I want to be sustainable, but I love my car!

A mixed-method study of consumer adoption of u-PSS from a Prospect Theory perspective

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Abstract: Critical to the transition towards a Circular Economy is for organizations to move from traditional linear, make-use-dispose business models to circular. One such business model, "Use-Oriented Product-Service-Systems" (u-PSS), has gained increased traction among both scholars and practitioners due to its environmental benefits. An industry which has started to implement this business model is the automotive industry in the form of car-sharing offerings, where major environmental gains are predicted. Although consumers are interested in engaging in more sustainable activities, this is not reflected in their behavior in terms of mobility, and due to lack of research and thus knowledge on consumers' attitude, intentions and behaviors, companies are struggling to diffuse their offerings. This thesis aimed to address this gap through a mixed-method study to explore and determine the underlying factors that affect consumer adoption intentions of u-PSS within automotive, and how companies within the industry might address these factors through the framing of their offering to increase the adoption rate. By applying the logic of Prospect Theory, we found that the factors which influence consumers' adoption intentions are *Economical-* and *Convenience value* and *Financial-* and *Flexibility risk.* Additionally, we found that consumers have an emotional bias towards car ownership and that their individual situation in terms of car-sharing experience and car ownership affects their perceived behavioral control and thus their intentions. However, framing a u-PSS offering within automotive with emotional cues to address this emotional bias did not increase consumer adoption intention. We, therefore, suggest u-PSS operators within automotive to take these aspects into account when framing their offering towards the consumers.

Keywords: User-Product Service System (u-PSS), Car-Sharing, Prospect Theory, Framing
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1. Introduction

1.1 Background

29th of July marked the day when humanity's demand for ecological resources and services in 2021 exceeded the capacity of the earth (Overshoot Day, 2021). We are over-utilizing the resources of our planet and human-induced climate change is accelerating (IPCC, 2021). To address this critical issue, governments and policymakers worldwide have united and taken action to preserve our planet and its resources before it is too late. A field gaining increased traction towards more sustainable consumption and production for both policymakers, practitioners, and scholars is the development of a Circular Economy (CE) (Ghisellini et al, 2016), one where waste is eliminated, resources are circulated, and nature is regenerated (Ellen McArthur Foundation, 2013). Critical to the transition towards a circular economy for more sustainable consumption and production is for organizations to move from traditional linear, make-use-dispose business models to circular (ibid.). Circular business models (CBM) incorporate elements that slow, narrow, and close resource loops, and come in several different shapes and forms (Bocken et al, 2019).

An industry that has integrated circular business models for decades is the automotive industry (World Economic Forum, 2020), in forms of e.g., leasing, renting, remanufacturing, and pre-used sales, hence slowing and narrowing the resource loops. Although circular activities have been present in the automotive industry for quite some time, there are still measures to be taken before becoming fully circular. With business models generating more mobility and less waste, the industry has potential to reduce carbon emissions by up to 75% and resource consumption up to 80 % per passenger kilometer by 2030 (ibid.). Currently, the industry is being reshaped not only by more sustainable vehicles but also by other sustainably influenced trends such as sharing offerings (McKinsey & Company, 2016). New business models are thus emerging towards increased circularity, relating to the concept of "Product-Service-Systems" (PSS) (Mahut et al, 2017), where firms satisfy customer needs without physical ownership of products and instead offer its functionality or capability while reducing the environmental impact (Evans et al., 2017). Thus, in addition to leasing and renting, sharing business models have gained

increased traction. All three are included under the term "Use-Oriented Product-Service-Systems" (u-PSS), where the provider does not sell the product but instead make it available through these three types of agreements (Reim et al, 2015). With u-PSS, resources can be utilized and shared among many people, reducing usage and potentially the total need for physical goods (EPA-Network, 2021), thus constituting a potential for environmental gains.

The development and implementation of a CBM, such as u-PSS, is inherently complex as many different stakeholders are involved and affected. This since the implementation often requires business model innovation, thus implying new ways of creating, capturing, and delivering value (Bocken et al, 2019). To capture and deliver high value, u-PSS are dependent on consumer adoption, not only for profitability purposes but also since the experienced value of the offering increases with the number of users (Wirtz et al., 2019). In recent years, car manufacturing businesses have been introducing new, more sustainable u-PSS offerings such as car-sharing services. Even though these services can help direct consumer patterns towards less resource use and thus smaller environmental impact, the success of these initiatives regarding u-PSS offerings have been mixed (EPA-Network, 2021).

1.2 Problem discussion

Even though u-PSS within the automotive industry have been implemented rapidly in recent years, market penetration is still low and many of the active u-PSS providers are still operating on a relatively small scale (EPA-Network, 2021). For example, the number of shared cars only accounts for less than 0.1 percent of the number of cars sold in 2021 (Scotiabank, 2022; CAR, 2017). Hence, indicating that car-sharing providers are struggling to diffuse their circular offerings on a larger scale. The reasons for this are multifold, however, consumer acceptance and adoption have been shown to be the most crucial factors for u-PSS market penetration (Vermunt et al., 2019; Piscicelli, 2015).

Consumers are, in general, motivated to engage in CE because they care for the environment, and a sizable share are interested in engaging with novel PSS practices such as leasing products instead of purchasing them (European Commision, 2018). However, studies and practical examples have shown that this is far from always reflected in their behavior (ElHaffar et al., 2020). For example, giving up one's car and making use of mobility solutions cannot be taken

for granted by a vast majority of car owners (EPA-Network, 2021). The phenomenon of choosing to purchase a linear product over a u-PSS offering despite its benefits can be explained by various factors. Studies have shown that a prominent factor is that consumers value having control over their products and are thus choosing to purchase and own products instead of accessing them through a u-PSS, despite it often being cheaper than ownership (Mont, 2002; Tukker, 2015; Catulli, 2012). Further, consumers are used to purchasing and owning products, and changing this behavior is often associated with risk-taking (Kim & Hwang, 2021).

This phenomenon can also be seen in practice. In an expert interview conducted with a Global Sustainability Manager at a Swedish car manufacturing firm which offers a sharing platform for car utilization, much effort is put into figuring out how to create an offering which is relevant enough for consumers to be willing to pay for access and not ownership (Interview, 17-09-21) (See Appendix 1). Hence, how to make consumers engage in circular activities. Thus, despite car manufacturing firms trying to transition towards more circular offerings, they end up with low consumer adoption and lack guidance on how to frame u-PSS offerings to increase adoption. Based on the above findings, the question to be answered by the automotive industry is how u-PSS offerings within automotive should be framed to increase relevance and consequently consumer adoption.

A lot of attention has been drawn to the CE field in academia during recent years, including u-PSS. Existing research indicates that u-PSS adoption is disappointingly low, with consumer acceptance being a main barrier (Piscicelli et al., 2015; Catulli et al., 2017). However, current research lacks empirical evidence focusing on consumer behavior and adoption (Planing, 2018). An understanding of the underlying reasons for consumer behavior regarding u-PSS adoption is thus critical. Although there has been some recent academic research on consumers' acceptance and adoption intentions towards product-service systems within most types of consumer-focused industries such as fashion (Camacho-Otero et al., 2019), consumer goods (Borg et al., 2020), bike sharing (D'Agostin et al., 2020) and automotive (Efthymiou et al., 2013; Namazu et al., 2018), the most impactful factors of consumer adoption still remain a mystery (Tukker, 2015). As previously mentioned, consumers are in general positive toward u-PSS and interested in engaging with such practices (European Commision, 2018), however,

the low adoption of u-PSS indicates that there is a gap between consumers' attitude and their behavior.

Previous research has suggested that Prospect Theory could be used to understand the reasons why and under what conditions people tend to have an irrational decision-making process towards car-sharing services (Liu et al, 2014), however, this has not been tested empirically. Further, Prospect Theory has been used in previous research to predict consumers adoption of a u-PSS offering within fashion, showing that u-PSS providers can change consumers' perceived value and risk by providing additional product information, and that the driver of adoption is the opportunity to save money (Day et al., 2020). However, a car purchase is fundamentally different from a clothing purchase, especially since it involves a greater investment and thus a higher level of risk for the consumer. It could therefore be a mistake to draw conclusions about the automotive industry based on findings from research on the fashion industry.

With the above discussion in mind, the fundamental problem is the lack of research and knowledge about consumers' intention to adopt a u-PSS within automotive. Considering the environmental, social, and economical benefits of u-PSS, it is of critical importance for u-PSS stakeholders and academic literature that knowledge about consumers' adoption factors is more carefully investigated. This to be able to create more attractive u-PSS offerings enabling diffusion based on research within the automotive industry.

1.3 Purpose

Based on the background and problem discussion, the purpose of this thesis is to investigate the underlying factors that affect consumer adoption intentions of u-PSS within automotive, and how companies within the industry might address these factors through the framing of their offering to increase the adoption intention. Thus, we aim to identify consumers' perceived values and risks when evaluating the choice of adopting to car ownership or a car-sharing service, and from these insights derive how u-PSS offerings can be framed to minimize perceived loss and maximize perceived gain. This is to grasp why consumers are not adopting circular car offerings, despite having a positive attitude towards it, and how companies within the automotive industry can affect consumers to overcome this irrational behavior.

1.3.1 Research Questions

To summarize, this thesis aims to answer the following two research questions:

What perceived value and risk factors affect consumers' adoption intention towards a u-PSS compared to a linear offering?

How can a u-PSS offering be framed to minimize consumers' perceived risk and maximize perceived value?

1.4 Expected Contribution

Practices devoted to the development of a CE, such as firms' transition from linear to circular business models like u-PSS, has gained increased attention in both academia and practice. Consumer adoption of u-PSS has been identified as a crucial barrier among both researchers and practitioners, thus, the topic requires a deeper understanding of CBM adoption from a consumer perspective.

In research, there is an absence of empirical evidence focusing on consumer behavior and adoption of u-PSS, where the most impactful factors of consumer adoption remain a mystery. Therefore, this thesis aims to fill this gap by identifying consumers' perceived values and risks in adopting CBM, more specifically u-PSS within automotive in Sweden. This in order to investigate how to increase consumers' adoption intention of u-PSS.

In practice, whilst much effort has been put towards creating offerings which are relevant enough for consumers to be willing to pay for use and not ownership, u-PSS providers are struggling to diffuse their offerings and are still operating on a relatively small scale. Thus, this thesis aims to contribute empirically by giving management, executives, and marketing professionals within the automotive industry guidance on how to frame their u-PSS offerings to increase consumer adoption.

1.5 Delimitations

This thesis is limited to focus on consumer adoption intentions of u-PSS within the automotive industry in Sweden and not consumers' actual behavior. However, since this study builds upon the notion of the Theory of Planned Behavior (TPB), we argue in accordance with Ajzen & Fishbein (1980) that consumers' intention is likely to predict their behavior. Furthermore, the study takes a consumer perspective, delimiting from studying internal business challenges related to the diffusion of u-PSS offerings. This since research has shown that consumer acceptance and adoption are major barriers towards u-PSS implementation, hence, there is a research gap on consumer adoption behavior.

Further, the study is limited to u-PSS, thus excluding the other two types of PSS business models, namely result-oriented (providing customers with a certain result) and product-oriented (providing customers with the delivery of a service in addition to the product) (Reim et al, 2015). This is due to the circular benefits of u-PSS, since it incentivizes the production of more durable products and creation for take-back and reuse (Borg et al, 2020). Further, u-PSS provided by car manufacturers are categorized into sharing, renting, and leasing (Tukker, 2004). The difference between these categories is important when exploring consumer acceptance and adoption (Day et al., 2020). The choice of sharing is mainly motivated by the environmental benefits, since it is the one out of the three which aims to reduce the number of vehicles needed by consumers (Shaheen et al., 2018). Furthermore, renting and leasing have been present within the automotive industry for decades, whilst sharing is still a fairly new phenomenon where car-sharing services are struggling to diffuse their offerings.

In terms of industry choice, the automotive industry is predicted to be one of the most environmentally beneficial industries to implement CE practices due to the high carbon emission savings (World Economic Forum, 2020). Further, car-sharing services have tried to expand their business to Sweden, but many have failed to do so due to the lack of adoption and unfavorable conditions (DI, 2018). Thus, the results of this study are delimited to the automotive industry. Since we, the authors of this thesis, are based in Sweden, the scope of this thesis has further been geographically delimited to the Swedish market, thus, the findings are probably more applicable in a Swedish context.

1.6 Thesis outline

This thesis will explore consumers' perceived risk and value factors when adopting a u-PSS within automotive, and how these should be framed to increase adoption. The study is designed as a mixed-method study, combining qualitative and quantitative data. The outline of this thesis consists of seven main chapters, being 1) Introduction, 2) Theory, 3) Methodology, 4) Exploratory study, 5) Confirmatory study, 6) Discussion, and 7) Conclusion, summarized in Figure 1. In the following chapter, *Theory*, we will present the foundational theories used in this thesis, where additional theory will later be presented in Chapter 5 in connection to the hypotheses generation. In the third chapter, *Methodology*, the mixed-method approach is further explained; the *Exploratory study* and the *Confirmatory study* are then described in more detail in their respective chapters four and five. In the sixth chapter, *Discussion*, the results from the exploratory and confirmatory studies will be analyzed separately and together in conjunction with theory. In the seventh and last chapter, *Conclusion*, we conclude the answer to the research questions along with the theoretical and practical implications, and lastly limitations of the study along with suggestions for further research on the topic.

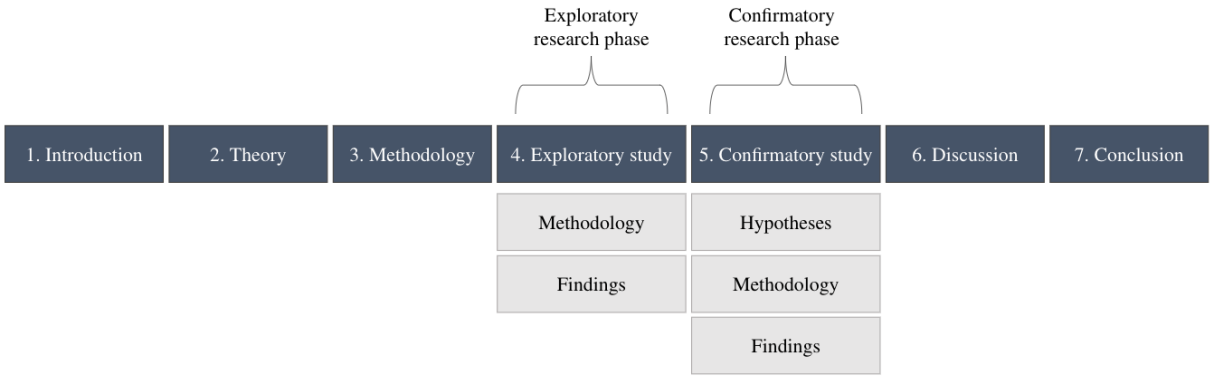


Figure 1: Visualization of the Thesis outline

2. Theory

This chapter outlines relevant theories and the theoretical framework about consumer behavior and intention used as a foundation to address the research questions. Through this theory, it is possible to conceptualize the factors that affect the consumer adoption intentions of u-PSS offerings and how they might lead to a behavior. Additional theory will further be presented and applied in Chapter 5 in connection to the hypotheses generation of the confirmatory study. The theory will later be used to explain the findings from the studies to address the knowledge gap.

2.1 Consumer Adoption and Intentions

To understand consumer behavior within the circular economy, Bücker et al., (2021) have developed a model to explain the different phases consumers pass through before they reach acceptance. According to Bücker et al., (2021) circular consumer behavior is a process which includes the following phases: searching for, purchasing, using, evaluating, and replacement of a product or service while aiming to be resource-efficient. This thesis is particularly interested in the purchasing and use phase since those are affected by consumers' adoption intentions. Adoption occurs when a consumer commits to using a single product or service instead of its alternatives (Bücker et al., 2021). Hence, in this case when a consumer commits to a car-sharing service instead of owning a car. Intentions are the consumers' willingess to commit to such behavior and are therefore a central factor for predicting the consumers' behavior (Ajzen & Fishbein, 1980; Ajzen & Fishbein, 1977). Hence, this thesis is focused on consumers' intentions to adopt in order to increase the adoption of u-PSS within automotive.

