding the most important driver perceived by surveyed population "Satisfy temporary needs", people who move more than once a year seem less attracted to this driver. Though they are more likely to be the group that have temporary needs, their frequent moving frequency may be considered too short-term for them to commit to a rental contract. Younger people are assumed to have more interest in trying different brands or styles, however, in this study, the group aged under 22 unexpectedly shows less attention to the driver "Ability to try different styles, brands", which might because group under 22 has fewer needs for furniture in general. Regarding sustainability, interviewee 5 stated that the younger generation might have more attention to sustainability issues. However, the result shows that there is no significant difference among different age groups regarding sustainability. This could infer that the younger generation does not have more sustainable consciousness than the older generation, at least in the case of furniture rental.

From the results presented in 4.3.1, it can be stated that the advantage of furniture rental compared to the traditional business model, such as "satisfy the temporary need", "try different styles and brands", and "have higher quality or more expensive products" is a great incentive for consumers in Shanghai. This might because of the unfamiliarity and low prevalence of furniture rental, consumers find this alternative option for furniture that can provide more possibilities to their lives more novel and attractive. Other than that, the freedom of non-ownership, such as "diminish troubles when moving" and "trialability for products" are also deemed very important.

This result is a little different from the findings of Gullstrand Edbring et al.(2016), where flexibility from only having access to products and economic reasons are the top two important factors in their analysis for consumers' motivations for access-based consumption in Sweden. The result of this study, however, shows that economic reasons are deemed less important compared to other categories (except for sustainability). In the 7 interviewees, a higher proportion of them thinks renting furniture is a sunk cost because compared to purchasing the ownership of products does not remain with consumers after the renting period ends. Despite the framing of those factors is a little different in this study, it might imply that the mindset of consumers can differ in contexts or consumption cultures. From a broader perspective, the desire to own exists in all different cultures, yet compared to western countries, this phenomenon in the east is more pronounced, especially in China (Du, 2019). As Du (2019) mentioned, the Chinese overall have a stronger attachment to tangible asset and attach more importance to ownership than access. Because the ownership also connects to the social value and some other emotional values, especially for products that will be used on a high frequency or products operating in a renting model, which can be a considerable capital accumulation in the long run. In that case, more likely they will spend their money on something they can retain the ownership of afterwards.

The finding of this study is also different from the statement from D'Agostin et al. (2020) and Akbar & Hoffmann (2018) in which the former stated that the environmental aspect is a very important motivation to adopt use-oriented PSS and the latter presumed that environmental consciousness is an important factor whether to choose PSS. As mentioned in 4.3.1, though the sample population agree furniture rental has potential sustainability benefits, it is not their top three or even an important driver compared to other factors. The same attitude is also spotted among the interviewees, they indicated that the connection between furniture rental and sustainability or environmental protection is very weak from their perspectives.

The proportion of people in China who have a strong environmental consciousness is still small (Mo, 2018). Moreover, their thoughts are more likely to remain at the stage where protecting the environment is to use less plastic or no littering on the street, which are most commonly advocated among the public. An overall sustainable awareness regarding sustainable production and consumption, for example, promoting access-based consumption to reduce material use is still lacking or regarded insignificant (Zhu, 2017). For consumer groups that care about sustainability, they may also not choose to rent furniture, because its influence is much more subtle than other consumer behaviour, like buying second-hand clothing or using paper bags.

Barriers

The finding of this study supports the previous studies included in the literature review. In the survey, all barriers received a mean value of over 3 in the Likert scale question, which indicates that the factors identified from literature are also deemed as barriers for consumers in Shanghai. From the result, it can be seen that concerns about the products, such as hygiene issue and preference of new products are very important. Besides, economic reasons such as concerns about sanction fees and the idea that furniture rental will cost more are also important factors. Lastly, the low trust, unfamiliarity and low accessibility resulted from the novelty of this business are also deemed important by consumers in Shanghai.

Different from the result of the drivers, the regression analysis shows that there are more differences of agreeing on level towards the description of the barriers, but the differences show a similar pattern within one demographic characteristic, i.e., different groups have a similar attitude towards the barriers in general.

For example, the barriers included in the survey are all perceived as more important by the student group than the group who are employed when renting furniture. This implies that student group have more concerns about furniture rental in general, instead of one particular barrier, which might result from their lower need for furniture or the fact that they normally do not have income, so they have more worries. Similarly, the group who move less than every 5 years showed a higher agreeing level to most of the barriers compared to people who move every 1-5 years, which may also imply that those who move less frequently are more reluctant to rent furniture. On the contrary, people who rent places concern less about the barriers compared to those who are offered and who own a residence. Thus, it can be seen that some group type, for example, those who rent apartments, are more open to renting furniture, and some, like students or those who move less frequently, are not.

Nevertheless, some groups still showed different attitude towards different types of barriers. The group aged under 22 agree more on the ownership and financial reasons are their barriers to rent furniture compared to groups aged 23-50. This result is different from the statement of Guangzhou Daily, (2018) where the younger generation is estimated to have less attachment to ownership. Instead, the results show that the group aged under 22 attach more importance to ownership and more prefer new products than people aged 23-50. This might because that the younger generation has fewer economic concerns as the living standards of the Chinese improves, so they do not regard access-based models as an alternative option, because they have the ability to purchase. But this might also because people who are under 22 have a lower need for renting furniture in general, so they have a more passive attitude, like the student group mentioned before. Furthermore, people who live by themselves concern less about the sanction fee issue compared to those who live with others. This is interesting because when living with others, rented furniture then becomes a shared responsibility. So, when people stated they are worried about the sanction fees that came with the damages, they might also subconsciously include the opinions of or the interactions with their cohabitants into consideration.

The barriers concern about hygiene issues and potential sanction fee may also connect to the low trust and unfamiliarity of furniture rental rather than the issues themselves. This is to say the concern about hygiene may result from the low trust in the statement of second-hand furniture disinfection from service providers. Furthermore, the misunderstanding or worry of dispute on the contract might also contribute to the concern about potential sanction fees. This low trust and unfamiliarity could result from the overall low trust between consumers and the business sector in China, especially for smaller enterprises or newly emerging business. There are numerous exposed cases of consumers caught in trouble of frauds or disputes in

China every year (Liang, 2015). Additionally, relevant regulations and market rules are still incomplete, as a result, consumers in China now are more cautious and hold a more sceptical attitude towards newly rising businesses (Lin et al., 2013).