2.2 TPB and Consumers Green Attitude-Behavior Gap

The *Theory of Planned Behavior* (TPB) is widely used in research to explain consumers adoption behaviors and intentions of products and services, and has been applied in various contexts to investigate consumers' acceptance and adoption of PSS-offerings (Lang & Armstrong 2018; Mattia et al, 2019). TPB is an extension of *Theory of Resonated Action* (TRA), which states that an individual's *intention* is a central factor in predicting behavior, which consists of two indicators, *attitude* towards the behavior and the *subjective norm,*

meaning the social pressure towards the behavior (Ajzen & Fishbein, 1980; Ajzen & Fishbein, 1977). TPB further includes the measure of *perceived behavioral control,* meaning an individual's own belief about the performability of the behavior, as not just an indicator of intention but also a direct predictor of behavior. This, since TRA, could only adequately predict behaviors that are under volitional control. Perceived behavioral control, however, captures circumstances where there are constraints on action, for instance in terms of time, money, skills, or cooperation of others (Ajzen, 1988). Thus, according to TPB, an individual's intention to perform a behavior, and their perceived ability to do so, will lead to a behavior.

However, when it comes to sustainable behavior, consumers' attitude towards green products and services has shown to be trivial when it comes to purchasing behavior (Moser, 2015). There is an inconsistency between what consumers declare about their concerns regarding the environment and what they actually do in terms of sustainable purchasing behavior (ElHaffar et al., 2020). This phenomenon is often referred to as consumers "green attitude-behavior gap" and is well acknowledged in literature. Thus, although TPB has shown great potential in predicting human behavior and has been used to explain intentions in extended versions with for instance environmental concern as mediating role (Paul et al., 2016, Maichum et al., 2016), some researchers argues that it fails to predict actual behavior in the context of green consumption and merely models the gap (ElHaffar et al., 2020). However, according to TPB attitudes are not supposed to be used to predict consumer behavior, but the consumers' intentions are (Ajzen & Fishbein, 1980; Ajzen & Fishbein, 1977).

To not only explain the gap, but also find solutions to it, scholars have investigated factors which affect green consumption behavior (Joshi & Rahman, 2014). Thus, showing that there are multiple possible barriers which affect consumers behaviors, for example, psychological barriers such as consumers values and ethics, perceived consumer effectiveness, and consumer habits, as well as more practical barriers such as limited availability, access problems, and price (ibid.). The categorization of psychological and practical barriers can be further linked to the two paradigms of theories used to explain the gap: rational-economic and behavioral, where the rational-economic stem has received more attention. ElHaffar et al. (2020) argues this dominance of the rational paradigm as a possible cause of the gap since it forces an alignment between attitudes, intentions, and behaviors. Theories in this paradigm, such as TPB, rely on the notion that individuals in consumption choices consciously seek to maximize utility

(ElHaffar et al., 2020), and seems insufficient in finding solutions to the attitude-behavior gap. Behavioral theories such as Prospect Theory which is influenced by emotional and cognitive biases, are therefore suggested to bridge and solve the gap (ibid).

As previously stated, u-PSS within automotive has been struggling to diffuse their offerings on a larger scale, where consumer adoption is a main barrier (Piscicelli et al., 2015; Catulli et al., 2017). Whilst consumers, in general, have a positive attitude towards engaging in novel PSS practices because they care for the environment, this does not seem to be reflected in their behavior. Thus, it is of importance to explore, in addition to attitude and social norms, the cognitive and behavioral mechanisms that might hinder or facilitate their intention to adopt to a u-PSS within automotive, thus factors affecting their perceived behavioral control. Further, this study acknowledges that consumers' adoption is not only driven by conscious, rational, and utility-maximizing factors but also by psychological biases. For the purpose of this study, we will hence explore consumers' emotional and cognitive barriers. Thus, as suggested by ElHaffar et al. (2020), we will continue with exploring the consumers' adoption intentions through the fundamental principles of Prospect Theory.

2.3 Prospect Theory & Framing

Prospect Theory is widely used in research when explaining humans decision-making process under uncertainty and has been used in previous research to predict and understand consumers' adoption choices of u-PSS (Day et al., 2020). The theory states that individuals make decisions based on the potential *gains* or *losses* in relation to their specific situation, referred to as their *reference point*, rather than in absolute terms (Tversky & Kahneman, 1981). These gains and losses are assessed asymmetrically, as when individuals are faced with a riskful choice which leads to gains, they tend to overweight the value of certain outcomes despite it having lower expected utility, thus they are *risk-averse*. However, when faced with a riskful choice which leads to losses, individuals tend to be *risk-seeking*, hence preferring solutions which leads to lower expected benefit if it has the potential to avoid losses (ibid.). This notion violates the theory of rational choice, which states that people make rational choices seeking to maximize utility, and the preference between choices is independent of different representations of the same choice. However, according to Tversky and Kahneman (1981), these principles are often violated because of the imperfection of human perception.

The tendency for individuals to avoid losses can further be connected to the notion of the *Endowment Effect*, meaning individuals' propensity to value things they own higher than those owned by others. Thus, once an individual owns an item, refraining from it is perceived as a loss, thus they become loss-averse (Kahneman et al., 1991). For example, research has shown that the endowment effect is a disincentive for consumers to engage in collaborative consumption within apparel, as it increases perceived risk (Park & Armstrong, 2019). Thus, the endowment effect influences consumers' consumption choices by making it harder to give up on the things they own.

According to Prospect Theory, individuals further arrive at decisions by a two-stage process: *editing,* where the set of possible prospects are defined based on available information, and *evaluation*, where consumers assign value to each of the prospects and then chooses the one with the highest *perceived value* (Puto, 1987). Thus, consumers' reference point is set in the editing stage, where possibilities to affect consumers' perception of whether a choice leads to gains and losses through *framing* is possible. According to Prospect Theory, framing choice outcomes in terms of probabilities and gains or losses affects individuals' propensity to be risk-averse or risk-seeking, thus moving their reference point (Kahneman et al., 1991). In terms of consumer behavior, where the context is the decision whether to adopt either of two offerings, marketers can therefore frame offerings through e.g., advertisement content, thus influencing consumers' adoption intention. In this setting, as Day et al (2020) argues, “the values the two offerings are assigned during the valuation stage are perceived value and risk that have been influential previously”, where a superior perceived value of one offering is associated with increased adoption, whilst risk sources decrease it. It has also been proven to be an effective way to frame marketing messages to increase consumers' adoption intention (Maheswaran & Meyer-Levy, 1990). Thus, by framing a u-PSS offering in a way which increases perceived value and decreases perceived risk, consumers' adoption intention should increase.

It is hence of importance to explore consumers’ perceived value and risk when choosing between car ownership and a u-PSS. This is especially crucial, since current research lacks empirical evidence focusing on consumer behavior and adoption intention (Planing, 2018). Further, since most people are used to purchasing and owning products, changing behavior is associated with risk-taking (Kim & Hwang, 2021). In accordance with the endowment effect,

consumers are biased towards things they own and value them higher, thus the abandonment of ownership can be perceived as a risk (Kahneman et al., 1991). Thus, when consumers are in the evaluation stage of choosing between car ownership and a u-PSS, this choice arguably involves risk-taking, where the offerings are evaluated on perceived value and risk, ultimately affecting their adoption of either offering. In this situation, refraining from car ownership could make consumers loss-averse, thus, they become less inclined to adopt a u-PSS offering. To affect the assigned values of the two offerings, we argue that affecting consumers in the editing stage is crucial. Framing an offering could be a way of affecting consumers' reference point, positively increasing their adoption intention of u-PSS within automotive, For the purpose of this study, we will therefore apply the logic of Prospect Theory to explore consumers' perceived risks and value factors and how these can be framed to increase the adoption intentions of a u-PSS.

3. Methodology

This chapter intends to briefly describe the method of empirical studies used to answer the research questions. Since the research has been conducted in two sequential steps, each of the methods used will be further elaborated on in each respective section. The purpose of this section is hence to motivate the scientific approach and study design choices.

3.1 Scientific Approach

U-PSS offerings are an emerging trend within several B2C industries such as fashion, white goods, and automotive. Although u-PSS is not a new topic, a limited amount of research has been conducted within the field of consumer adoption of u-PSS (Kim & Hwang, 2021). Since the purpose of this thesis is to explore consumers' perceived risk and value factors and then determine how those can be framed to affect adoption, we realized the necessity of both an exploratory and a confirmatory research design to fully capture the underlying mechanisms of consumer adoption behavior.

Given the purpose and nature of this thesis, we embodied a philosophical position of critical realism. Thus, we as researchers acknowledge the ontological standpoint of realism, that the world in some ways is independent from us as researchers (Bell et al., 2019), but there is also a need for theory-based interpretations (Bhaskar's, 1989). Embodying this philosophical position allowed for the application of existing theories as an initial starting point for this thesis, as these theories made it possible to add a more meaningful analysis of the underlying mechanisms of consumer adoption (Fletcher, 2017). However, to gain a more accurate representation of reality, we as critical researchers must acknowledge the fallibility of existing theories and use this thesis analysis process to support, expand or oppose existing theory (Bell et al., 2019). Furthermore, due to the qualitative and quantitative research nature of this thesis, we have adopted an abductive approach, meaning that the thesis has been designed alternately between theory and empiricism (Bell et al., 2019). The abductive approach made it possible to gain a deeper understanding between both theory and empiricism (Dubois & Gadde, 2002).

3.2 Research Design

Given the intermediate knowledge of the research topic and the need for both exploratory and confirmatory research designs, a mixed-method approach was identified by the authors as the most appropriate design to answer the two research questions. It was thus necessary to first learn about what risk and value factors consumers perceive through qualitative research and consequently study how those factors could be framed to minimize risk and maximize value with a large sample of individuals through quantitative research. Using a hybrid approach for the data collection when the state of prior research is intermediate is further recommended by Edmondson and McManus (2007).

A qualitative study was thus used as an initial, hypothesis-generating research approach to explore consumers' perceived values and risks concerning the adoption of u-PSS. Bell et al (2019) argues that qualitative data is a good source for formulating hypotheses which can be tested further by a quantitative study. Thus, the findings from the qualitative study serve as a basis for the confirmatory hypotheses, further strengthened by existing theory. The two studies were therefore chosen to be conducted subsequently rather than mixing the approach throughout the research. Conducting the data collection subsequently allowed for a thorough and in-depth analysis of the qualitative study before the insights were tested (Creswell et al., 2008).

The mixed-method approach is advantageous since it lessens the weakness of using quantitative or qualitative research. Furthermore, a sequential design of the mixed methods is advantageous since it increases the ability to understand the underlying reasons of the studied phenomenon (Small, 2011), which fits with the purpose of this thesis. In addition, critical realists often advocate for a combination of qualitative and quantitative research (Olsen, 2016), since qualitative research sheds light on complex concepts and relationships (McEvoy & Richards, 2006), whilst quantitative research helps to uncover the generality of the studied phenomenon (Bell et al., 2019), in our case consumer adoption behavior. However, some critics argue that since qualitative and quantitative research are based on different epistemological and ontological assumptions, they are not suitable to be mixed since they are not compatible (Bell et al., 2019). Be that as it may, our philosophical position of critical realism allows for the two methods to be used together.

4. Exploratory Study

This chapter presents the exploratory study of the thesis, by firstly describing the methodological choices for the qualitative research, followed by a discussion of its quality. Lastly, the result and findings from the study will be presented.

4.1 Research Question and Approach

As previously noted, there is a research gap regarding consumers' perceived values and risks when adopting a u-PSS offering compared to purchasing a product. The purpose of the exploratory study is hence to investigate this by answering the first research question of the thesis:

What perceived value and risk factors affect consumers' adoption intention towards a u-PSS compared to a linear offering?

Since there is limited consumer-focused research available in this area (Planing, 2018), our aim was to gain a deeper understanding of consumers' underlying risk and value factors with a car-sharing offering. To receive elaborated contextual descriptions from consumers, a qualitative research method was chosen, as mentioned above, since it allows to identify and understand the underlying factors impacting consumer adoption (Bell et al., 2019).

4.2 Study Design

Semi-structured interviews was the method of choice for gathering the qualitative data since it provides a structure when interviewing while still granting room for discovery and unexpected insights by follow-up questions (Bell et al., 2019). This structure also allows the respondents to give examples and express their own experiences, hence contributing to an understanding of the underlying factors affecting consumer adoption of car-sharing services (Gioia et al., 2013), which is one of the benefits of using semi-structured interviews (Bell et al., 2019)

The interviews were guided by open-ended questions within three main predetermined themes; car ownership, car-sharing, and comparison between car-sharing and ownership (Appendix 2).

The questions were inspired by theory presented in the theoretical framework and tested through a pilot interview prior to the study. However, since the objective was to explore consumers' attitude and perceived risk- and value factors, we were careful to avoid response bias by not directly framing the questions or leading the respondents to answer in a certain way (Yin, 2014). Furthermore, to reduce interview bias, thus that the nature of the interview affects the respondent's way of answering (David & Sutton, 2016), we highlighted the anonymity of the answers and our interest in their personal opinions.

A total of nine interviews were conducted, lasting between 30 and 60 minutes. Specific data for each interviewee is provided in Appendix 3. Due to the COVID-19 pandemic, interviews were conducted via video conferencing services, mainly Teams and Zoom, which besides the safety precautions provided maximum convenience and minimal effort for interviewees (Bell et al., 2019). This method, despite not being our first choice, enabled us to bridge location gaps, making a geographically broader data collection possible. However, compared to in-person interviews, online personal interviews come with difficulties in reading body language and other non-verbal communication (Bell et al., 2019). We tried to mitigate this by encouraging the interviewees to turn on their video cameras, which all of them did.

We, the authors of this thesis, were both present during all interviews, one with responsibility for leading the interview and the other with responsibility for follow-up questions. All interviews were conducted in Swedish in order for respondents to express themselves more freely, seeing as all of them had Swedish as their mother tongue. Furthermore, all interviewees consented to be recorded during the interview and for their answers being used in this study. Having the interviews recorded gave us the opportunity to review the material which facilitated the transcription and analysis of the data (Dalen, 2015; Bell et al., 2019).

4.2.1 Ethical Considerations

To ensure the integrity of this study we took the following ethical considerations into account throughout the data collection and analysis process. Firstly, all the respondents were informed about the study's aim and were asked for consent to participate in our study. Secondly, we asked for permission to record the interviews and informed them about their anonymity in the research. Hence, we were able to ensure informed consent, privacy, anonymity, and

confidentiality in our study to create a safe space for the respondents to express their own experiences, honest opinions, and reasons for their behavior (Bell et al., 2019).

4.2.2 Selection of Interviewees

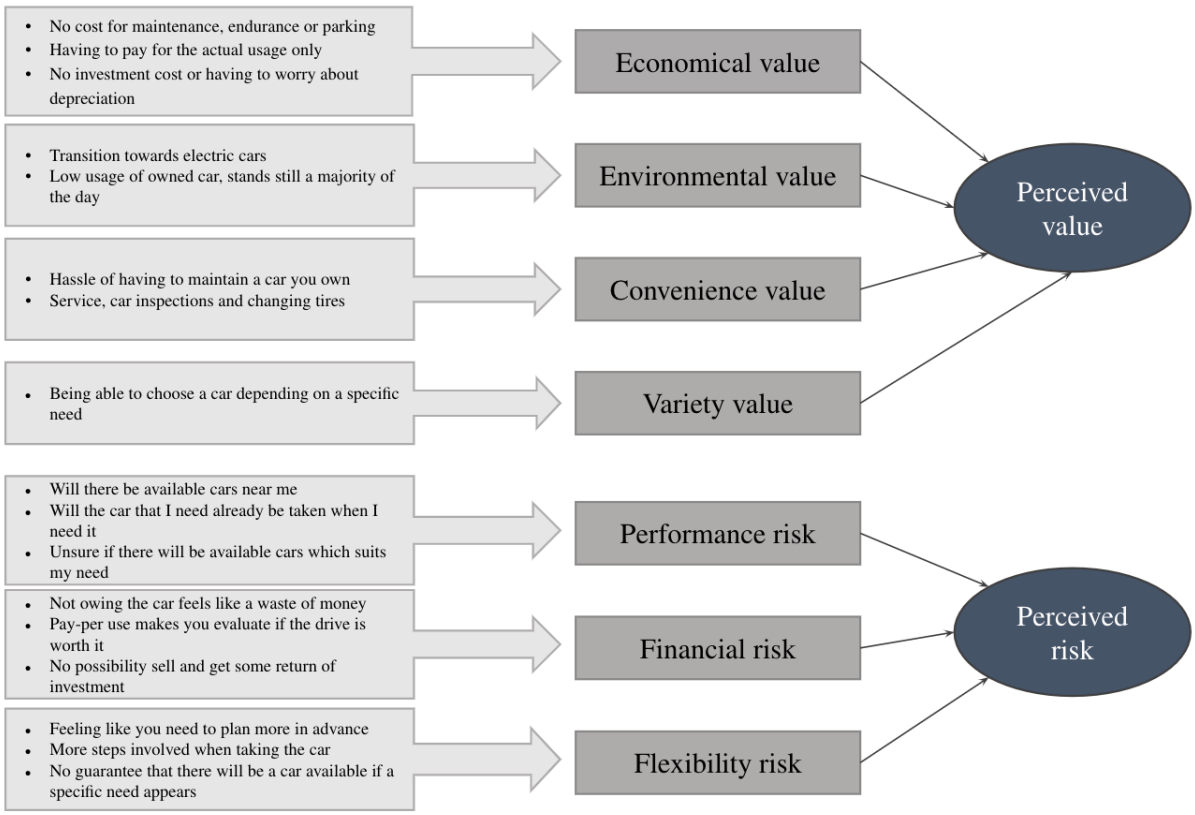
The interviewees were selected through a purposive sample, allowing us to target participants who were both users and non-users of u-PSS offerings to receive rich information relevant to the exploratory research question (Bell et al., 2019). We selected respondents with a driver's license, geographically spread in both larger and mid-sized cities around Sweden, within the age range of 25-60 to increase the generalizability of our results. By using a purposive sampling method, a form of non-probability selection, we were able to select respondents based on special experiences and qualities which we deemed as most suitable for the study (David & Sutton, 2016). Furthermore, purposive sampling suits the aim of this exploratory study since it is suitable to use when the objective of the research is to increase the understanding of a certain topic (Korstjens & Moser, 2017).

According to Bell et al (2019), the size of the selection depends on the authors' resources in form of time, money, and need for precision. Since the study is using a mixed-method approach within a limited time frame, we chose to conduct ten interviews, however, one respondent declined the invitation on short notice, thus nine interviews were conducted. Nonetheless, we were able to see clear patterns that were repeated in the different interviews and deemed that saturation had been reached.

4.2.3 Data Processing

The data analysis was conducted in parallel with the data collection, allowing us to discuss and note down interview observations after each interview. This overlapping process between data collection and initial data analysis eased the saturation of emerging insights (Eisenhardt, 2014). The interviews were transcribed in full and not selectively to capture all potential factors of consumers' perceived risk and value with car-sharing. The transcribation was a time-consuming process but by doing it ourselves it increased our knowledge about the study's collected data (Bell et al., 2019; Korstjens & Moser, 2017). We opted to use inductive coding techniques, following the Gioia method, when constructing our first and second-order constructs since it allowed for a structured approach whilst showing the dynamics among the

emergent concepts (Gioia et al., 2013). Furthermore, it also limits the influence of one single author of the research results since it requires both authors to arrive at a consensus before creating the first and second-order constructs (Gioia, et al., 2013). By first coding and identifying patterns in the data within and between interviews we were able to establish the first broad core constructs. Using this approach made it possible to find core themes without being restricted by theory, which is in line with the exploratory aim of this study. Comparing our first-order constructs to the theoretical framework allowed us to synthesize the first-order constructs into theory-centric themes, thus building the second-order constructs. These themes were further aggregated into four themes, see Figure 2, which we identified as driving or hindering the adoption of u-PSS offerings within automotive. The role of emotional (e.g., feeling of freedom and comfort) compared to functional factors (e.g., availability and maintenance) in the evaluation stage of choosing a car-sharing or car ownership made it possible to derive concrete hypotheses which will be presented in Chapter 5.



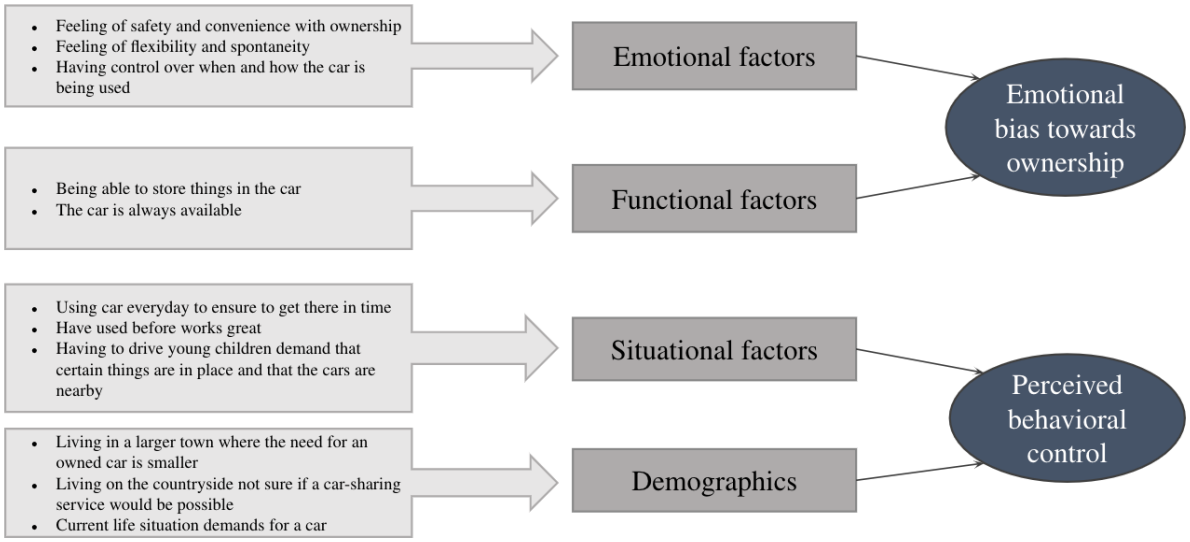


Figure 2: Overview of the data structure

4.3 Quality Considerations

Lincoln and Guba (1985) highlight trustworthiness, rather than reliability and validity, as an important criterion in assessing the quality of a qualitative study. To ensure the quality of the study, we have thus used the criterion of trustworthiness, divided into four sub-criteria's; credibility, transferability, dependability, and confirmability (ibid.), which is further elaborated below.

4.3.1 Credibility

Credibility denotes whether the research has been conducted in accordance with proper research standards, thus reflecting an accurate picture of the researched topic (Bell et al., 2019). To ensure credibility of the study and to reduce the risk of biases during the interviews and in the transcribation process, both authors were present during all interviews. The interview guide was further pre-tested through a pilot study to ensure comprehensibility and avoid biases in the questions asked.

4.3.2 Transferability

Transferability refers to whether the results from the study can be transferred to other contexts (Lincoln & Guba, 1985). The focus of the study was to investigate consumers' perceived risk and value factors with car-sharing services limited to the context of Sweden. To achieve high

transferability, all material in the study intended to be as descriptive as possible, as Lincoln and Guba (1985) believe that detailed descriptions enable outside parties to assess whether the result can be transferred to another context.

4.3.3 Dependability

A high degree of dependability is according to Lincoln and Guba (1985) achieved through a high consistency in the study, meaning another researcher would come to the same conclusion with similar respondents. Thoroughly describing our research process contributes to a high dependability of this study (Bell et al., 2019). Our research process and material have also been regularly monitored by our supervisor which further strengthens the dependability (Bell et al., 2019).

4.3.4 Confirmability

Confirmability aims to ensure that the researchers guarantee that the study has been carried out in good faith. This means that no personal values should have influenced the research process or the results of the study (Lincoln & Guba, 1985). Using open questions in the interviews ensured that we, the authors, did not bias the answers. Furthermore, the transcribation was conducted by the one author who was not leading the interview to ensure legitimacy. As researchers, we are aware of the active role we have played throughout this study. Prior to and continuously throughout the study, we therefore discussed and reflected upon how our pre-existing knowledge and opinions may have affected the study to represent the results as true as possible.

4.4 Findings

The key to this study was to explore consumers' transportation habits and the logic behind their transportation choices, to answer what perceived risk and value factors consumers experience when adopting a u-PSS within automotive. In this section, the results from our interviews will be presented. Quotes from the interviews are used to highlight and exemplify our findings. Since the interviews were conducted in Swedish, we have translated them into English.

4.4.1 Attitude Towards Car-sharing

In general, there was a positive attitude towards car-sharing among the respondents, where all expressed that it is a good service and alternative to car ownership. However, although all respondents were positive towards car-sharing services, some of the respondents who had younger children or expected children in the near future implied that car-sharing services are not an option for their current life situation.

> *"I see that car-pools and similar car-sharing services fulfill its function but for me, it would only be an option if I only had to transport myself or go shopping."*
> -Respondent 4

Furthermore, all respondents mentioned that car-sharing services would be a good option to consider in the future when there is a greater availability geographically spread all over Sweden. Respondent 7 specifically mentioned the technological development in cars as an advantage for car-sharing services since they are able to adapt more quickly to technological developments, while others were mostly positive in general towards new offerings in terms of mobility services.

> *"I think it's a good offer, especially in big cities where you do not need to use a car that much, but it's probably only useful if you have to go to a place that does not have good public transport communication."* - Respondent 3

4.4.2 Value Factors

All respondents expressed that they see gain factors with using a car-sharing service compared to owning a car. These positive factors mostly centered around: Economical-, Environmental-, Variety-, and Convenience- value.

Economical

All respondents discussed the price of sharing u-PSS services in relation to what value it could bring them in their everyday life, hence, evaluating the economical value of a car-sharing service. However, being able to save money was mainly mentioned by respondents 2,5,6, and 8, who currently did not use a car particularly often in their daily life. Because of their low

usage, the respondents argued that it probably would be cheaper to use a car-sharing service compared to owning a car. Out of those four, only one of the respondents did not own a car. This indicates that even though consumers own cars, they can see the economic gain of using car-sharing if they currently are not using their car often.

> *"...it becomes demand-driven to when you need it. So, I certainly think it would have been a lower annual cost because we do not use it very often"* - Respondent 6

Environmental

Out of the nine interviews, respondents 2, 3, and 7 emphasized the environmental value of choosing a car-sharing service compared to ownership as a major gain, in terms of reducing the number of cars and maximizing their utility. Although some of the other respondents also talked about the low usage of their car and pointed out that car-sharing services probably are more environmentally friendly, it was not mentioned as their main concern. Among these respondents, the environmental value was mostly discussed in conjunction with electrical vehicles and the technological advancements of new cars, which car-sharing services were associated with. Having access to new, more environmentally friendly cars was thus seen as something that brought the respondents value.

> *"Yes, the biggest advantage is the environment. It is probably more environmentally friendly to share cars than for everyone to have their own, which just stands still and uses the earth's resources, especially when they are manufactured."* - Respondent 2

Variety

A majority of the respondents mentioned the fact that the utilization of a car-sharing service is need-based as something that brought them value. Furthermore, respondents 1 and 2 did not currently own a car, motivated by a low usage need, and explained that when the need of a car appears they use car-sharing to satisfy it. Another aspect that was frequently mentioned by the respondents was that by using car-sharing services you could utilize different cars depending on specific needs or situations, which was seen as something that brought value to the respondents.

> *"...a car-pool also has possibilities in the other direction because it consists of several different cars, so you can choose the car that best suits the trip you are going to make. If you go to IKEA, it's a bigger car, but if I must go somewhere else where I just have to transport myself, with no luggage and stuff, then you can choose a smaller car.*
> - Respondent 7

Convenience

The majority of the respondents mentioned the hassle of maintaining an owned car, for instance with service, parking, and insurance, and therefore saw gains in being relieved from these engagements when using a car-sharing service. The inconvenience of maintenance mostly touched upon service of the car, car inspection, and changing the tires. Furthermore, not only did the respondents refer to the maintenance as an inconvenience but also as a cost.

> *"There are hassles with owning a car, meaning that you must service it, fill up the gas, you need to have control over things like should I buy new winter tires now. It is a bit of a hassle and a bit expensive; I would like to get rid of all that."* -Respondent 8

4.4.3 Risk Factors

Even though all respondents had a positive attitude towards car-sharing, only two out of nine used car-sharing services on a regular basis. Out of those two, one stated that they probably would buy a car in the coming years as their life situation would change when they move out of the city center. Among the other respondents, the main reasons for not using a car-sharing besides that there currently were no available car-sharing services in their area were related to what they felt like they were going to lose or miss out on by not owning a car, more specifically the risk of not satisfying their needs of Performance, Flexibility, Financial and Ownership.

Performance

Related to the topic of availability, respondents 3 and 5 mentioned that the feeling of safety and security were at risk when relying on car-sharing since there is no guarantee for car availability nearby exactly when you need it. Hence, uncertainty regarding whether a sharing u-PSS would be able to perform as expected, meaning that it could provide an available car that suited the respondents' need of mobility when it occurred. Furthermore, five of the respondents mentioned that they perceive car-sharing as somewhat of a hassle, since they need

to plan and book in advance to make sure that there is a car available that suits one's needs nearby, especially during hours when most need their cars.

> "*Often you want to use it at the same time, after four o'clock on a weekday because you must go shopping or do errands after work, or during the weekend when you are free. So I think it will be difficult to rely on a car-pool, especially when you live in a house or townhouse, that will match my needs there and then."* - Respondent 2

Flexibility

One of the biggest risks the respondents saw with using a car-sharing service was the loss of freedom. Although car-sharing services are promoted as flexible, the respondents expressed a fear of being inflexible since they experienced that they could not rely on that there would always be a car available whenever needed. Thus, feelings of being bound and not being able to be spontaneous were described as barriers for u-PSS adoption compared to ownership. Furthermore, the two respondents who currently use car-sharing services mentioned the pay per usage as a barrier, making them evaluate the necessity of each trip more thoroughly in comparison when owning a car, thus further inhibiting spontaneity. Another aspect which was discussed related to inflexibility with car-sharing services was needing to park cars on specific spots or needing to rent cars for the whole day if you were going to a zone with no designated parking lots. However, the most critical topic discussed by the respondents was the insecurity of relying on that there would always be a car available nearby when a need appears.

> *"...okay there's a parking lot there, and then you need to check if there's a car available and then there is not. So, then you must book it three days before the trip, if you are going somewhere on the weekend, and you forget about it. The spontaneity witch a car-sharing should give disappears"*- Respondent 8

Financial risk

All respondents concluded that using a car-sharing service presumably could be more financially beneficial than owning a car. However, five of the respondents described that even though owning a car costs a lot of money and is more often than not losing its value, not owning the "asset" makes them feel as paying for the usage of a car-sharing is a waste of money. This since when owning a car, you can sell it and gain a return on investment, despite depreciation.

Paying directly for the use of u-PSS was further mentioned as a barrier towards using the service among the respondents, since it would make them reflect on what each drive costs them, which they do not with an owned car.