Another issue, as mentioned in the previous section, is that the trend of furniture rental emerged in China years ago, however, its popularity is still low even in large cities. For a business to survive, market demand is an indispensable factor, yet the market in China currently seems to be smaller compared to other countries. The result of the literature review shows that people with two characteristics are more likely to rent furniture: 1) people have a temporary need for furniture and 2) people have a hedonistic need for home decoration. For example, one of the biggest furniture rental companies in the US, CORT, states on their homepage that "*From students, corporate relocates, professional athletes and lifestyle enthusiasts, CORT works with you to make your house a home*" (CORT, n.d.). But there are fewer people with these characteristics in China.

The reasons for the currently small market in China could result from several perspectives. The most different part might be a miss of students as a customer group since students in China are normally offered furnished dormitories. As for relocators or people who will only stay for a short time in one city, most of them are either offered dormitories or they will choose to rent furnished apartments to minimize the trouble. Because of the nature of their short staying time, they will be more likely to focus on their basic needs, thus there is a higher chance that they will put up with their current furniture (Lin et al., 2013). With regards to the people who are lifestyle enthusiasts, the survey results showed that "Ability to try new styles and brands" is considered the second important driver, which indicates that respondents have the enthusiasm for different lifestyles. But they may not choose furniture rental to satisfy this need. Because there are various ways of purchasing cheap furniture in China, therefore furniture rental shows lower competitiveness among the furniture market. Especially with the revolution of the payment methods, the advantage of furniture rental that it does not require a great initial outlay becomes uncompetitive. Because consumers can purchase furniture through instalment on online and offline platforms, yet they can acquire ownership of the furniture when they settle their payment.

Overall reflections

Furniture rentals have potential environmental benefits, but they may also have a rebound effect. Many researchers (Borg et al., 2020; D'Agostin et al., 2020) have identified hedonistic value as one of the consumers' motivations to take part in a use-oriented PSS business model, which might lead to the opposite of the intention of a circular economy. The emergence of a use-oriented PSS business model could encourage more consumption and thus might cause some side effects. Take furniture rental, for example, it might increase the overall furniture changing rate of consumers, therefore it might increase material use for producing and might bring some negative environmental impacts like emissions to come with logistics. Nevertheless, furniture rental can suit people who have the need, in most cases more temporary needs for furniture, which can potentially reduce material use. In this way, use-oriented PSS can provide an extra solution for temporary living solutions. Therefore, it can coexist with ownership of the long-living solution and provide a low cost and a solution with potential low environmental impacts for different needs.

As shown in the result of this study, consumers' attitudes tend to be very positive, which indicates there might be a promising market for furniture rental. However currently, the core customer group of furniture rentals are actually not general consumers, but the operators of long-term rental apartments, landlords, and united offices (EqualOcean, 2017). Because of the nature that furniture is a durable product with low replacement frequency, it is hard to have long-term rigid market demand, meaning that consumers who have this temporary need for furniture are limited and it is difficult to capture that time window of need, which might because many consumers are unaware of the existence of furniture rental. But the market for furniture rental might increase in the future because the Chinese government is encouraging renting instead of purchasing apartments, so it might also drive the development of the whole household industry. EqualOcean (2018) pointed out that the younger generation who aspire to higher living standards might have more interest in furniture rental, which is aligned with the result of this study that group aged 22-30 showed a high willingness to try furniture rental. Nevertheless, neither the younger generation nor the older age groups have a high proportion of renting experience, furthermore, as mentioned before, the group aged 0-22 deemed the mentioned barriers more important than other groups. Thus, it can be seen that consumers' behaviour has yet to be formed.

5.2 Methodology reflections

A consumer survey is used as the main method to collect empirical data in this study. Because the confidence interval (+/-6%) and the confidence level (95%) chosen in this study are relatively loose, and the valid responses collected are slightly less than the expected sample size, it may not be completely accurate to generalise the whole consumer group in Shanghai from this survey. It is also not suitable to generalise other cities in China because of possibly different contexts. Nevertheless, it provides empirical insights and validates the method for testing consumers' attitudes including what motivates or hinders them to rent furniture with a certain sample population.

Regarding the design of the survey, due to the nature of the Likert scale question, it may not accurately reflect the distance between different scales. The scale might influence the result when calculating the mean value to define the most important drivers and barriers. Moreover, in the ranking question, the answers might be influenced by the sequencing of questions, i.e., respondents may choose the drivers or barriers placed in the front, which could in some way influence the results. The survey questions are designed in a similar form, which may lead to some casual answers and cause some bias.

Furthermore, in the survey, the responses tend to be very positive, but in the second phase of interviews, the interviewees showed a more negative attitude towards furniture rental, saying that it might be a promising business, but the business model does not fit their circumstances. The positive attitudes showed in the survey might result from the social-desirability bias, meaning respondents tend to choose the answer that seems more favourable (Podsakoff & Organ, 1986). Though the interview number is quite limited, they indicated that there is a chance that in the survey some respondents may choose the "right answer" or provide answers to "ideal" situations instead of reflecting their real thoughts.

The result of the study would be more holistic and more representative, and the understating of consumers' choices would be more comprehensive if more respondents who filled the survey would have been interviewed. Nevertheless, this study contributes to improving the understanding of consumer's attitudes towards renting furniture in Shanghai and especially the driver and barriers for furniture renting services.

6 Conclusion

Acknowledging the necessity to shift to more circular business models and the lack of knowledge in consumer attitudes towards use-oriented PSS models, this study focused on improving the current understanding of consumers' attitudes towards use-oriented PSS, specifically for furniture rental and in a new geographical perspective (Shanghai, China). By having qualitative and quantitative methods this study provided empirical evidence to address the following questions:

RQ1: What are consumers' attitudes towards furniture rental in Shanghai?

RQ2: What are the drivers and barriers perceived by consumers in Shanghai towards furniture rental?

RQ3: Why do consumers in Shanghai have such attitudes and why do they regard these drivers and barriers as important?

The results showed that in Shanghai, regardless of the relative unfamiliarity with the furniture rental among certain consumer groups, there is an overall positive attitude towards it. The majority of the surveyed population stated that they are willing to try it if there is a need.

Among the main drivers perceived by the consumers are the freedom of non-ownership, advantages compared to the traditional furniture purchasing, economic reasons and sustainability reasons, in which consumers mostly value drivers, such as: "Satisfy temporary need", "Ability to try different styles, brands" and "Diminish troubles when moving". Other drivers, like, "renting furniture can better suit different needs for different tenants, which will make the transactions easier", from a perspective as a landlord, are also apparent.