> "*But I know that it is more expensive to rent such a car because we never get the money back, while when we have our own car and sell it, we get money back which we spent on it."* - Respondent 2

Ownership

Despite the fact that only one of the respondents stated ownership itself as an important factor, all of the others stated risk and value factors which were correlated to car ownership. For example, the safety of knowing that the car can be packed and ready on the driveway, being able to leave the car uncleaned and with one's belongings inside, and the feeling of safety of knowing what condition the car is in or what to do if you happen to scratch the car. Ultimately it comes down to the respondents feeling of not having to think twice before using the car. This indirectly shows that the respondents value the attributes of car ownership even though they state that ownership itself is not so important.

> *"I like the feeling that it is mine and that I can do what I want with it. For example, I can just throw back the energy drink can in the back seat once it is empty or let the dog ride along without having to worry about the car being quite hairy."*
> - Respondent 5

4.4.4 Functional and Emotional Elements

When discussing car ownership, we noticed that respondents attributed the positive factors with car ownership to emotional values, such as the feeling of freedom, spontaneity, security, and life quality enhancer, while negative factors tend to be more functional, such as service aspects, parking, and maintenance. Conversely, the positive aspects of car-sharing were mostly attributed to functional values, such as the quality of the cars and lack of maintenance, whilst negative factors were described with emotional losses, such as loss of freedom and spontaneity. Thus, we identified that the advantages of car ownership reflected respondents' perceived disadvantages and risks with car-sharing, and vice versa. For example, car ownership gives a sense of control and the possibility of spontaneity, while this is something consumers lose with

car-sharing. Based on this, we identified an emotional bias towards the positive aspects of ownership, and negative aspects of car-sharing, potentially causing irrational behavior in terms of choosing ownership over sharing despite car-sharing being more beneficial in practical and financial terms. Further, these findings imply that consumers' positive and negative attitudes towards the two offerings can be separated into functional and emotional values and risks, where consumers seem to be biased towards the emotional factors. This distinction between functional and emotional factors will therefore be addressed for further research.

4.4.5 Other Important Findings

Another important finding was that the majority of the respondents described car-sharing services as cheaper, hence, assigning it a higher economical value compared to owning a car. Despite this, the respondents also agreed that paying for utilization is perceived as more expensive as it becomes more of a direct cost. Respondents indicated that this may lead to hesitance to use and thus less usage, a hesitance by which several would justify car ownership, since by owning a car they simply would not need to think twice. Similarly, several respondents expressed that using a car-sharing felt like a loss affair since they would never get the money invested back. Despite the high depreciation rate and the uncertain second-hand value of cars, which many had realized was probably less beneficial economically, they still chose ownership. Thus, we identified an irrational decision-making process among our respondents, where they are choosing not to maximize utility, but settled with fewer gains to ensure they did not lose their current standard.

Although all respondents generally were positive to the idea of a car-sharing, we found that the respondents who had previously tried a car-sharing were more positive towards it than the ones who had not. Further, respondents who did not own a car were also more positive than respondents who currently own a car, who saw more barriers for adoption. We also noticed that the attitude of respondents differed in terms of their current life situation, whether they lived close to the city center or not, if they had children and if they traveled longer distances on a monthly basis, as well as how they would imagine their life situation in the future. For instance, people in urban areas and smaller households saw more use of car-sharing whereas larger households and in suburban or rural areas expressed a greater need for car ownership. Thus, these demographic aspects might impact consumers' frame of reference.

4.4.6 Conclusions Exploratory Study

From the qualitative data analysis, eight factors which consumers reflect upon when choosing their means of transportation were identified, which can further be categorized into risk and value factors. The value factors were *Economical, Environmental, Variety,* and *Convenience*. The risk factors were *Performance, Financial,* and *Flexibility*. Furthermore, consumers attributed car ownership with emotional values whilst risk factors concerned functional aspects. However, this relationship changed concerning car-sharing services, where values were more functional and the risks more emotional, thus, there is an emotional bias towards ownership. The qualitative data further showed that consumers were not rational in their decision-making, hence not choosing utility maximization, meaning that emotional factors with ownership outweighs the functional factors of an offering. We, therefore, argue that by applying the same emotional attributes which consumers have towards car ownership on car-sharing offerings, will affect how consumers value the offer. Insights on how an emotional framing contributes to increase the perceived value and lowers the perceived risk will be further analyzed in the confirmatory study.

5. Confirmatory Study

This chapter presents the confirmatory study of the thesis, by firstly presenting the hypotheses generated based on the exploratory study and the theoretical framework, as well as additional theory. It will be followed by a review of the methodological choice for the quantitative study, describing the experiment that has been carried out. Lastly, the hypotheses will be tested and discussed in the results section.

5.1 Research Question and Approach

Grounded in the findings from the qualitative data collection, as well as theory, the quantitative study aimed to statistically test how the framing of perceived value and risk factors affect consumer adoption intention of a u-PSS. The purpose of this confirmatory study is hence to answer the second research question of this thesis:

How can a u-PSS offering be framed to minimize consumers' perceived risk and maximize perceived value?

To statistically test how u-PSS offerings can be framed to affect consumer adoption intention, we chose to utilize a quantitative research method for the confirmatory study, since it allows the use of numerical data to analyze how consumers are affected (Bell et al., 2019). Furthermore, to answer the research question above, the conceptual model below has been proposed to show a visual presentation of the generated hypotheses (see Figure 3). The conceptual model builds upon the findings from the exploratory study and theoretical framework together with relevant theory, which will be further presented in the section below.

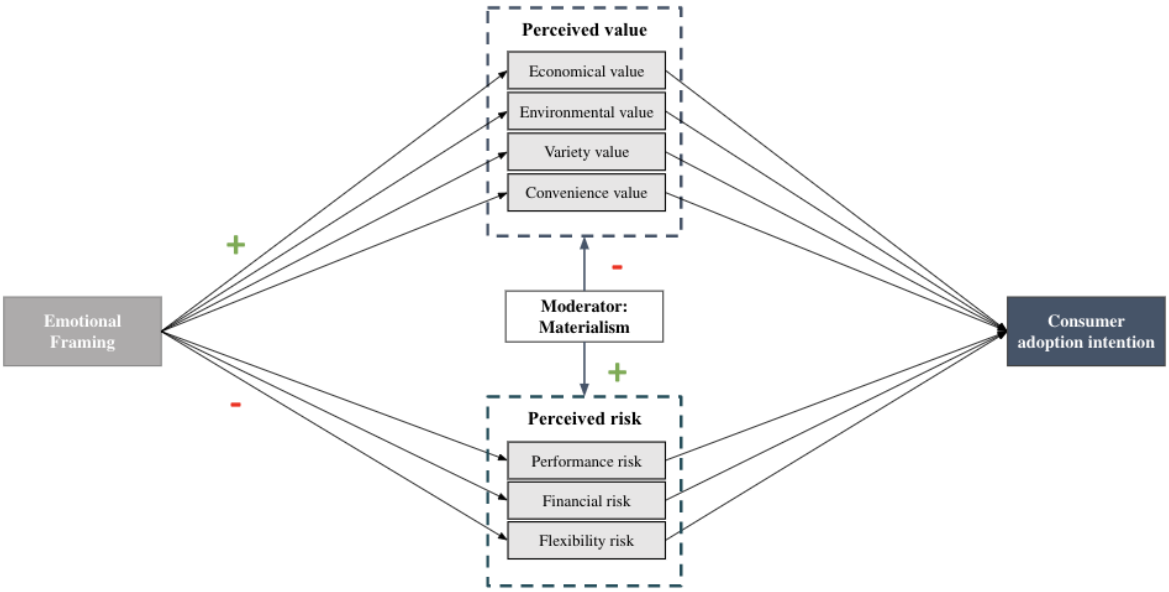


Figure 3: Conceptual model of the generated hypotheses.

5.2 Hypotheses Generation

Research has shown that when consumers need to make risky decisions based on limited information, they subconsciously evaluate each option from their individual reference point (Kahneman & Tversky, 1979). In the context of u-PSS offerings, the typical reference point is ownership of a product. Owning the products gives, according to recent studies, consumers a sense of control and freedom over their own decisions about the product use (Kim & Hwang, 2021). Thus, when consumers run their mental comparison between what they perceive and what they know about the u-PSS, it needs to be perceived as generating more value or less risk compared to car ownership for it to be perceived as less risky and hence get chosen.

5.2.1 Framing Effects

Framing loss and gain factors have not only been used to give rise to different preferences (Kahneman & Tversky, 1979). It has also been proven to be an effective way to frame marketing messages to increase consumers' adoption intention (Maheswaran & Meyer-Levy, 1990). Framing messages as a gain or a loss affects consumers differently. A message framed as a positive gain for the future has been shown to enhance consumers' attitude and adoption intentions (Chang et al., 2015). Further, framing a u-PSS in an efficient way by providing information to reassure consumers concerning perceived values and risks, has proven critical

in putting PSS adoption in practice (Day et al., 2020). In our exploratory study, we found that consumers attach emotional value to car ownership, whereas car-sharing mainly was connected to functional value. Thus, appointing emotional gain associations to a u-PSS offering might tap into the same cognitive schemas as car ownership, hence leading to less perceived loss of the u-PSS. Tukker (2015) argues that in terms of the value of PSS it is important to distinguish between tangible and intangible added value of the offering. For instance, the cost of capital consumers save compared to a product-based solution is often cheaper for the user. However, the intangible added value is often forgotten in a comparison between PSS and product ownership (ibid.). Hence, by framing the offering emotionally the intangible added value can be captured, leading to higher perceived value and lower perceived risk. We, therefore, hypothesize that:

H1: An emotional gain framing of a u-PSS offer will lead to higher perceived value in terms of Economical, Environmental, Convenience and Variety than a neutral gain framing of a u-PSS offer.

H2: An emotional gain framing of a u-PSS offer will lead to lower perceived risk in terms of Performance, Financial and Flexibility than a neutral gain framing of a u-PSS offer.

5.2.2 Perceived Value

The perceived value of an option has been shown to affect how consumers perceive an option (Kahneman & Tversky, 1984), thus the perceived value of an offering is connected to consumers' adoption intentions. Perceived value is often defined as "the consumers' overall assessment of the utility of the product/service based on the perception of what is received and what is given" (Zeithaml, 1988, p. 14). Hence, representing consumers' perception of the trade-off between perceived benefit and sacrifice (Lovelock, 2000), in the assessment of an offering. Previous research has also shown that the perceived value is associated with adoption of an offering (Day et al., 2020), and that the u-PSS value increases with the numbers of users (Wirtz et al., 2019). Thus, we argue that consumers' perceived value with adopting a u-PSS, thus the benefits they would gain when adopting a u-PSS, will influence their adoption intention. Our exploratory research showed that consumers mainly perceive four types of value factors regarding u-PSS within automotive which will be further elaborated below.

5.2.2.1 Economical Value

Previous research has defined cost as an important contributor to perceived value and is considered strongly in purchase decisions (Sweeney & Soutar, 2001). Further, consumers' perception of the value of a service is a function of perceived service quality relative to price (Hallowell, 1996). Thus, how consumers perceive the value of the price will affect the perceived value of a u-PSS. Furthermore, previous studies have shown that perceived financial benefits are critical to PSS adoption (Schrader, 1999; Rexfelt & Ornäs, 2009). Additionally, perceived financial benefits in terms of the potential to save money is argued to be critical to PSS adoption in general (Tukker, 2015). This is strengthened by the findings in the exploratory study, as several respondents mentioned the price and the possibility to save money compared to other types of mobility as crucial in their evaluation of whether to use a car-sharing service. We therefore hypothesize:

> *H3: A higher perceived economical value will lead to a higher adoption intention of a u-PSS*

5.2.2.2 Environmental Value

The perceived environmental benefits generated by consuming environmentally friendly products, have shown notable impact on perceived overall value in terms of functional-, economic-, emotional- and social values for car users (Koller et al., 2011). U-PSS are a promising alternative to traditional ownership-based business models as they may result in lower environmental impact (Borg et al., 2020). Car-sharing systems specifically constitutes a potential for environmental gains, since it reduces the number of private vehicles, thus requiring less production resources compared to individual ownership of cars being bought, driven and parked (Firnkorn & Müller, 2012). Furthermore, the exploratory findings showed that most respondents acknowledged the environmental benefits with u-PSS, and one-third of the respondents emphasized it as a major factor that brought them value compared to owning a car. Hence, we hypothesize that:

> *H4: A higher perceived environmental value will lead to a higher adoption intention of a u-PSS*

5.2.2.3 Variety Value

Consumers may seek variety in their choices when the external environment changes, for instance different usage situations, where a change in preference may occur owing to this change (Kahn, 1995). One possible advantage of car-sharing services is the opportunity to use a variety of cars that are more efficient for specific consumer needs, e.g., smaller, larger, more basic, or luxurious (Meijkamp, 1998). Our exploratory study showed that this advantage is perceived as valuable, as cars are often used for different purposes, e.g., family holidays, running errands nearby or transporting goods, where different types of cars were perceived as more or less efficient. We therefore hypothesize that:

H5: A higher perceived variety value will lead to a higher adoption intention of a u-PSS

5.2.2.4 Convenience Value

Consumers usually seek convenience in their decision-making and avoid behaviors requiring higher perceived effort (Joshi & Rahman, 2015). Further, consumers are more likely to adopt products which are easy to use and time-saving (Lane & Potter, 2007). The exploratory study showed that respondents saw the benefit of being relieved from the hassle of maintaining the car when they evaluated car-sharing. Hence, not needing to spend time or energy on maintenance by using car-sharing services instead of owning the car. Thus, we hypothesize that:

H6: A higher perceived convenience value will lead to a higher adoption intention of a u-PSS

5.2.3 Perceived Risk

Perceived risk is often referred to the negative expected utility that consumers associate with the purchase of a service or a product (Dunn et al., 1986). Perceived risk, in accordance with Prospect Theory, is evaluated in terms of what consumers perceive they will lose when making a purchase decision (Tversky & Kahneman, 1981). Research has found that perceived loss plays a larger role in the decision-making process and is conceded disproportionately compared to the perceived value (Bruce et al.,1993). Thus, it has an impact on consumers' adoption

intention. Further, within fashion apparel, the perceived risk of a u-PSS service affects adoption (Day et al., 2020). Thus, we argue that consumers' perceived risk with adopting a u-PSS within automotive, thus the factors which they feel they lose not owning a car, will impact their adoption intention. Our exploratory study identified three major risks consumers perceive regarding u-PSS within automotive which will be elaborated below.

5.2.3.1 Performance risk

When adopting a new type of offering consumers may worry about the performance risk, meaning whether the performance of the product or service will be as expected (Schaefers et al. 2016). In various studies, limited availability has been identified as a barrier towards consumption of sustainable products (Joshi & Rahman, 2015). Further, Nguyen et al, (2018) found that the availability of green products moderates the relationship between green consumption intentions and the actual behaviors such that the more the green products are available, the stronger the positive relationship between the intentions and the behaviors. In our exploratory study, we identified the perception of low availability as a barrier for adoption of car-sharing services. According to Tukker (2015), ease of access of PSS is essential for it to be successful. Since consumers usually share the consumption of a u-PSS, there is a rivalry of consumption leading to a perceived risk of unavailability (Lamberton & Rose, 2012). The exploratory study further showed that the respondents perceived a risk of not being guaranteed an available car that suits their need of mobility when it appears. Thus, we hypothesize that:

> *H7: A lower perceived performance risk will lead to a higher adoption intention of a u-PSS*

5.2.3.2 Financial Risk

Financial risk addresses the concern about the financial loss consumers experience due to a purchasing decision (Kang & Kim, 2013). Previous research has shown that the perceived financial risk of ownership positively influences consumers usage and adoption of access-based consumption such as u-PSS, since it avoids the ownership risks (Schaefers et al., 2015). However, as found in the exploratory study, car owners view their car purchase as an investment which can provide a monetary return if eventually selling it. Sharing services such as car-sharing encourage consumers to focus on the temporary use and not the actual ownership

of the product (Bardhi & Eckhardt, 2012), which may cause consumers to perceive that paying for accessing the car temporarily is a waste of money compared to owning it, thus causing a barrier for adoption as shown in the exploratory study. Therefore, we hypothesize that:

H8: A lower perceived financial risk will lead to a higher adoption intention of a u-PSS

5.2.3.3 Flexibility Risk

Regarding adoption of u-PSS, consumers may feel a loss of freedom over their own decisions since they do not have ownership of the product (Tukker, 2015). Research has shown that consumers can perceive a loss of flexibility when they are not owning products since they cannot control when and how it is being used (Tukker, 2015; Schrader, 1999). However, scholars have also argued that the perceived flexibility of using a service instead of owning the product is an important intangible benefit that increases the interest of u-PSS (Moeller & Wittkowski 2010; Gullstrand Edbring et al. 2016). In our exploratory study, we could see tendencies towards both directions. The ones who did not own a car felt that car-sharing services increased their flexibility. However, all respondents mentioned the feeling of loss of spontaneity as a barrier for being dependent on car-sharing services, thus the risk of being inflexible affected their decision-making. Therefore, we hypothesize that:

H9: A lower perceived flexibility risk will lead to a higher adoption intention of a u-PSS

5.2.3 Materialism

Adopting a u-PSS means giving up ownership of a product to not just adopting a service, but also sharing it with others. The lack of ownership has been identified as a barrier toward PSS adoption in previous studies (Becker-Leifhold & Iran, 2018; Catulli, 2012). The importance of ownership is individual, and the more a person values ownership the less interested they are in engaging in pay-per-use activities (Moeller & Wittkowski, 2010). Furthermore, one fundamental aspect of Prospect Theory is the Endowment Effect, i.e., people's tendency to subjectively value things they own higher than things owned by others (Kahneman et al, 1991). This also showed in the exploratory findings as respondents showed an emotional bias towards car ownership. The importance of ownership is closely linked to materialism, thus more materialistic individuals will prioritize ownership higher than less materialistic individuals

(Browne & Kaldenberg, 1997). We therefore believe that consumers importance of ownership will inhabit the adoption intentions, meaning it will moderate the effect of the offerings:

H10: Materialism negatively moderates the relationship between perceived value in terms of Economical, Environmental, Convenience and Variety and adoption intentions of a u-PSS

H11: Materialism positively moderates the relationship between perceived risks in terms of Performance, Financial and Flexibility and adoption intentions of a u-PSS

All hypotheses are summarized in Table 1 below.

Hypotheses	
H1:	*An emotional gain framing of a u-PSS offer will lead to higher perceived value in terms of Economical, Environmental, Convenience and Variety than a neutral gain framing of a u-PSS offer*
H2:	*An emotional gain framing of a u-PSS offer will lead to lower perceived risk in terms of Performance, Financial and Flexibility than a neutral gain framing of a u-PSS offer*
H3:	*A higher perceived economical value will lead to a higher adoption intention of a u-PSS*
H4:	*A higher perceived environmental value will lead to a higher adoption intention of a u-PSS*
H5:	*A higher perceived variety value will lead to a higher adoption intention of a u-PSS*
H6:	*A higher perceived convenience value will lead to a higher adoption intention of a u-PSS*
H7:	*A lower perceived performance risk will lead to a higher adoption intention of a u-PSS*
H8:	*A lower perceived financial risk will lead to a higher adoption intention of a u-PSS*
H9:	*A lower perceived flexibility risk will lead to a higher adoption intention of a u-PSS*
H10:	*Materialism negatively moderates the relationship between perceived value in terms of Economical, Environmental, Convenience and Variety and adoption intentions of a u-PSS*
H11:	*Materialism positively moderates the relationship between perceived risks in terms of Performance, Financial and Flexibility and adoption intentions of a u-PSS*

Table 1: Overview of the Thesis Hypotheses

5.3 Confirmatory study design

An experimental case study using scenarios was the chosen method for gathering the quantitative data, since it allows for testing causality between the hypothesized variables. Further, experiments are suitable as it allows for manipulation of independent variables, in this case, emotional framing (Bell et al., 2019), and to explore causality with dependent variables, since the method deals with the three conditions of causality, namely covariation, temporal precedence, and control for other variables (Söderlund, 2010). To ensure causality, the study has a posttest-only control group design, where one group receives the treatment (emotional framing) and the other control group does not, and data is collected after the treatment through a survey. Further, the two groups only receive either a treatment or control scenario through random assignment, thus a between subject design is used (Söderlund, 2010). Since experiments facilitates to illustrate treatments that are difficult to depict, in this case consumers reaction to an emotional framing, and people have the ability to engage in fictitious situations as if they were reality (Söderlund, 2010), it is argued as a suitable method for this case.

5.4 Pre-study/Pilot test

5.4.1 Pre-study Design

An initial pre-study was conducted to test the manipulation of the stimuli for the independent variable identified in the quantitative study, thus emotional framing, to ensure that respondents interpret it as intended. Thus, two fictitious scenarios were developed based on the findings from the qualitative study. The treatment scenario represented the manipulation of emotional framing, with a description of a car-sharing offering, highlighting emotional aspects mentioned during the qualitative interviews. Wordings such as spontaneous, freedom, comfort, and safety were used. The control scenario represented a neutral offering, only highlighting the functionality aspects of a car-sharing. See Appendix 4 for the scenarios. By conducting this pre-test, we were able to objectively verify whether the respondents understood the offerings as intended (Saunders et al., 2012).

The scenarios were part of a survey, created in the program Qualtrics and distributed through social media to the authors' private networks between 2nd-6th of November 2021. Due to time constraints, we argued that conducting the pre-study to our closer network was more favorable

than not conducting it at all, as recommended by Saunders et al., (2012). Respondents were randomly assigned either the treatment or control scenario. After being exposed to the stimuli, respondents were asked to rate their perception of the offering as emotional or functional through six questions, see Appendix 4. The statements were measured on a 7-point Likert scale from *"strongly agree"* to *"strongly disagree"*.

5.4.2 Pre-study Results

In total, 77 respondents participated in the survey whereas 61 completed the survey, where 31 received the control scenario, thus a neutral framing only highlighting the functionality aspects, and 30 received the manipulation scenario of an emotional framing. The results were analyzed using IBM SPSS. The six questions were compiled into two multi-item indexes measuring the underlying variables; functional and emotional, showing high internal consistency with a Cronbach's Alpha of >0,76. An independent-samples t-test further showed differences between the two groups on a 95% confidence interval, in terms of emotional perception ($M_{treatment}$ = 4.4333, $M_{control}$ = 3.6452, p<0.047), whereas the functional perception did not show a significant difference between the groups ($M_{treatment}$ = 4.0111, $M_{control}$ = 4.6022, p<0.076) (see Table 2). The pretest thus confirms that the emotional framing was perceived as more emotional, but that there was no significant difference in perceived functionality. Thus, the scenarios were refined for the main study to achieve a significant perceived difference.

Experienced value	Manipulation	N	Mean	Std. devidation	t	P
Functional value	Control	30	4.60	1.07	1.80	0.076
	Treatment	31	4.00	1.47	1.79	0.079
Emotional value	Control	30	3.65	1.73	-2.03	0.047*
	Treatment	31	4.43	1.26	-2.04	0.046*

Significance level: *≤ 0.05

Table 2: Display of the independent-samples t-test result

5.5 Main Study

5.5.1 Main Study Design

For the main study, a self-completion questionnaire was used for data collection for the experimental research. The questionnaire was formed through the survey tool Qualtrics, taking into account the findings of the pre-study to ensure that respondents perceive a difference between the manipulations. All questions had forced answers, ensuring that respondents completed the entire survey, and were expressed in Swedish since the sample consisted of Swedish speaking respondents. The complete survey can be found in Appendix 5. Prior to distribution of the questionnaire, it was pilot tested on a few respondents (N=6) as proposed by Bell et al (2019) to receive feedback on its content.

Initially, respondents were asked whether they hold a driver's license, where respondents who do not were excluded for further participation in the survey. This was done to ensure that respondents had a general propensity and ability to buy a car or use a car-sharing, removing potential confusion due to lack of knowledge about car use. Respondents were then given information about a situation where they have recently moved to a new city and need to solve their everyday transportation needs with either purchasing a car or using a car-sharing service, followed by a control question to ensure that they were well understood with the situation. Following, respondents were randomly assigned (possible through the survey tool) either the control group or manipulated treatment. Both scenarios involved an advertisement of a car-sharing service named “PoolCar" in the form of a flyer, where the control group was exposed to a description of an offering in a neutral way only describing the functional aspects, whereas the treatment group was exposed to a description emphasizing emotional aspects, with wordings inspired by the qualitative study. Before continuing to the questionnaire, respondents answered a manipulation check to ensure they perceived a difference between the control- and manipulated scenario.

Following exposure to the control- or manipulated stimuli and manipulation check, all respondents received the same questionnaire. Initially, respondents were asked about the intentions to adopt the car-sharing offering. Following, questions were asked regarding their perceived value of the offering in terms of *Economical, Environmental, Variety* and

Convenience, as well as perceived risks in terms of *Performance*, *Financial* and *Flexibility*. The measurements are presented in more detail in section 5.5.2. Before proceeding to personal characteristics and demographic questions, respondents were asked a control question to ensure they had read and understood the car-sharing ad they had been exposed to. Following, respondents were asked about their materialistic tendency, emphasizing that they should not consider the situation presented to them, as this trait might have a moderating effect on the relationship between independent and dependent variables. Lastly, respondents were asked demographical questions to enrich the findings. We chose to structure the questionnaire by beginning with the most important questions and finishing with the least important as recommended by Malthotra (2010).

5.5.2 Survey Measures

The majority of the measurements and scales used in the survey are adapted from previously used and proven measures to the greatest extent possible to fit the context of the study. One measure, namely *Convenience Value*, was created solely from the exploratory findings. The measurements were further translated to Swedish, facilitating for respondents to understand and answer the questions. The measures consisted of three or four multi-item scales and were combined into index variables, where a Cronbach's Alpha-test of >.0.7 was used to increase their reliability. Further, all variables were measured on a 7-point Likert scale from "*strongly disagree*" to "*strongly agree*" with "*neither agree or disagree*" in between, except the manipulation check which consisted of three questions regarding respondents' perception of the offering using the Osgood 7-point scale between bipolar, contrasting adjectives (Friesen et al, 1988, s. 41), namely "Fact-based" and "Value-loaded", "Factual" and "Alluding to emotions", and lastly "Neutral" and "Emotional". All measurements are described in further detail in Table 3.

Constructs and Source	Item	Cronbach Alpha
Purchase Intention (PI) inspired by (Kim et al., 2018)	PI1: I intend to use a carpool in the near future PI2: If the choice is between buying a new car or using PoolCar I would choose to use a PoolCar.	0.867
Economic Value (EV) adapted from (Day et al., 2020)	EV1: Compared to buying a new car it is more economically beneficial to use PoolCar EV2: Compared to buying a new car does PoolCar give me more value for money EV3: By using PoolCar's services I am able to lower my transportation costs compared to buying a new car EV4: Compared to buying a new car, using PoolCar give me an opportunity to save money	0.929
Environmental Value (EnV) inspired by (Wang et al., 2013; Chen and Chang (2013)	EnV1: Compared to buying a new car, using PoolCar's service save natural resources and energi EnV2: Using PoolCar's service reduces harmful environmental effects compared to buying a new car EnV3: Using PoolCar's service is better from an environmental perspective compared to buying a new car EnV4: Compared to buying a new car, using PoolCar reduces the consumption of natural resources and energy	0.902
Variety Value (VV) adapted from (Day et al., 2020)	VV1: Compared to owning a car, using PoolCar gives me the opportunity to utilize a variety of cars VV2: Using PoolCar gives me the opportunity to change cars more oftan, than if I would own a car VV3: The variation of cars which PoolCar offers is higher, than if I would own a car VV4: PoolCar's service allows me use different cars more often, than if I would own a car	0.845
Convenience Value (CV) created from exploratory study	CV1: Using PoolCar allows me to save time on maintenance, compared to owning a car CV2: Compared to owning a car, using PoolCar decreases the energy I devote to maintaining the car CV3: Using PoolCar makes the maintenance easier, than if I would own a car	0.893
Performance Risk (PR) inspired by (Lindloff et al., 2014)	PR1: I feel worried that there will not always be car available close to me when I need one PR2: I feel worried that there will not always be cars available which suits my needs PR3: Using PoolCar make me feel the need to plan more, than if I would own a car	0.817
Financial Risk (FR) inspired by (Lang, 2018)	FR1: Paying for the usage of PoolCar feels like waste of money compared to owning a car FR2: Paying for the usage of PoolCar just for a shorter period of time feels like waste of money, then if I would own a car FR2: It will cost a lot to use PoolCar compared to owning a car if I use it often	0.814
Flexibility Risk (FeR) (Lindloff et al., 2014)	FeR1: Using PoolCar give me less flexibility, than if I would own a car FeR2: Using PoolCar make me feel less spontaneous, than if I would own a car FeR3: Using PoolCar makes me feel more bound, than if I would own a car	0.847
Materialism (M) adapted from (Richins, 2004)	M1: The things I own say a lot about how well I succeed in life M2: Buying things brings me a lot of joy M3: I admire people who own expensive houses, cars and clothes M4: My life would be better if I owned certain things that I do not currently do	0.775

Table 3: Detailed description of survey measurements.

5.5.3 Sample and Sampling

The survey was distributed on the social media platforms Facebook and LinkedIn between the 8th-16th of November 2021. A link for the questionnaire along with a short text about the thesis topic was posted in various open and closed groups related to different cities and towns located across Sweden. This distribution method was chosen since it facilitates gaining a geographically diverse sample in a cost- and time efficient way, since no funding was possible to distribute the survey (Bell et al., 2019). Thus, a convenience sample was used to facilitate an effective distribution.

In total, 416 respondents participated in the survey, however not all participants completed it or were in the target group. 37 respondents did not hold a driver's license and were thus excluded from the survey. Out of the remaining 379 respondents, 233 completed the survey. Among these, the respondents who answered incorrectly on the control question were

excluded, as well as respondents who answered the questionnaire in less than four minutes and longer than 15 minutes, as these deviated extensively from the median time measured by the authors during the setup of the survey. This might indicate that they were not attentive to the survey content. No straight-line answer patterns were identified; thus, no further responses were excluded due to this. The final sample consisted of 188 responses in the age range of 20-64 years. The control group had 91 respondents (48.4%) and the manipulation group 97 respondents (51.6%) and had a median age of 38.8 and 39.2 respectively. The two groups were further equal in terms of other demographics and characteristics as seen in Table 4.

Table 4: Demographics and characteristics of the control- and manipulation groups.

5.5.4 Ethical Considerations

The ethical considerations were taken into account throughout the quantitative data collection

	Gender			Household size			Location				Carowner		Carpool experience	
Group	Female	Male	Do not want to say	Singel	Two	Three or more	Large city	Mid-sized city	Small city	Rual area	Yes	No	Yes	No
Treatment	67%	33%	-	28%	34%	38%	64%	21%	10%	5%	59%	41%	25%	75%
Control	59%	40%	1%	30%	34%	36%	69%	21%	4%	6%	60%	40%	34%	66%

and analysis process. Firstly, all respondents were informed about the study's purpose before starting the survey. The survey was voluntary, and the respondents could quit it at any time, thus the ones who conducted the survey consented to participate in the study. Secondly, we ensured anonymity and confidentiality throughout the study and data storage process since we did not share the data with a third-party or gather any personal information more than general information from the respondents, thus they were kept anonymous. Hence, enabling as truthful and honest answers as possible (Bell et al., 2019).