The perceived barriers also reflect multiple perspectives. For instance, the desire to own, novelty and low availability, economic reasons, concerns regarding the products, and incompatible current living condition, in which "Hygiene issue", "Potential sanction fees if there are damages" and "low trust" is deemed the most important. Additionally, some new barriers like "concern on safety" and "worry for dispute" because of the lack of a complete supervision system and relevant legislation for furniture rental were also identified.

The perceptions of the drivers and barriers are closely connected to consumption behaviour in different contexts and relate to the prevailing consumers' cultures. The desire to own, which is stripped from furniture rental, has been rooted in the consumers' consumption patterns for a long time. Therefore, PSS business models, like furniture rentals, have a high probability to face resistance from consumers, especially in a market like China, where people attach great importance to tangible assets. How consumers regard these barriers and drivers also relate to factors like the development level of furniture rental in that country/district, the cost of alternatives, i.e., other options for cheap furniture, the complete degree of relevant regulations and market rules.

It seems that, due to the prevailing largely positive attitudes, there is a potential promising market for furniture rental in Shanghai. However, it should be noted that such attitudes do not necessarily mean that there will be a corresponding consumption behaviour. This positive attitude might be the direct reflections of the surveyed population on this business model itself, but not based on their practical scenarios or it might result from the social-desirability bias from the respondents. Thus, whether the furniture rental business will be prevailing in Shanghai in the near future is uncertain.

Implications and recommendations for practitioners

This study contributed to the current knowledge of how consumers in Shanghai think about furniture rental in general and investigated what are the most important drivers and barriers valued by them. To make furniture rental prevailing in Shanghai, it needs to cater to consumers' needs and only when consumer deems the benefits from the drivers outweigh the detriments the barriers could bring, will more consumers participate in this use-oriented PSS business model. Therefore, based on the results of this study, some implications and recommendations for practitioners are listed below:

For furniture rental companies and furniture companies who want to test the furniture rental model

- Identify target consumer groups, i.e., those who have temporary needs and those who might have high hedonistic needs for furniture; and consumers identified in this study have a higher willingness to try furniture rental: who move every 3-5 years, who live by themselves and who rent places, etc.
- Build stronger communication to increase publicity, to familiarise consumers with the benefits of renting furniture, and to show their guarantee on safety, hygiene, or quality issues.
- Connect furniture rental to consumers' familiar concepts, like renting furniture for an event, to reduce the resistance towards new notion.

In addition, relevant regulations are also identified as an issue, thus this study also recommends related government departments to create relevant regulations and market supervision system to reduce consumers concern about the safety and hygiene issues of rented furniture.

Recommendations for future research

This study has focused on the consumers' perspective and in a geographical scope in Shanghai, but there are also other factors that determine whether a rental business model can be successful or not. Also, the connection between a rental business model and the environmental benefits still lacks the support of empirical evidence, therefore future research could look at the aspects listed below:

- Consumers attitudes, drivers, and barriers in another city/country.
- How to reduce barriers of consumers and how to communicate with drivers to promote furniture rental.
- Incentives and obstacles faced by furniture rental companies.
- How companies communicate to consumers and if their messaging aligns with consumer drivers.
- Changes in people's perceptions about the importance of ownership.
- An LCA analysis for furniture rental business to see if this business model is indeed more sustainable.

Bibliography

Akbar, P., & Hoffmann, S. (2018). Under which circumstances do consumers choose a product service system (PSS)? Consumer benefits and costs of sharing in PSS. *Journal of Cleaner Production*, *201*, 416–427. https://doi.org/10/gfd5dn

Annarelli, A. (2016). Product service system: A conceptual framework from a systematic review. *Journal of Cleaner Production*, 22. https://doi.org/10/f9bkkp

Annarelli, A., Battistella, C., & Nonino, F. (2020). Competitive advantage implication of different Product Service System business models: Consequences of 'not-replicable' capabilities. *Journal of Cleaner Production*, *247*, 119121. https://doi.org/10/gghg2d

Armstrong, C. M., Niinimäki, K., Kujala, S., Karell, E., & Lang, C. (2015). Sustainable product-service systems for clothing: Exploring consumer perceptions of consumption alternatives in Finland. *Journal of Cleaner Production*, *97*, 30–39. https://doi.org/10/f7fj9t

Armstrong, C. M., Niinimäki, K., Lang, C., & Kujala, S. (2016). A Use-Oriented Clothing Economy? Preliminary Affirmation for Sustainable Clothing Consumption Alternatives. *Sustainable Development*, *24*(1), 18–31. https://doi.org/10/f8bqjd

Baines, T. S., Lightfoot, H. W., Evans, S., Neely, A., Greenough, R., Peppard, J., Roy, R., Shehab, E., Braganza, A., Tiwari, A., Alcock, J. R., Angus, J. P., Bastl, M., Cousens, A., Irving, P., Johnson, M., Kingston, J., Lockett, H., Martinez, V., … Wilson, H. (2007). State-of-the-art in product-service systems. *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, *221*(10), 1543–1552. https://doi.org/10/dn3fxm

Baumeister, C. (2014). Access versus Ownership: Consumers' Reactions to an Alternative Consumption Mode. *Undefined*. /paper/Access-versus-Ownership%3A-Consumers%E2%80%99-Reactions-to-an-Baumeister/5b1642ef4a7128d2ec63f75cecaefbf2e1b1a387

Beuren, F. H., Gomes Ferreira, M. G., & Cauchick Miguel, P. A. (2013). Product-service systems: A literature review on integrated products and services. *Journal of Cleaner Production*, *47*, 222–231. https://doi.org/10/f4x3zf

Blackwell, R., Miniard, P., Engel, J., & Rahman, Z. (2017). *Consumer Behavior*.

Blaikie, N. W. H., & Priest, J. (2019). *Designing social research: The logic of anticipation* (Third Edition). Polity Press.

Bocken, N., Miller, K., & Evans, S. (2016, June 16). *Assessing the environmental impact of new Circular business models.*

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*(19), 8079. https://doi.org/10/ghrvjj

Botsman, R., & Rogers, R. (2010). *What's mine is yours: The rise of collaborative consumption* (1. ed). HarperBusiness.