5.6 Critical Review of Data Quality

To ensure that the quantitative study provides an accurate description of reality and measures what is intended, it is of importance to assess the quality of the data in terms of reliability, validity, and replicability (Bell et al., 2019). Thus, these factors are analyzed below.

5.6.1 Reliability

To ensure that the study has been conducted in accordance with established research methods, thus producing reliable and accurate results, the study needs high reliability (Bell et al., 2019). Two constructs of reliability, namely stability and internal reliability (ibid.), are discussed below:

5.6.1.1 Stability

Stability addresses whether the measure is stable over time and does not fluctuate within the contextual conditions of the study, meaning that similar results would be found with little variation if the measures were tested twice on the same sample (Bell et al., 2019). To achieve stability in the results, a pre-study was conducted of the manipulation. To increase the stability further, it would have been advantageous to test the final manipulation, as well as the questionnaire, numerous times to measure its stability in producing the same results (ibid.). Time constraints due to the mixed-method approach limited this possibility, although the final study was pilot tested on a smaller sample (N=6), which was assessed as satisfactory.

5.6.1.2 Internal Reliability

Internal reliability concerns that the multi-item scale indexes are measuring the intended underlying variable (Bell et al., 2019). To ensure high internal reliability we performed Cronbach's alpha tests on all multi-item scale measures, where all measured higher than the accepted internal validity rule of 0.7 (Table 5) (ibid.).

Constructs and Source	Cronbach Alpha
Purchase Intention (PI)	0.867
Economic Value (EV)	0.929
Environmental Value (EnV)	0.902
Variety Value (VV)	0.845
Conveniance Value (CV)	0.893
Performance Risk (PR)	0.817
Financial Risk (FR)	0.814
Flexibility Risk (FeR)	0.847
Materialism (M)	0.775

Table 5: Overview of the multi-item scale measures Cronbach Alpha result

5.6.2 Validity

Validity refers to which extent the study measures what it is aimed to measure and whether the relationship between observable variables is causal (Saunders et al., 2012). To ensure the validity of the study, the internal validity, measurement validity, external validity and ecological validity has been evaluated.

5.6.2.1 Internal Validity

Internal validity addresses whether there is a casualty in a relationship between variables, if the independent variable is truly responsible for the variations in the dependent variable (Saunders et al., 2012; Bell et al., 2019). The study is based on hypotheses generated from research, thus previously tested causal relationships which increases internal validity. Further, randomizing the assigned stimuli to the respondents is a prerequisite to reach internal validity (Shadish, W. R. et al., 2002), which was possible through the questionnaire tool. The stimuli, thus the emotional framing of the "PoolCar"-ad, was the only differentiated feature between the control and treatment groups, thus the difference in outcome variables between the groups can be attributed to the stimuli (Bell et al., 2019). We further used the same, fictitious brand name for both groups, to avoid any personal prejudices that would affect the result. Worth mentioning

however, is that the "PoolCar"-ad was slightly longer for the manipulation group, which arguably could affect respondents' perceived effort and thus result. However, this text was only marginally longer, thus not considered to affect the results. One error which could potentially harm the internal validity is having the manipulation check in the beginning of the survey, which could affect responses thereafter. If we would have distributed the survey again, we would have put the manipulation check in the end. In summary, the internal validity is considered satisfactory.

5.6.2.2 Measurement Validity

Measurement validity denotes whether a measurement captures the concept it is intended to capture (Saunders et al., 2012). Since there is no extensive research specifically on u-PSS adoption, we adapted measures by previous academic research to the greatest extent possible, which strengthens the measurement validity (Bell et al., 2019). However, since the study was based on the qualitative study, one variable was not translatable to predefined measures. Further, all measurements were translated from English to Swedish. These factors could potentially affect measurement validity; however, it is considered satisfactory.

5.6.2.3 External Validity

External validity concerns the generalizability of the study, whether conclusions can be drawn and generalized to a larger population beyond the study context (Bell et al., 2019). The use of a non-probability sample could potentially violate the generalizability of the findings, as we cannot conclude that the sample represents the larger population of driver's license holders in Sweden. However, since our study is an experiment with people to test theory, which inherently is generalizable, random sampling is not necessary to draw statistical conclusions if the respondents have been randomly assigned treatment or control stimuli (Söderlund, 2010), which our sample has.

5.6.2.4 Ecological Validity

Ecological validity addresses whether the study's findings are applicable in people's everyday natural setting (Bell et al., 2019). The respondents had to immerse themselves in a fictive scenario and react to a flyer ad of a fictive brand, and consequently answer a questionnaire online via their computer or other device. Thus, we cannot ensure that an artificial presentation of the study can be generalized into the everyday natural setting. However, since humans have

the ability to immerse themselves in fictive situations and react to them as if they were reality (Söderlund, 2010), ecological validity is considered satisfactory.

5.6.3 Replicability

Replicability refers to the extent of reproducibility of the study, meaning whether it is possible or not to support or disprove the findings by replicating the study (Bell et al., 2019). The theory, methodology and analysis has been described in detail, facilitating a replication of the study. Further, as previously mentioned, all measures except for one are adapted from well-established multi-scale measures. Where the exploratory study conducted has influenced hypotheses and measures, this has been clearly stated. We, therefore, argue that high replicability can be ensured.

5.7 Analysis and Results

5.7.1 Analytical Tools

The collected dataset from the survey was exported and statistically analyzed using the analytical tool *IBM SPSS 27.* As stated in section *5.6.1.2 Internal reliability,* all multi-item scale measures went through a Cronbach's Alpha test in order to compile them into indexes measuring the underlying variables. To compare differences between the control and treatment groups, thus test the hypotheses, Independent Sample T-tests were conducted. To analyze direct relationships between adoption intention and perceived values and risks, Linear Regressions were performed. The moderation analysis was conducted through including an interaction term of the independent variable and moderator in the regression (Cohen, 2013). Hence, multiplying their centered predictors into an interaction predictor variable, then entering both mean centered predictors and the interaction predictor into the regression analysis. The confidence interval of minimum 95% was used for all tests, in the case of a 90% confidence interval this is clearly stated.

5.7.2 Manipulation Check

To confirm that the treatment group perceived the offering as more emotional compared to the control group, an initial manipulation check was conducted using independent samples t-test. The test showed significant differences between the groups, where the group which was

exposed to the emotional stimuli had a higher level of emotional perception of the offering ($M_{treatment}$ = 3.945, $M_{control}$ = 3.396, p = 0.01). Thus, further analysis of consumers' responses can be ascribed to the manipulation.

5.7.3 Testing of Hypotheses

5.7.3.1 Framing Effects

To analyze whether the emotional stimuli affected consumers' perceived values and risks, thus differences between the control and manipulation group, independent sample t-tests were conducted of all variables addressing these. The test showed no significant differences between the two groups for any of the dependent variables (see Appendix 6). Hence, that there is no significant difference in perceived value nor perceived risk when exposed to an emotional framing compared to functional, thus, H1 and H2 are not supported.

Although there was no significant difference between control and treatment group in terms of perceived values and risks, we will proceed with analyzing the subsequent steps of the overall conceptual model using the entire sample. This is of interest as it allows us to determine what perceived value and risk factors affect consumers' adoption intention of u-PSS within automotive, thus strengthening the answer to the first research question.

5.7.3.2 Perceived Value & Perceived Risk

Analyzing the correlations between the independent variables and adoption intention on the entire sample, thus not taking into account if the respondents are in the control- or treatment group, several significant relationships are identified. All variables considering perceived value have a positive correlation with *Adoption intention* i.e., *Economic*- (0,597, sig<0.001), *Environmental*- (0.345, p<0.001), *Variety*- (0.210, p=0.004), and *Convenience Value* (0.422, p<0.001), thus indicating that a higher perceived value correlates with consumers adoption intentions. All the perceived risk factors further correlate negatively with *Adoption intention,* i.e., *Performance*- (-0.375, p<0.001), *Financial*- (-0.568, p<0.001), and *Flexibility* (-0.435, p<0.001), thus indicating that the higher perceived risk correlates negatively with consumers' intentions to purchase.

A regression analysis explores these correlations, hence how much variation in consumers' adoption intentions can be explained by variation in their perceived value and risk. With *adoption intention* as the independent variable, all variables except for *Environmental Value* and *Variety Value* are significant in explaining the variation. However, with a slight risk of multicollinearity (Condition index = 21.686), further excluding *Performance Ris*k eliminates the risk of multicollinearity (Condition index = 19,030), possibly incurred by the slightly high correlation to *Flexibility Risk* (0.526, p<0.001). The final model showed a significant (p<0,001) Adjusted R Square of 0,516 with a standard error of estimate of 1,382, and no signs of autocorrelation (Durbin-Watson=1,938) nor heteroskedasticity (see Appendix 7 for scatter plot). Thus, H3, H6, H8 and H9 are supported, whilst H4, H5 and H7 are not supported. The results from the final regression (Table 6) are shown below:

Variable	B	Std. error	t	Sig
Economical value	0.486	0.077	6.310	<0.001***
Convenience value	0.285	0.082	3.475	<0.001***
Flexibility risk	-0.322	0.077	-4.210	<0.001***
Financial risk	-0.232	0.078	-2.979	0.003**

Significance level: ***≤ 0.001

Table 6: Regression analysis of the effect of consumers perceived value and risk on adoption intention

5.7.3.3 Materialism

To identify whether Materialism, thus how much consumers value ownership, moderates the relationship between perceived value/risk and adoption intention, we conducted a moderation interaction effect analysis with the independent variables showing significant results in the regression, namely *Economical Value, Financial Risk, Flexibility Risk* and *Convenience Value.* This was done by standardizing all variables, then multiplying them with the dependent variable (materialism) into four interaction prediction variables. The standardized independent variables were run seperately in a linear regression analysis with the standardized dependent variable and the interaction prediction variables for each independent variable. From the analysis, we can conclude that materialism significantly moderates the relationship between *Flexibility Risk* and *Adoption intention* ($\beta = 0.324, p = 0.011$) and *Financial Risk* and *Adoption intention* ($\beta = 0.271, p = 0.02$), see Appendix 8, but has no significant

moderating effect on perceived value factors. Thus, H10 is not supported whilst H11 is partially supported. This result shows that the more materialistic the consumer is, the higher flexibility risk and financial risk they perceive with a u-PSS offering.

5.7.4 Additional Analyses

Since there was no significant difference between the control- and manipulation group in terms of perceived values and risks, a series of additional analyses were conducted to gain a deeper understanding of our findings.

5.7.4.1 Emotional Framing and Adoption Intention

The difference between the control- and treatment groups in terms of *Adoption intention* was further explored through an independent sample t-test, showing significance on a 10 % level, where the treatment group showed lower adoption intention than the control group ($M_{treatment}$ = 3.701, $M_{control} = 4.181$, p = 0.0098), thus implicating that consumers exposed to an emotional framing have lower adoption intention than the ones exposed to a neutral framing of a u-PSS offering.

5.7.4.2 Car Owners

We further analyzed the data sample with regards to whether the respondent is a car owner or not. Without taking whether respondents were in the manipulation or control group into account, we compared the answers of car owners versus non-car owners, where significant differences can be identified. Firstly, *adoption intention* is lower for car owners compared to respondents who do not own a car ($M_{carowner}$= 3.4732, $M_{Non-carowner}$= 4.6118, p<0.001). Further, car owners show lower perceived value on numerous variables compared to non-car owners, as well as higher perceived risk, summarized in Table 7.

	Perceived value			Perceived risk	
	Economical	**Environmental**	**Convenience**	**Financial**	**Flexibility**
Car owner	4.2478	5.3192	5.6131	3.4866	5.2887
Non-car owner	4.7257	5.9737	6.1226	2.8289	4.3158
p-value	0.044*	<0.001***	0.009**	0.008**	<0.001***

Significance level: ***≤ 0.001

Table 7: Display of the perceived value and risk for car and non-car owners

Further, when comparing car owners versus non-car owners between the control- and manipulation group, we see that among respondents in the treatment group, car owners show lower *adoption intention* than non-car owners, ($M_{carowner}$= 3.2632, $M_{Non-carowner}$= 4.3250, p<0.009), as well as lower perceived *Environmental Value* ($M_{carowner}$= 5.2456, $M_{Non-carowner}$= 6.1000, p<0.001), *Convenience Value* ($M_{carowner}$= 5.4444, $M_{Non-carowner}$= 6.2157, p=0.002) and higher *Flexibility Risk* ($M_{carowner}$= 5.3509, $M_{Non-carowner}$= 4.4333, p=0.002). For the control group, car owners show lower *adoption intention* than non-car owners: ($M_{carowner}$= 3.6909, $M_{Non-carowner}$= 4.9306, p=0.003) and higher *Flexibility Risk* ($M_{carowner}$= 5.2242, $M_{Non-carowner}$= 4.1852, p<0.001). Thus, the tendency for carowners to have a lower adoption intention, perceived value and higher perceived risk identified across the whole sample showed within groups as well.

5.7.4.3 Car-sharing Experience

Further analyzing the entire sample, respondents who have previous experience with a car-sharing service have higher *adoption intention* than respondents who have not ($M_{Experienced}$= 5.5827, $M_{Non-Experienced}$= 4.7818, p<0.001), as well as higher perceived *Environmental Value* ($M_{Experienced}$= 5.9273, $M_{Non-Experienced}$= 5.4417, p=0.023). Analyzing the treatment group separately, respondents with experience have higher *adoption intention* than people who have not ($M_{Experienced}$= 4.5625, $M_{Non-Experienced}$= 3.4178, p<0.001) and perceived *Environmental Value* ($M_{Experienced}$= 6.1354, $M_{Non-Experienced}$= 5.4212, p=0.023). Within the control group, respondents who have experience with car-sharings have higher *adoption intention*

($M_{Experienced}$= 4.9516, $M_{Non-Experienced}$= 3.7833, p=0,007). Thus, the tendency for consumers with previous experience of car-sharing offerings to have a higher adoption intention and perceived environmental value across the whole sample showed within the groups as well.

5.7.5 Summary of Findings

As seen in Table 8 below, our confirmatory study showed that hypothesis H3, H6, H8 and H9 were supported and H11 was partly supported, while the rest were rejected. Thus, showing that perceived higher *Economical-* and *Convenience value* and perceived lower *Financial-* and *Flexibility risk* increases consumers' adoption intention. Furthermore, the findings show that *materialism* partly moderates the relationship between the perceived risk and the adoption intention. The confirmatory study also showed that if consumers owned a car or had tried a car-sharing service before also affected their adoption intentions. Lastly, the results also show that emotional framing through text does not lead to a higher adoption intention of a u-PSS offering.

Hypotheses		Supported or Rejected
H1:	*An emotional gain framing of a u-PSS offer will lead to higher perceived value in terms of Economical, Environmental, Convenience and Variety than a neutral gain framing of a u-PSS offer*	Rejected
H2:	*An emotional gain framing of a u-PSS offer will lead to lower perceived risk in terms of Performance, Financial and Flexibility than a neutral gain framing of a u-PSS offer*	Rejected
H3:	*A higher perceived economical value will lead to a higher adoption intention of a u-PSS*	Supported
H4:	*A higher perceived environmental value will lead to a higher adoption intention of a u-PSS*	Rejected
H5:	*A higher perceived variety value will lead to a higher adoption intention of a u-PSS*	Rejected
H6:	*A higher perceived convenience value will lead to a higher adoption intention of a u-PSS*	Supported
H7:	*A lower perceived performance risk will lead to a higher adoption intention of a u-PSS*	Rejected
H8:	*A lower perceived financial risk will lead to a higher adoption intention of a u-PSS*	Supported
H9:	*A lower perceived flexibility risk will lead to a higher adoption intention of a u-PSS*	Supported
H10:	*Materialism negatively moderates the relationship between perceived value in terms of Economical, Environmental, Convenience and Variety and adoption intentions of a u-PSS*	Rejected
H11:	*Materialism positively moderates the relationship between perceived risks in terms of Performance, Financial and Flexibility and adoption intentions of a u-PSS*	Partially Supported

Table 8: Summary of the hypotheses testing result

6. Discussion

This chapter presents a discussion regarding the findings from the exploratory and confirmatory study in relation to theory. Hence, expanding, confirming, and contributing to the theoretical framework. Further, these findings will be connected to the thesis research questions.

6.1 Exploratory Implications

This thesis was designed to answer two research questions, where the exploratory study aimed to explore:

What perceived value and risk factors affect consumers' adoption intention towards a u-PSS compared to a linear offering?

According to the TPB logic, consumers' intention to adopt a u-PSS is dependent on their attitude towards it, the subjective norm, as well as their perceived behavioral control to do so (Ajzen, 1988). From the interviews, we could conclude that consumers in general have a positive attitude towards carsharing offerings, where social norms of environmental concern endorse it. However, consumers lacked perceived behavioral control, meaning their own belief in their ability to use car sharing services, being excused by their transportation pattern, location, household size, and other individual specific factors. This is where we find that consumers are hindered. Of importance here is to distinguish that behavioral control is about what consumers *perceive*, not actual control. Thus, we found that despite some having car-sharing services easily available, the time and money to use them, and a car usage pattern that would better suit its temporary utilization, consumers did not perceive the ability to be dependent on a u-PSS. We could therefore identify that the outcome in terms of choosing a u-PSS offering, could be dependent on consumers' *perceived* behavioral control, influenced by cognitive and emotional biases, which does not necessarily correspond to *actual* behavioral control.

The logic of Prospect Theory suggests that individuals make decisions based on the potential *gains* or *losses* in relation to their specific situation, or *reference point*, rather than in absolute

terms (Tversky & Kahneman, 1981). The exploratory study indicated that consumers assign different types of values and risks to the two prospects of car owning and car-sharing, where the values associated with car ownership were connected to emotional needs, whilst the risks were associated with functional needs, and vice versa for car-sharing. Thus, it appears that consumers have an emotional bias towards car ownership when evaluating the decision of the two prospects. This indicates that some consumers in need of mobility are irrational in their choice, where they tend not to maximize utility but rather evaluate their loss and gain factors in an asymmetric manner in relation to their reference point in accordance with Prospect Theory (Tversky & Kahneman, 1981). This emotional bias further might explain why consumers perceive less behavioral control. Hence, the emotional perceived values of car owning e.g., spontaneity, freedom and control, and emotional risks with losing these, decrease their perceived ability to adopt a sharing u-PSS, thus affecting the outcome.

Prospect Theory further suggests that individuals faced with a riskful choice which leads to gains tend to overweight the value of certain outcomes despite it having lower expected utility, thus being risk-averse (Tversky & Kahneman, 1981). The exploratory study showed that the choice of mobility of u-PSS over car owning, the risks identified are associated with emotional needs, where the feeling of loss of freedom, spontaneity and independence were the most predominant. To avoid these losses, respondents were willing to accept a higher financial burden, thus purchasing a car rather than paying for the usage. This arguably means that consumers prefer a lower expected outcome in monetary terms that car ownership entails, for the assurance of avoiding these losses, instead of a higher expected monetary outcome that car-sharing entails, for the gamble of these losses to incur, thus engaging in risk-averse behavior. Therefore, reducing these risks by assuring through emotional arguments of e.g., increased feeling of safety and freedom could, according to the exploratory findings, make consumers more inclined to adopt a u-PSS, hence increasing adoption intention.

Aligned with the arguments of ElHaffar et al. (2020), our exploratory findings thus show that theories in the rational paradigm, relying on the notion that individuals consciously maximize utility and forcing an alignment between attitudes, intentions, and behaviors, fail to explain the behavioral outcome in terms of u-PSS. Thus, our study suggests that theories influenced by emotional and cognitive biases such as Prospect Theory, seem more suitable to bridge the green attitude and behavior gap. Further, our exploratory findings ultimately showed that consumers'

perceived risks and values associated with car-sharing compared to car owning that were the most prominent can be translated into the following: Value factors: *Economical, Environmental, Variety,* and *Convenience*; Risk factors: *Performance, Financial,* and *Flexibility.*

6.2 Confirmatory Implications

Followed by, and based upon the findings of the exploratory study, the confirmatory study aimed to confirm the exploratory findings, and answer the following:

How can a u-PSS offering be framed to minimize consumers' perceived risk and maximize perceived value?

Framing a u-PSS in an efficient way through providing information to reassure consumers concerning perceived values and risks has proven critical in putting PSS adoption in practice (Day et al., 2020). Since the exploratory study indicated that consumers have an emotional bias towards car ownership, we argued that an emotional framing of a u-PSS offering could potentially increase its perceived value, decrease perceived risk, and consequently increase adoption intention. However, the results indicated no significant effect of an emotional framing compared to a neutral framing only highlighting the functional aspects in terms of perceived value and risk factors, nor adoption intention. Thus, the confirmatory study results contradict both our hypotheses and the implications from the exploratory study, namely that translating the emotional values consumers associate with car ownership to u-PSS would increase adoption intention. Since the framing of a u-PSS offering needs to be provided with the right kind of information to increase perceived value and decrease perceived risk (Day et al., 2020), perhaps an emotional framing was not suitable in this case.

The confirmatory study further showed that a higher perceived economical- and convenience value, and lower perceived financial- and flexibility risk, led to higher adoption intention of a u-PSS, in accordance with Prospect Theory, which states that individuals make choices based on the highest perceived value and lowest perceived risk (Tversky & Kahneman, 1981). Hence, indicating that consumers evaluate sharing u-PSS offerings mainly on factors relating to monetary and availability value and risks, ultimately affecting their adoption intention. This

validates that perceived financial benefit is critical to PSS adoption (Schrader, 1999; Rexfelt & Ornäs, 2009), especially since a u-PSS cannot exceed car ownership on availability, in order for the consumers to perceive the trade-off between perceived benefit and sacrifice of a u-PSS as exceeding the value of car ownership (Lovelock, 2000).

The results further indicate that materialism moderates the relationship between perceived risk and adoption intention, thus showing that a consumers' propensity to value having things in their possession increases the effect of perceived Flexibility- and Financial risk, thus leading to a lower adoption intention. This finding strengthens the notion of the *Endowment Effect*, meaning individuals value things they own higher than those owned by others, and refraining from it is perceived as a loss, thus they become loss-averse (Kahneman et al., 1991). This notion might explain why consumers' perceived value was not affected by materialism, as it merely influences potential losses, thus perceived risks. This is further strengthened by the findings that consumers who currently own a car were less likely to adopt a u-PSS and did in general experience higher risk and less value than non-car owners. Hence, indicating that those consumers have a strongly rooted reference point in favor of ownership. This might further explain the non-significant results of the manipulation, arguably because consumers might not have been fully able to immerse themselves into the scenarios presented. This could potentially be further strengthened with the fact that consumers who have previous experience with car-sharing services had higher adoption intention and perceived environmental value than those who have not.

6.3 Combining Exploratory and Confirmatory

The overarching purpose of this thesis was to explore consumers' adoption of u-PSS within automotive by answering the two research questions stated above. Analyzing the somewhat divergent findings from the exploratory and confirmatory studies contribute with important insights which are further elaborated on below.

6.3.1 Risk & Value Factors

As both our studies show, some perceived risk and value factors are of higher importance for consumers than others when choosing between sharing u-PSS and car ownership. Hence, implying that these factors are more important to emphasize to increase adoption of sharing u-

PSS. The studies show that the factors of highest importance are *Convenience value, Economical value, Flexibility risk and Financial risk.*

According to Lane & Potter (2007) consumers are more likely to adopt products and services which are easy to use and time-saving. Thus, if a car-sharing service saves the consumer time and is easy to use compared to car ownership they are more likely to adopt it. Our studies show that *Convenience value,* that is, the value of adopting behaviors that are easy and that do not require higher perceived effort or time (Joshi & Rahman, 2015; Lane & Potter, 2007) significantly affected consumers' adoption intention. Hence, emphasizing the convenience of u-PSS compared to the inconvenience of car ownership in terms of maintenance is of high importance. Furthermore, relating to the *Convenience value* is the *Flexibility risk,* that is, the risk of not being in control of when and where the service is being used (Tukker, 2015; Schrader, 1999). Some scholars argue that the perceived flexibility increases when using a service instead of owning the product, which would increase the adoption intention of a u-PSS (Moeller & Wittkowski 2010; Gullstrand Edbring et al. 2016). However, our results indicate that this is not applicable to sharing u-PSS within automotive. Our studies rather strengthen the findings of Tukker (2015), namely that the adoption intentions may be hindered by the perceived loss of freedom over consumers' decisions since they do not have ownership over the u-PSS. The perceived risk of inflexibility, feeling bound and less spontaneous was shown to be one of the main barriers to car-sharing adoption. Furthermore, although Performance Risk, thus the risk of whether or not the performance of the product or service will be as expected (Schaefers et al. 2016), was excluded from the linear regression due to the risk of multicollinearity, we still recognize that this risk was a prominent factor affecting adoption among consumers both in the exploratory and confirmatory study. Thus, emphasizing the visibility of cars to affect perceived availability and convenience to increase the feeling of freedom and spontaneity is therefore of importance.

Previous research has further shown that the cost of a product or service is an important contributor to the perceived value and is strongly considered in the adoption decision (Sweeney & Soutar, 2001). Our study shows that *Economical value,* the value of a service as a function of perceived service quality relative to price (Hallowell, 1996) and *Financial risk,* the concern about the financial loss consumers experience due to a purchasing decision (Kang & Kim, 2013), significantly affect u-PSS adoption within automotive. This extends the findings of

Rexfelt & Ornäs (2009) and Schrader (1999), that perceived financial benefit is critical to PSS adoption, thus that this is also applicable to u-PSS. Our study further shows a two-sided view of costs related to value and risk with u-PSS compared to ownership. Consumers perceived paying per usage as affordable with lower annual costs, but at the same time expensive since each single trip was perceived as more costly and a waste of money since there is no second-hand value. Hence, this contradicts the findings of Schaefers et al. (2015); that the perceived financial risk of ownership positively influences consumers usage and adoption of access-based consumption since it avoids the ownership risks. In our study, car ownership is seen as investment, thus, this argument does not seem to hold for u-PSS within automotive. To increase consumers' adoption intention of car-sharing services, the financial benefit compared to car-owning must therefore be visible and relatable to consumers in order to increase perceived economical value and decrease financial risk.

Although Koller et al. (2011) argues that environmentally friendly products and services have an impact on the overall perceived value in terms of functional-, economical- and emotional value for car users, our research indicates that the *Environmental value* does not lead to increased adoption intention. Thus, *Environmental value* merely seems to be a bonus and not a determinant for u-PSS adoption. Further, *Variety Value* is according to previous studies a benefit since consumers can choose a variety of cars mostly efficient for their specific need (Meijkamp, 1998). Although our exploratory study indicated *Variety value* as an important factor, this was not mirrored in our confirmatory study, hence indicating that this is also rather a bonus factor. Thus, our research shows that *Environmental-* and *Variety value* are not the main factors contributing to consumer adoption intention of u-PSS within automotive.

Ultimately, to increase consumer adoption intention of u-PSS within automotive, it must be perceived as economically beneficial, as well as more flexible and convenient compared to a linear product offering. This, by framing the offering in such a way that consumers perceive less risk and more value with u-PSS compared to car ownership.

6.3.2 Framing

As shown in our exploratory study, consumers have an emotional bias towards the ownership of a car, meaning they will not always be rational in their decision-making in terms of utility maximization, violating the theory of rational choice. Instead, by applying theory influenced

by emotional and cognitive biases through Prospect Theory, we were able to conclude that consumers assess loss and gain factors between the two choices asymmetrically in relation to their reference point, as previously stated (Tversky & Kahneman, 1981). The findings imply that consumers are engaging in risk-averse behavior (Kahneman et al., 1991), hence, overweighting the value of the certain outcome of car-ownership despite it having lower expected utility. Thus, we argued that framing the offering to reassure consumers concerning perceived values and risk can affect consumers' reference point, and consequently increase the adoption.

Our study shows that addressing consumers' emotional bias by tapping into emotional cues in the framing of the offering to affect perceived value and risk outcomes, thus attempting to move consumers' reference point, did not increase the adoption intentions of the u-PSS, if anything, it decreased. In conjunction, our findings show that consumers do not have, and are not inclined to have, similar emotional attachment to things they do not own or are shared with others as with things they own. The results from the confirmatory study further showed that materialism, thus consumers' importance of owning things, enhances the perceived risk of a u-PSS in terms of Flexibility- and Financial risk and hence negatively affects consumers adoption intention. Thus, the studies imply that the irrational decision-making process of consumers when choosing between sharing u-PSS and car-ownership, can be explained by the Endowment Effect, namely that consumers are biased towards things they own and value them higher (Kahneman et al, 1991). It seems that the ownership of a car goes beyond functionality, tapping into consumers' emotional senses, whereas this emotionality is not transferable to promote sharing u-PSS adoption, where the functional aspects are what matters.

Although framing has shown to be an effective way to increase consumers' adoption intention (Maheswaran & Meyer-Levy, 1990) our study shows that emotional framing through text is not relevant to influence consumers' reference point. We acknowledge however, that both studies showed differences in attitudes and intentions dependent on consumers' specific situations. More specifically, both the confirmatory and exploratory study shows that car owners had lower adoption intentions towards u-PSS, as well as lower perceived value and higher perceived risk on numerous variables compared to non-car owners. Further, consumers who had tried car-sharing services before had higher adoption intention compared to car owners, and perceived higher Environmental Value, regardless of which framing they were

exposed to. This can arguably mean that consumers have deeply rooted reference points dependent on previous experience and current ownership situation, affecting their perception and preferences for mobility choice. Thus, this study confirms Kim & Hwang (2021) findings that most consumers are used to purchasing and owning products, and changing behavior is associated with risk-taking, as this study shows that the consumers who are currently owning a car associate sharing u-PSS with higher risk. This implies that the framing of a u-PSS within automotive needs to be relevant to consumers dependent on their situation, thus different framings are required to capture first-time users compared to users who have previously tried a similar service, to decrease risk and thus lower adoption barriers.

6.3.3 Consumer biases

As previously mentioned, our study shows that consumers are not translating their attitude towards u-PSS within automotive into a behavior because they are lacking perceived behavioral control, affected by several cognitive and emotional bias factors. Thus, consumers are not rational utility maximizers. Therefore, our study supports ElHaffar et al. (2020) in that rational economics theories alone are insufficient in finding solutions to the consumer adoption with regards to u-PSS. Instead, behavioral theory, in this case Prospect Theory, is more applicable in explaining the consumers adoption intentions towards a u-PSS.

As stated, various cognitive and emotional biases contribute to consumers' perceived behavioral control towards u-PSS within automotive. Firstly, the exploratory study showed that consumers have an emotional bias towards purchasing and owning a car, that is, they attribute emotional values to ownership which are reflected in the risks they perceive with u-PSS, whilst the risks with ownership are perceived as functional factors, which are the gains they see with u-PSS. Additionally, the studies show that increased materialism, thus valuing owning things, increases the perceived risks with u-PSS, strengthening the notion of the Endowment Effect, that consumers value things they own higher. Our study further shows that changing behavior from purchasing and owning products to sharing is associated with risk-taking, since car-owners showed lower perceived values and higher perceived risks with u-PSS. Thus, consumers are engaging in risk-averse behavior, thus avoiding the emotional losses of car-ownership by accepting a higher financial burden (Tversky & Kahneman, 1981). Furthermore, the perception of low flexibility and uncertain financial benefits of u-PSS was found to have the strongest influence on how consumers currently assess car-sharing services both in the

exploratory and confirmatory study. By addressing these factors when framing a u-PSS offering, as well as the emotional bias towards ownership that consumers have and the influence of previous experiences with car-sharing services, could be an efficient way to increase consumer adoption intentions.