Brentani, U. de. (2001). Innovative versus incremental new business services: Different keys for achieving success. *Journal of Product Innovation Management*, *18*(3), 169–187. https://doi.org/10/fgx4pw

Catulli, M. (2012). What uncertainty? Further insight into why consumers might be distrustful of product service systems. *Journal of Manufacturing Technology Management*, *23*(6), 780–793. https://doi.org/10/gjjbk6

Catulli, M., Cook, M., & Potter, S. (2017). Consuming use orientated product service systems: A consumer culture theory perspective. *Journal of Cleaner Production*, *141*, 1186–1193. https://doi.org/10/gghj4f

Catulli, M., Lindley, J. K., Reed, N. B., Green, A., Hyseni, H., & Kiri, S. (2013). What is Mine is not Yours: Further Insight on what Access-Based Consumption says about Consumers. In *Consumer Culture Theory* (Vol. 15, pp. 185–208). Emerald Group Publishing Limited. https://doi.org/10.1108/S0885-2111(2013)0000015012

China Galaxy Securities. (2019). Research data and future development trend analysis report of the status quo of the global and Chinese furniture industry in 2020.

Chinese Information Centre. (2019). Annual Report on the Development of China's Sharing Economy (2019).

Chinese National Bureau of Statistics. 2021. Seventh national census.

Cherry, C. E., & Pidgeon, N. F. (2018). Why Is Ownership an Issue? Exploring Factors That Determine Public Acceptance of Product-Service Systems. *Sustainability*, *10*(7), 2289. https://doi.org/10/gghkfg

Churchill, G. (1979). A Paradigm for Developing Better Measures of Marketing Constructs. Journal of Marketing Research, 16(1), 64-73. doi:10.2307/3150876

Ciweek. (2019). The house is rented, but life is not.

Cook, M. B., Bhamra, T. A., & Lemon, M. (2006). The transfer and application of Product Service Systems: From academia to UK manufacturing firms. *Journal of Cleaner* Production, 14(17), 1455–1465. https://doi.org/10/cg9zcb

Cordella, M., & Hidalgo, C. (2016). Analysis of key environmental areas in the design and labelling of furniture products: Application of a screening approach based on a literature review of LCA studies. Sustainable Production and Consumption, 8, 64–77. https://doi.org/10/gj36q8

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (Fourth edition, international student edition). SAGE.

Cushman & Wakefield. (2019). White Paper on Shanghai Urban Renewal 2019.

CORT, n.d. Website homepage.

D'Agostin, A., de Medeiros, J. F., Vidor, G., Zulpo, M., & Moretto, C. F. (2020). Drivers and barriers for the adoption of use-oriented product-service systems: A study with young consumers in medium and small cities. *Sustainable Production and Consumption*, *21*, 92–103. https://doi.org/10/ghtpqp

De Angelis, R. (2018). *Business Models in the Circular Economy*. Springer International Publishing. https://doi.org/10.1007/978-3-319-75127-6

Devisscher, T., & Mont, O. (2008). An analysis of a product service system in Bolivia: Coffee in Yungas. *International Journal of Innovation and Sustainable Development*, *3*(3–4), 262–284. https://doi.org/10/brqdcj

Ding, S. (2006). Consumers and the development of the circular economy [A]. Shanxi Science and Technology, 1004-6429(2006)04-0017-03.

Du, Y. (2019). A Discussion on Furniture Rental Service for Urban Migrants in China——From the Gain of a Lifestyle Design Research in Hong Kong & Beijing. *Materials Science and Engineering*, 8.

EFIC. (2018). *The furniture sector and circular economy 2.0 perspectives from the European furniture industry—-Gabriella Kemendi secretary general of EFIC.* Retrieved from http://www.furn360.eu/wp-content/uploads/2018/04/The-furniture-sector-and-circular-economy-2.0-perspectives-from-the-European-furniture-industry-%E2%80%93-Gabriella-Kemendi-secretary-general-of-EFIC.pdf

EFIC. (2020). *Circular economy in the furniture industry.*

Ellen MacArthur Foundation. (2013). *Towards the Circular Economy vol.1*. Retrieved from https://www.ellenmacarthurfoundation.org/assets/downloads/publications/Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf

Ellen MacArthur Foundation. (n.d.). The final stop for quality furniture. Retrieved May 6, 2021, from https://www.ellenmacarthurfoundation.org/case-studies/the-final-stop-for-quality-furniture

Equal Ocean. (2017). Furniture rental is hard to get through on the surface but actually can solve industry pain points.

European Commission. (2020). A new Circular Economy Action Plan. For a cleaner and more competitive Europe. COM (2020) 98 final.

European Commission. (2015). Closing the loop - An EU action plan for the Circular Economy. COM (2015) 614 final.

European Commission. Joint Research Centre. (2017). Revision of the EU Green Public Procurement (GPP) criteria for furniture: Technical report : final version. Publications Office. https://data.europa.eu/doi/10.2760/14246

Fota, A., Wagner, K., & Schramm-Klein, H. (n.d.). *WILL RENTING SUBSTITUTE BUYING? DRIVERS OF USER INTENTION TO PARTICIPATE IN RENTAL-COMMERCE*. 18.

Fowler, F. J. (2009). Survey research methods (4th ed.) (4th ed.). SAGE Publications, Inc. https://www.doi.org/10.4135/9781452230184

Geissdoerfer, M. (2020). Circular business models: A review. *Journal of Cleaner Production*, 17. https://doi.org/10/ghk9t7

Geissdoerfer, M., Savaget, P., Bocken, N. M. P., & Hultink, E. J. (2017). The Circular Economy – A new sustainability paradigm? *Journal of Cleaner Production*, *143*, 757–768. https://doi.org/10/gddrvb

Goedkoop, M. (1999). *Product Service Systems, Ecological and Economic Basics*.

Guangzhou Daily. (2018). Shared furniture is just rubbing off? Industry: It may stimulate the second-hand market.

Goldstein, M., & Almeida, H. (2000). Crítica dos modelos integrativos de comportamento do consumidor. *Undefined*. /paper/Cr%C3%ADtica-dos-modelos-integrativos-de-comportamento-Goldstein-Almeida/af91390b07e57d501ccc9eeb091968ef511c12af

Gullstrand Edbring, E., Lehner, M., & Mont, O. (2016). Exploring consumer attitudes to alternative models of consumption: Motivations and barriers. *Journal of Cleaner Production*, *123*, 5–15. https://doi.org/10/f8nrvs

Halme, M., Anttonen, M., Hrauda, G., & Kortman, J. (2006). Sustainability evaluation of European household services. *Journal of Cleaner Production*, *14*(17), 1529–1540. https://doi.org/10/bf9vfg

Hamari, J., Sjöklint, M., & Ukkonen, A. (2016). The sharing economy: Why people participate in collaborative consumption. *Journal of the Association for Information Science & Technology*, *67*(9), 2047–2059. https://doi.org/10/gfc8nh

Heiskanen, E., & Jalas, M. (2003). Can services lead to radical eco-efficiency improvements? – A review of the debate and evidence. *Corporate Social Responsibility and Environmental Management*, *10*(4), 186–198. https://doi.org/10/bb94sg

Hirschl, B., Konrad, W., & Scholl, G. (2003). New concepts in product use for sustainable consumption. *Journal of Cleaner Production*, *11*(8), 873–881. https://doi.org/10/bn5gnh

Home Link Research Institute. (2016). The Rise of Rental.

Huang, N., xu, J., Ren, P., Lai, H., Fan, L., Hu, J., & Hong, Z. (2020). The sitting-type furniture about the introduction of PSS theory for the old. *IOP Conference Series: Earth and Environmental Science*, *512*, 012179. https://doi.org/10/ghsgdk

Intlekofer, K., Bras, B., & Ferguson, M. (2010). Energy Implications of Product Leasing. *Environmental Science & Technology*, *44*(12), 4409–4415. https://doi.org/10/czs5xm

Kaza, S., Yao, L. C., Bhada-Tata, P., & Van Woerden, F. (2018). *What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050*. Washington, DC: World Bank. https://doi.org/10.1596/978-1-4648-1329-0

Kim, N. L., & Jin, B. E. (2020). Why buy new when one can share? Exploring collaborative consumption motivations for consumer goods. *International Journal of Consumer Studies*, *44*(2), 122–130. https://doi.org/10/gh3ch8

Lehner, M., Mont, O., Mariani, G., & Mundaca, L. (2020). Circular Economy in Home Textiles: Motivations of IKEA Consumers in Sweden. *Sustainability*, *12*(12), 5030. https://doi.org/10/gjdd56

Liang, C. (2015). Feasibility investigation and analysis of Nanning household goods rental market. Science and Technology Information. 2015 No.16.

Lin. L., Zhu. J., Tian. J. & Wang. J. (2013). Status and Prospects of the Furniture Rental Industry.

Littig, B. (2001). Eco-efficient Services for Private Households. Looking at the Consumer's Side. *Undefined*. /paper/Eco-efficient-Services-for-Private-Households.-at-Littig/e5534bb7d395bd24e057affed113000e29e38dd7

Manzini, E., & Vezzoli, C. (2003). A strategic design approach to develop sustainable product service systems: Examples taken from the 'environmentally friendly innovation' Italian prize. *Journal of Cleaner Production*, *11*(8), 851–857. https://doi.org/10/fv37mx

Meier, H., Roy, R., & Seliger, G. (2010). Industrial Product-Service Systems—IPS2. *CIRP Annals*, *59*(2), 607–627. https://doi.org/10/b6jcch

Meijkamp, R. (1998). Changing consumer behaviour through eco-efficient services: An empirical study of car sharing in the Netherlands. *Business Strategy and the Environment*, *7*(4), 234–244. https://doi.org/10/dzv6xk

Mentink, B. (n.d.). Circular Business Model Innovation. 168.

Mo, S. (2018). Low Carbon Consumption Mechanism to Promote Green Development. Journal of Guizhou University (Social Sciences). 10.15958 /j. cnki. Gdxbshb. 2018.04.15

Moeller, S., & Wittkowski, K. (2010). The burdens of ownership: Reasons for preferring renting. *Managing Service Quality: An International Journal*, *20*(2), 176–191. https://doi.org/10/d43qnt

Möhlmann, M. (2015). Collaborative consumption: Determinants of satisfaction and the likelihood of using a sharing economy option again. *Journal of Consumer Behaviour*, *14*(3), 193–207. https://doi.org/10/gfc82p

Mont, O. (2002). Clarifying the concept of product–service system. *Journal of Cleaner Production*, *10*(3), 237–245. https://doi.org/10/ft4w6v

Mont, O. (2003). Editorial for the special issue of the Journal of Cleaner Production on Product Service Systems. *Journal of Cleaner Production*, *11*(8), 815–817. https://doi.org/10/bd4dwz

Mont, O. (2004). Institutionalisation of sustainable consumption patterns based on shared use. *Ecological Economics*, *50*(1–2), 135–153. https://doi.org/10/dw6n56

Mont, O, Plepys, A., Whalen, K., & Nußholz, J. L. K. (2017). *Business model innovation for a Circular Economy: Drivers and barriers for the Swedish industry – the voice of REES companies*. http://lup.lub.lu.se/record/833402ef-b4d4-4541-a10e-34d1e89d2146

Morelli, N. (2006). Developing new product service systems (PSS): Methodologies and operational tools. *Journal of Cleaner Production*, *14*(17), 1495–1501. https://doi.org/10/dd9hnd

Murray, A., Skene, K., & Haynes, K. (2017). The Circular Economy: An Interdisciplinary Exploration of the Concept and Application in a Global Context. *Journal of Business Ethics*, *140*(3), 369–380. https://doi.org/10/gdz54z

OECD. (2019). *Global Material Resources Outlook to 2060: Economic Drivers and Environmental Consequences*. OECD. https://doi.org/10.1787/9789264307452-en

Osterwalder, A., Pigneur, Y., & Clark, T. (2010). *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers*. John Wiley & Sons, Incorporated. http://ebookcentral.proquest.com/lib/lund/detail.action?docID=581476

Pal Kapoor, A., & Vij, M. (2021). Want it, Rent it: Exploring Attributes Leading to Conversion for Online Furniture Rental Platforms. *Journal of Theoretical and Applied Electronic Commerce Research*, *16*(2), 212–231. https://doi.org/10/ghv6br

Patwa, N., Sivarajah, U., Seetharaman, A., Sarkar, S., Maiti, K., & Hingorani, K. (2021). Towards a circular economy: An emerging economies context. *Journal of Business Research*, *122*, 725–735. https://doi.org/10/ghsgfk

Pine, B. J., & Gilmore, J. H. (2011). *The experience economy* (Updated ed). Harvard Business Review Press.

Podsakoff, P. M., & Organ, D. W. (1986). Self-Reports in Organizational Research: Problems and Prospects. *Journal of Management*, *12*(4), 531–544. https://doi.org/10/czv

Rashid, A. (2013). Resource Conservative Manufacturing: An essential change in business and technology paradigm for sustainable manufacturing. *Journal of Cleaner Production*, 12. https://doi.org/10/f24wtg

Reim, W., Parida, V., & Örtqvist, D. (2015). Product–Service Systems (PSS) business models and tactics – a systematic literature review. *Journal of Cleaner Production*, *97*, 61–75. https://doi.org/10/f24mpt

Rexfelt, O., & Hiort, af O. V. (2009). Consumer acceptance of product-service systems: Designing for relative advantages and uncertainty reductions. *Journal of Manufacturing Technology Management*, *20*(5), 674–699. https://doi.org/10/ckqg69

Rexfelt, O., & Hiort af Ornäs, V. (2009). Consumer acceptance of product-service systems: Designing for relative advantages and uncertainty reductions. *Journal of Manufacturing Technology Management*, *20*(5), 674–699. https://doi.org/10/ckqg69

Sachdev, S. B., & Verma, H. (2004). RELATIVE IMPORTANCE OF SERVICE QUALITY DIMENSIONS: A MULTISECTORAL STUDY. *Undefined*. /paper/RELATIVE-IMPORTANCE-OF-SERVICE-QUALITY-DIMENSIONS%3A-Sachdev-Verma/b9a62fdb45ef1288cde2525a903076d9c42090c9

Sakao, T., Öhrwall Rönnbäck, A., & Ölundh Sandström, G. (2013). Uncovering benefits and risks of integrated product service offerings—Using a case of technology encapsulation. *Journal of Systems Science and Systems Engineering*, *22*(4), 421–439. https://doi.org/10/f23p2d

Schrader, U. (1999). Consumer Acceptance of Eco-efficient Services. *Greener Management International*, *25*, 105.

Seiders, K., Voss, G. B., Godfrey, A. L., & Grewal, D. (2007). SERVCON: Development and validation of a multidimensional service convenience scale. *Journal of the Academy of Marketing Science*, *35*(1), 144–156. https://doi.org/10/dt6t7j

Springwise. (2018). *Furniture rental enters the sharing economy*. https://www.springwise.com/furniture-rental-enters-the-sharing-economy/

Svensk Handel. (2018). Starkt Ökat Hållbarhetsintresse Hos Konsumenterna Och Handelsföretagen Är Redo; Svensk Handel: Stockholm, Sweden, 2018. Available online: https://www.svenskhandel.se/globalassets/dokument/aktuelltoch-opinion/rapporter-och-foldrar/hallbar-handel/svensk-handels-hallbarhetsundersokning-2018.pdf

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, *2*, 53–55. https://doi.org/10/c29fhh

The United Nations. (2019). *The Sustainable Development Goals Report*. Retrieved from https://unstats.un.org/sdgs/report/2019/The-Sustainable-Development-Goals-Report-2019.pdf

Thomasson, E. (2019). IKEA to test furniture rental in 30 countries. *Reuters*. https://www.reuters.com/article/us-ikea-sustainability-idUSKCN1RF0WY

Tukker, A. (2004). Eight types of product–service system: Eight ways to sustainability? Experiences from SusProNet. *Business Strategy and the Environment*, *13*(4), 246–260. https://doi.org/10/bpr234

Tukker, A. (2015). Product services for a resource-efficient and circular economy – a review. *Journal of Cleaner Production*, *97*, 76–91. https://doi.org/10/f7fhq7

Tukker, A., & Tischner, U. (2006). Product-services as a research field: Past, present and future. Reflections from a decade of research. *Journal of Cleaner Production*, *14*(17), 1552–1556. https://doi.org/10/d8pscg

Tunn, V. S. C., Fokker, R., Luijkx, K. A., De Jong, S. A. M., & Schoormans, J. P. L. (2019). Making Ours Mine: Increasing Consumer Acceptance of Access-Based PSS through Temporary Product Customisation. *Sustainability*, *11*(1), 274. https://doi.org/10/gghf2r

Turunen, L. L. M., & Halme, M. (2021). Communicating actionable sustainability information to consumers: The Shades of Green instrument for fashion. *Journal of Cleaner Production*, *297*, 126605. https://doi.org/10/gj35p2

UNDP. (n.d.). *Background of the Sustainable Development Goals*. Retrieved from https://www.undp.org/content/undp/en/home/sustainable-development-goals/background.html

UNEP. (2002). Product Service Systems and Sustainability: Opportunities for Sustainable Solutions. http://hdl.handle.net/20.500.11822/8123

Verganti, R. (2009). *Design Driven Innovation: Changing the Rules of Competition by Radically Innovating What Things Mean*.

Vermeir, I., & Verbeke, W. (2006). Sustainable Food Consumption: Exploring the Consumer "Attitude – Behavioral Intention" Gap. *Journal of Agricultural and Environmental Ethics*, *19*(2), 169–194. https://doi.org/10/crrd7z

Vermunt, D. A. (2019). Exploring barriers to implementing different circular business models. *Journal of Cleaner Production*, 12. https://doi.org/10/gghj5p

WBCSD. (2009). Sustain issue 31, special double issue.

Wicaksono, P. A., Hartini, S., Sutrisno, & Nabila, T. Y. (2020). Game Theory Application for Circular Economy Model in Furniture Industry. *IOP Conference Series: Earth and Environmental Science*, *448*, 012061. https://doi.org/10/ghmqft

Williams, A. (2006). Product-service systems in the automotive industry: The case of micro-factory retailing. *Journal of Cleaner Production*, *14*(2), 172–184. https://doi.org/10/b6vbws

Williams, L. J., & Abdi, H. (n.d.). *Fisher's Least Significant Difference (LSD) Test*. 6.

Wise, R., & Baumgartner, P. (1999, September 1). Go Downstream: The New Profit Imperative in Manufacturing. *Harvard Business Review*. https://hbr.org/1999/09/go-downstream-the-new-profit-imperative-in-manufacturing

Wohlin, C. (2014). Guidelines for snowballing in systematic literature studies and a replication in software engineering. *Proceedings of the 18th International Conference on Evaluation and* Assessment in Software Engineering - EASE '14, 1–10. https://doi.org/10/f22cpf

Zhang, L. & Wang, Y. (2019). With heavy asset operation and a long return cycle, how far is furniture renting from the consumer end? Equal Ocean.

Zhu, D. (2017). A review of circular economy development in European countries over the last decade and its implications to deepen Chinese circular economy [J]. China population, resources, and environment, 2017, 27(8):9-16.

Appendix A: Interview guide

Opening

1. Greeting (Briefly, introduce the topic)
2. Ask permission for recording (explain where/how/for what purpose the recording can/will be used).
3. There is a possibility that I will quote you directly in my paper, but remain anonymous, is it okay for you?
    - a consent form could probably offer here.
    - offer an option to remain anonymous when quote, use an interviewee identifier e.g. Int#x)
4. Also, please note that there are no right or wrong answers. Any kind of responses would be valuable.

Basic questions

1. Age range, gender, employment/occupation?
2. Which city do you live in now?
3. What is your accommodation type? Owner/renter/hosted by..?
4. How often do you move? What do you find most troublesome when moving?
    - Do you have your furniture? What did you do with it when moving?
5. When you look for accommodation, is the place furnished? What furniture does it have?
    - Do you like that furniture? Why?
6. How long do you plan to stay in your current city?

Further questions

1. Have you ever heard of furniture renting? What is your first impression? How do you think it works?
2. **Have you rented furniture before?**
    - **If yes,**
        - How do you like your experience?
        - What benefits do you think it has that you decided to rent furniture?
            - Is it the same as you thought after you rent it? i.e. is any new advantage you didn't think of before and what benefit you think it has but it doesn't?
            - Would you please rank those benefits by their importance in your case?
        - Is there any difficulty occurred when you rent furniture?
        - What are the disadvantages do you think furniture rental has?
        - What concerns do you have when you using rented furniture?
            - Would you please rank those barriers by the extent that influenced your decision whether to continue renting furniture/rent furniture again?
        - Why did you still choose to rent furniture regardless of those barriers? What are your criteria to make this trade-off? i.e. which are the factors you value most?
    - **If no →question 3**

3. **As a consumer, will you consider renting furniture?**
    - **If yes, what are the reasons?**
        - What advantages do you think it has?
            - Would you please rank those advantages by the extent that influenced your decision whether to rent furniture?
        - What are the reasons that you haven't tried renting furniture?
            - The barriers you think furniture rental has?
            - Would you please rank those barriers by the extent that influenced your decision whether to rent furniture?
        - What are your criteria to make this trade-off? i.e. which factors you value most?
    - **If no, what are the reasons?**
        - What barriers do you think furniture rental has?
            - Would you please rank those barriers by the extent that influenced your decision whether to rent furniture?
        - Regardless of these barriers, furniture rental still has many advantages, what benefits do you think it can bring?
            - Please rank those advantages by the extent that you considered them in your decision to rent furniture?" What are your criteria to make this trade-off? i.e. which factors you value most?
        - Under want circumstances, will you consider renting furniture?
4. Probing question (depending on which factor interviewee mentioned, especially for the second phase, connect their choice in the survey and the survey results)
    - How do you think of e.g. sustainability?
        - Is this factor important for you when you decide whether to rent furniture? Why?
5. Do you think furniture rental can share some part of the furniture market? Do you think it's a promising business model? Why and why not? Considering your case and your understanding in the Chinese context.
6. Who do you think this furniture rental might be suitable for?

Appendix B: Calculation of survey sample size

In the case of the population is very big:

$$\text{Necessary Sample Size} = \frac{(\text{Z} - \text{score})^2 * \text{StdDev} * (1 - \text{tdDev})}{(\text{margin of error })^2}$$

- Confidence level/Z-score: how confident you want to be that the actual mean falls within your margin of error.
  - Confidence level: **95%** → Z-score **1.96**.
- Standard deviation: the estimated percentage of the sample that will respond in a given way.
  - The most conservative choice is a standard deviation of **0.5,** thus respondents could respond either way, which will help make sure the sample size is large enough.
- The margin of error/confidence interval: how accurate the answers given by the sample correlate to the answers given by the entire population.
  - **+/- 6%**

$$n = \frac{1.96^2 * 0.5 * (1 - 0.5)}{0.06^2} = 267$$

Appendix C: Consumer survey

Nowadays, many business models are emerging to meet consumers' diverse needs. Furniture rental is a relatively new business model that offers access to furniture used instead of purchasing it - for example, to pay ¥ 200/month to rent a set of basic furniture (bed, closet, sofa, desk…). Some companies offer brand new furniture and some offer second-hand. The furniture type, furniture style, price and contract period also vary between companies. This survey is to further understand consumers' attitudes towards furniture rental in Shanghai. You can take the survey whether you have or have not rented furniture before. The survey will take approximately 7 minutes of your time.

This survey contains two parts:

- Demographic questions. These questions are multiple choices.
- Questions about drivers and barriers for you to rent furniture. For these questions, you will indicate how much different factors have influenced or would influence your decision to rent furniture. You also have an opportunity to add additional factors that are not already included in the survey.

Please note that there are no right or wrong answers. Any kind of responses will add value to the research.

Demographic questions

1. What gender do you identify as?
    - Male
    - Female
    - Rather not say.
2. What is your age?
    - Below 22
    - 22-30
    - 31-40
    - 41-50
    - 51-60
    - Over 60
3. Which city do you currently live in?
    - Shanghai
    - other
4. What is the highest level of education you have completed?
    - Primary school and below
    - Junior high school
    - High school
    - Junior college
    - Bachelor's Degree
    - Master's Degree
    - PhD or higher
5. What is your current employment status?
    - Student
    - Seeking opportunities
    - Employed full-time
    - Employed part-time (including student doing an internship)

- Retired
- Rather not say.

6. What is your current salary range?
   - 0-5000
   - 5000-10000
   - 10000-20000
   - 20000-30000
   - Over 30000
   - Rather not say
7. Do you rent your place?
   - Yes, I rent my place.
   - No, I own my place.
   - No, I live in a place that offered by the school or my company.
   - other
8. Who do you live with?
   - I live by myself.
   - I live with other tenants (friends, boy/girlfriend, stranger…)
   - I live with my family(parents, partner, kids…).
9. What is your approximate moving frequency since the first time you rented your place?
   - Less frequent than every 5 years
   - Every 3-5 years
   - Every 1-3 years
   - More than once a year
10. For how long do you plan to stay in your current city?
    - Less than 1 year
    - 1-3 years
    - 3-5 years
    - More than 5 years
    - I'm not sure.
11. Have you rented furniture before (here means the main furniture like bed, closet, or a whole set of basic furniture)?
    - Yes, I have rented it before.
    - No, I have heard about it but I haven't rented it.
    - No, I have never heard about it.
12. What is your current attitude towards renting furniture? (For people who have not rented furniture before)
    - I do not want to rent furniture.
    - I am willing to try.
    - I am not sure.
13. What is your current attitude towards renting furniture? (For people who have rented furniture before)
    - I am satisfied and would do it again in the future.
    - I am dissatisfied and would not do it again in the future.

Drivers

Likert scale questions:

Please indicate how much do you agree with each of the following factors that influenced or would influence your decision to rent furniture (1=strongly disagree, 2=somewhat disagree, 3=neither agree nor disagree, 4=somewhat agree, 5=strongly agree)

1. Renting furniture offers me the possibility to try new brands and new styles.
2. Renting furniture allows me to have higher quality or more expensive products than I could afford to buy.
3. Renting furniture allows me to change my furniture more often to keep up with the trend.
4. Renting furniture can meet my relatively short time need for certain furniture, like e.g. a crib.
5. Renting furniture offers me the possibility to try out products I am considering buying, so I don't make an incorrect purchase choice.
6. Renting furniture does not require great initial investment and I feel it is more manageable for me to pay for my furniture by month/quarter/year.
7. Renting furniture is more convenient than buying because furniture rental companies bring together different furniture brands.
8. Renting furniture frees me from some troubles when moving, like selling my furniture or transporting it to my new place.
9. Renting furniture means I do not have to worry about maintenance or repair for my furniture, because the rental company takes care of that.
10. I think renting furniture would be cheaper for me than buying it because I only plan to stay in my current city for a short period.
11. I think renting furniture would be more convenient for me than buying new ones because I only plan to stay in my current city for a short period.
12. I don't like the furniture I bought before/ provided by the landlord. Renting furniture allows me to replace it without spending a lot of money.
13. Renting furniture allows me to adapt to the trend of a sustainable lifestyle and enhances my sense of participation in sustainable development).
14. I think renting furniture is a more environmentally sustainable option than buying. This offers me additional emotional value because sustainability is important to me.

Ranking question:

Please rank the top 3 drivers when you decide whether to rent furniture.

Open question:

What other factors do you consider important that are not included above?

Barriers

Likert scale questions:

Please indicate how much do you agree with each of the following factors that influenced or would influence your decision to rent furniture (1=strongly disagree, 2=somewhat disagree, 3=neither agree nor disagree, 4=somewhat agree, 5=strongly agree)

1. I am not familiar with furniture rental and how it works.
2. I do not trust furniture rental because I think this business model is not mature yet.
3. I think it is more convenient to buy furniture because there are many furniture stores but comparatively few furniture rental companies and little information about furniture rental.
4. I prefer to own my furniture because I want to feel it's mine so I can do whatever I want with it, like modify it.
5. I prefer to own my furniture because I would be worried that I would damage the furniture and have to pay a fee if it was rented.
6. I prefer to own my furniture because ownership makes me feel secure and happy.
7. I prefer to own my furniture because I can sell it and get some of my money back when I no longer need it.
8. I have concerns that rented furniture might have some quality issues (e.g. it might be worn out because of long time use, or damaged by previous users)
9. I have concerns that rented furniture might have some hygiene issues (e.g. it might be dirty from previous users or have bugs, pests, etc.)
10. I think renting furniture would be more expensive than buying it in the long run.
11. I am worried that there might be some extra costs associated with contract-based service agreements.
12. I only prefer new products.
13. My current place is furnished and although I do not like the furniture it came with, I would not know what to do with it if I rent furniture.
14. My current place is furnished with basic furniture (bed, sofa, desk, chair, etc.) that meets my needs, so there is no need for me to rent furniture.

Ranking question:

Please rank the top 3 barriers when you decide whether to rent furniture.

Open question:

What other factors do you consider important that are not included above?

Appendix D: Relevance of drivers and genders

Category	Survey question	Sig.	t
Freedom of non-ownership	Liberate from product management, repair, and maintenance	0.98	0.03
	Trialability for products thus can avoid wrong purchasing decisions	0.88	-0.15
	Diminish troubles when moving, like selling or transporting furniture	0.19	1.32
	More convenient when having a short staying plan	0.76	0.3
Advantages compared to the traditional business model	Ability to try different styles, brands	0.38	0.88
	Ability to have higher quality or more expensive products	0.80	-0.25
	Keep up with the furnishing trend	0.6	0.52
	Satisfy the temporary need for certain products, like a crib	0.78	-0.28
	Combination of products information from different brands and styles	0.09	1.72
Economic reasons	Do not require a high initial outlay, more manageable to pay by month/quarter/year	0.4	0.84
	Cheaper when having a short staying plan	0.66	0.44
	Renting furniture can replace the disliked furniture without spending a lot of money.	0.33	-0.97
Sustainability reasons	Sustainable lifestyle and enhances participation in sustainable development	0.89	-0.14
	Renting is more sustainable than buying, sustainability is important to me	0.48	0.71

Appendix E. Relevance of barriers and genders

Category	Survey question	Sig.	t
The desire to own	Complete control and power over products, like modify it	0.73	0.34
	Ownership of products makes me feel secure and happy	0.48	-0.7
Novelty and Low availability	Unfamiliar with furniture rental and how it works	0.05	-1.97
	Low trust in this business model because I think this business model is not mature yet.	0.79	0.26
	Low accessibility to the service, products, or product information	0.2	1.27
Economic reasons	Purchased furniture can be sold to get some money back	0.94	-0.08
	Potential sanction fees if there are damages	0.68	-0.42
	Fees with contract-based service agreements, like a membership fee	0.93	0.09
	Renting furniture is more expensive in the long run	0.83	0.21
Concerns regarding the product itself.	Hygiene issue. E.g., pests and bugs	0.1	-1.67
	Quality issues. E.g., furniture can be damaged or worn out	0.7	-0.39
	Only prefer new products	0.06	-1.86
Incompatible current living condition	No need because have/landlord provides basic furniture	0.68	-0.42
	Concern on how to deal with the old furniture if rent furniture	0.58	-0.55