7. Conclusion

This final chapter of the thesis begins by summarizing the answers to the research questions which this thesis aimed to answer, followed by the theoretical contribution and managerial implications of the findings. Finally, the limitations of this thesis will be discussed along with recommendations for future research.

7.1 Answer to Research Questions

This thesis purpose was to investigate the underlying factors that affect consumers' adoption of u-PSS within automotive, and how these factors can be addressed through the framing the offering to increase adoption by answering the following two questions; *What perceived value and risk factors affect consumers' adoption intention towards a u-PSS compared to a linear offering?,* and *How can a u-PSS offering be framed to minimize consumers' perceived risk and maximize perceived value?*

The findings from this study shows that consumers' perceived value in terms of *Economical*- and *Convenience* value and perceived risk in terms of *Flexibility*- and *Financial* risks, are the most crucial factors affecting adoption intentions for a u-PSS within automotive. Furthermore, consumers have an emotional bias towards ownership and are lacking perceived behavioral control towards car-sharing services, affecting the way they evaluate the value and risk factors in relation to their *reference point.* Thus, to address this emotional bias, we argued that by framing the u-PSS offering emotionally the intangible added value of car-ownership can be captured, leading to higher perceived value and lower perceived risk. However, this thesis demonstrates that emotional framing through text does not affect consumers' perceived value or risk with a u-PSS offering within automotive. A relevant framing should address the perception of low flexibility and uncertain financial benefits of u-PSS, the emotional bias towards ownership and the influence of previous experiences with car-sharing services and current situation of car-ownership, to minimize perceived risk, maximize perceived value, and thus affect consumers' adoption intention.

7.2 Theoretical Contribution

This thesis has investigated consumers' underlying factors affecting u-PSS adoption within automotive and how these offerings can be framed to increase adoption intentions. Hence, contributing to the growing stream of CBM adoption, by addressing Planing's (2018) identified gap of empirical evidence on consumer behavior and adoption intention. Furthermore, with previous research showing that consumer acceptance is a common barrier for the implementation of CBM, such as u-PSS, and therefore a crucial factor for u-PSS diffusion (Vermunt et al., 2019; Piscicelli, 2015), our findings contribute with a better understanding of consumer adoption intention of u-PSS through insights and determinants regarding their decision-making process.

Additionally, this thesis gives clarity towards which factors are the most impactful for consumer adoption of u-PSS, which previously has remained a mystery (Tukker, 2015). By taking a consumer perspective, we were able to identify consumers' perceived values and risks factors with u-PSS adoption within automotive, namely values in terms of economical, environmental, variety and convenience, and risks in terms of performance, flexibility and financial. Among these, we found that values and risks relating to monetary and flexibility factors had the most impact on consumers' adoption intentions. We further identified that consumers lack behavioral control towards u-PSS within automotive due to an emotional bias towards car-ownership. Thus, contributing with an additional layer to Joshi and Rahman's (2014) research regarding the multiple barriers which affects consumers behavior towards u-PSS.

This thesis further contributes to a deeper understanding of consumers' adoption intentions. We applied Prospect Theory to identify the reasons why and under what conditions people tend to have an irrational decision-making process, thus addressing the underlying behavioral factors. Hence, contributing with unique empirical evidence, which has not been previously done using Prospect Theory in the automotive industry, even though it has been suggested by Liu et al, (2014). We found that consumers have an emotional bias towards the ownership of a car, thus they will assess their loss and gain factors between ownership and u-PSS asymmetrically and not in terms of utility maximization (Tversky & Kahneman, 1981). Thus, consumers apply the values of car ownership to emotional needs, and the loss of these are

mirrored in the risks with adopting a u-PSS. However, this emotionality is not transferable to u-PSS services, arguably explained by the Endowment Effect; that consumers value things they own higher (Tversky & Kahneman, 1981). Furthermore, we found that consumer lack of perceived behavioral control inhibits the adoption and affects the perception of value and risk factors of the offering.

Finally, we contribute to the literature of u-PSS adoption by applying a mixed-method study, which, as far as we the authors are aware, is a study method which has not been used to a great extent in previous research in this area. The exploratory and confirmatory studies independently show somewhat divergent findings in terms of the importance of addressing emotional needs. Conjointly however, we can conclude that consumers' adoption of u-PSS within automotive is complex where cognitive reasons play a big part, thus, to fully capture the ambidexterity between what people say and their actual behavior and intentions, it is of importance to capture both qualitative and quantitative findings.

7.3 Managerial Implications

This thesis aimed to contribute empirically by giving management, executives, and marketing professionals within the automotive industry guidance in terms of creating offerings that are relevant enough for consumers to be willing to pay for access and not ownership. From our findings regarding consumers' adoption of u-PSS whitin automotive, we can thus derive several implications for these professionals to consider.

Firstly, our study has shown that the perceived financial value of a car-sharing service compared to car-ownership is crucial for adoption. Therefore, we recommend a low-price strategy initially to ensure fast adoption, especially to convert non-users and provide incentives for them to engage in risk-seeking behavior as barriers of adoption are lowered. Furthermore, since the perception of pricing is what matters, we recommend transparency in terms of the cost of car-ownership versus car-sharing as a marketing tool. For instance, calculating the cost of consumers' annual usage of their car and comparing it with the car-sharing service to present the financial gain.

Secondly, perceived flexibility and convenience were further crucial factors to increase consumer adoption of car-sharing services. Thus, when diffusing the offering, managers should emphasize the visibility of available cars to the consumers. To improve actual availability, we recommend providing higher supply than current demand, thus rather than an incremental launching strategy, focus on launching abruptly to avoid consumers feeling inflexible or bound. To increase perceived availability, we recommend increasing the visibility of available cars, for instance through displaying them clearly on the car-sharing service's platform of choice, as well as having the logo clearly visible on cars to increase recognition among consumers.

Lastly, our study shows that consumers' previous experience with car-sharing services and current life situation affects their adoption intention, thus implying the importance for marketing managers to use different targeting strategies towards different user segments. For instance, consumers who currently own a car show lower adoption intention and higher perceived risks than the ones who do not, whilst consumers who have previously tried a car-sharing service have a higher adoption intention than the ones who have not, and higher perceived environmental value. In conjunction with the finding that consumers have an emotional bias towards car ownership, this implies that when converting non-users to users, the functional aspects of a car-sharing offering must therefore not only meet the functional aspects of car ownership but exceed it to lower their risk and change their behavior. When targeting current users however, values such as environmental gains and car variety can be further emphasized to increase perceived value.

7.4 Limitations and Future Research

This thesis has broadened the academic and theoretical field by contributing with knowledge of consumer adoption of sharing u-PSS within automotive. However, this thesis also comes with limitations which should be considered in future research.

Firstly, this thesis demonstrates the complexity of consumers' underlying reasons for adoption intention towards u-PSS within automotive. Thus, the divergent implications from the exploratory and confirmatory study showcases the need for further mixed-method research within the field. However, due to the method of choice, this thesis is limited to a rather small sample of respondents in both studies. Thus, the field of u-PSS adoption could benefit from

replicating this study on a larger sample. Furthermore, replicating the study on a sample where car-sharing services are more widely adopted than in Sweden could potentially deepen the knowledge regarding consumers' adoption intentions of sharing u-PSS offerings.

Secondly, this study focused on emotional framing through text since the emotional aspects were shown to be important for the consumer in the exploratory study. However, this type of framing did not affect consumers' adoption intention, if anything it decreased. Thus, other types of media choices could potentially have a larger effect on consumers' responses, since the emotional framing of the offering, thus the stimulus, in this study did not significantly affect perceived risks and values. Hence, it cannot be excluded that emotional framing does not affect the adoption intention, only that emotional framing through text does not. Future research would therefore benefit from investigating whether framing through other types of media offerings, such as video or audio, influence the perceived risk and value factors in relation to the reference point.

Lastly, this study has explored the consumer adoption of u-PSS in an automotive context. It would be interesting to conduct a similar study on other product categories where u-PSS are starting to appear, such as white goods or electronics. This to see if the results hold true or if they are specific to the automotive context, in order to generate more generalizable results of consumer adoption of u-PSS.

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9. Appendix

9.1 Appendix 1 - Expert Interview Guide

Interview guide: Global Sustainability Manager at a Swedish car manufacturing company

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1. **Could you tell us about the current circular trends within automotive?**
2. **What are the biggest challanges and opportunities in terms of consumers?**
3. **What attitudes towards circular offerings do you see among consumers?**
4. **What patterns do you see in terms of consumer behavior?**
5. **What does the future development of circular offerings within automotive look like?**
6. **Are there any specific business models you think will diffuse on a larger scale compared to others within automotive?**

Duration: 40 min

9.2 Appendix 2 – Interview Guide Exploratory Study

Part 1: Introduction
Information about the study

- Introduce ourselves and the study
- Describe the procedure
- Ask permission to record and inform about ethical aspects

Background information and personal information

- Can you briefly tell us about yourself (age, family / household)?
- Can you tell us about your everyday transport habits?
- If you reflect on your transport habits
  - Are there any factors you think could improve or worsen your habits?
- Can you tell us about how your transport habits have changed in the last five years?
- Can you tell us how you think your transport habits will change in the next five years?

General questions about rental services

- Have you ever used a rental service for a car, in the form of a car-pool or short-term rental?
  - If so - can you tell us more about it?
  - If not - can you tell me why not?

Part 2: Main part
Car ownership

- For what reason (s) do you choose not to buy a car?
- If you get into the idea of owning and buying a car, how does it make you feel?
- If you get into the idea of not owning a car, how does it make you feel?
- In what situations do you feel the need to own a car, how would you describe the need?
- What does a car mean to you, can you describe?

Car-pool / short term rental

- How do you feel about car-pools / shared short-term rental services?
- If you get into the idea of using a car-pool, how does it make you feel?
- What factors would make you use a car-pool / shared short term rental service, how much impact do these have?
- What would make you use it as a main option in your everyday life?

Comparative car ownership vs car-pool

- If you reflect on how much you use your car, it would be an option not to own a car. If so, why
- What do you feel you are missing out on using a carpool / short term rental service instead of owning a car?
- What is it that makes you choose to own a car instead of using a car-pool?
- What benefits do you see from choosing a car-pool / short term rental, instead of owning a car?

Part 3: Closing

- Is there anything else you want to add or want to address?

9.3 Appendix 3 – Summary of interviews

Interview	Age	Gender	Houshold size	Location	Carowner	Carpool experience	Date	Length of interview
Respondent 1	37 years	Female	3 persons	Large city	No	Yes	29/09-2021	30 min
Respondent 2	29 years	Female	3 persons	Large city	No	Yes	30/09-2021	40 min
Respondent 3	51 years	Female	2 persons	Mid-sized city	Yes	No	30/09-2021	31 min
Respondent 4	35 years	Male	2 persons	Large city	Yes	No	04/10-2021	53 min
Respondent 5	32 years	Female	5 persons	Small city	Yes	No	06/10-2021	32 min
Respondent 6	59 years	Male	2 persons	Mid-sized city	Yes	No	06/10-2021	39 min
Respondent 7	59 years	Male	2 persons	Large city	Yes	No	08/10-2021	31 min
Respondent 8	37 years	Male	3 persons	Large city	Yes	No	12/10-2021	30 min
Respondent 9	27 years	Male	1 person	Large city	No	Yes	13/10-2021	28 min

9.4 Appendix 4 – Quantitative Pre-Study

Pre-test

Hej! Hej! Vi är två studenter från Handelshögskolans Business & Management-program som just nu skriver vår masteruppsats. Vi skulle verkligen uppskatta om du vill svara på vår förstudie.

Du kommer nu att få läsa en text som beskriver en situation som du ska sätta dig in i. Det är väldigt viktigt att du läser texten noga. Efter detta kommer du att få svara på en fråga utifrån denna text. Det är viktigt att du svarar på frågan baserat på det du läst. Alla svar är såklart anonyma.

Q10 Du har fått ett nytt jobb och har därför nyligen bosatt dig i en ny stad. Din bil har gått sönder och går inte längre att använda. Du använder bilen som ditt primära transportmedel, men I staden finns olika transportmedel tillgängliga. Du funderar nu över hur du ska lösa din vardagliga transportsituation. Dina två primära val som du står mellan är huruvida du ska börja använda dig utav stadens utbud av bilpooler eller om du ska köpa dig en ny bil.

Scenario 1

Som nyinflyttad i stan får du hem erbjudanden och annonser från olika lokala aktörer varav en av dessa är en annons för en bilpool:

Med PoolCar finns bilar tillgängliga när som helst och var som helst du behöver, när du ska transportera dig i din stad. Våra bilar står parkerade på varannan gata. Du bokar och låser upp bilen via vår app i samband med behovet av att transportera dig dyker upp. Vi har olika bilar tillgängliga för dina behov, stora som små.

PoolCar står för underhåll, försäkring eller parkering och allt som bil ägande medför. Du behöver inte heller göra en stor investering, för den låga nyttjandegraden bilen har eller tänka på andrahandsvärdet eller nyttjandegraden.

Med oss åker du för 6 kr i minuten, 90 kronor i timmen och 950 kronor för 24 timmar. Vänta inte, kör nu!

Scenario 2

Som nyinflyttad i stan får du hem erbjudanden och annonser från olika lokala aktörer varav en av dessa är en annons för en bilpool:

Med PoolCar får du möjligheten till maximal frihet och spontanitet, med bilar tillgängliga när än du behöver dem. Du kan koppla av och känna dig trygg då bilar är parkerade på varannan gata, så att du ska slippa känna dig bunden. Slipp krånglet med att behöva planera, och förvånas av hur enkelt och smidigt du bokar via vår app när ditt behov av att transportera dig dyker upp.

Var nyfiken och upplev variationen av våra olika bilar, stora som små, så att dem passar just dina behov. Lätta sinnet och känn friheten med PoolCar, utan att tänka på service, försäkring eller parkering som bil ägande medför.

Med PoolCar slipper du gå och oroa dig för bilens värdeminskning och oklart andrahandsvärde, samt lätta ditt samvete för den låga nyttjandegraden av en bil. Hos oss betalar du endast för ditt användande, 6 kr i minuten, 90 kronor i timmen och 950 kronor för 24 timmar. Ta ett smart beslut, kör nu!

Baserat på situationen du läst om,

	Stämmer inte alls						Stämmer mycket väl
Texten beskriver erbjudandet sakligt	○	○	○	○	○	○	○
Texten beskriver erbjudandet neutralt	○	○	○	○	○	○	○
Texten beskriver erbjudandet funktionellt	○	○	○	○	○	○	○
Texten anspelar på känslor	○	○	○	○	○	○	○
Texten beskriver erbjudandet emotionellt	○	○	○	○	○	○	○
Texten berör mig	○	○	○	○	○	○	○

9.5 Appendix 5 – Quantitative survey

Masterarbete Carpool

Hej!
Vi är två studenter från Handelshögskolans Business & Management-program som just nu skriver vår masteruppsats. Vi skulle verkligen uppskatta om du vill svara på vår enkät. Det är viktigt att du läser instruktionerna och frågorna noga innan du svarar. Alla svar är självklart anonyma.

Körkort Har du körkort?

- ○ Ja (1)
- ○ Nej (2)

Du kommer nu att få läsa en text som beskriver en situation som du ska sätta dig in i, och därefter en bild. **Det är väldigt viktigt att du läser texten som kommer härnäst samt texten i bilden noggrant.** Efter detta kommer du att få svara på ett antal frågor utifrån det du läst. Det är viktigt att du svarar på frågorna baserat på det du läst och sett.

Q1 **Jag har tagit del av ovanstående information och kommer att läsa texten noggrant.**

- ○ Ja (1)

Du har fått ett nytt jobb och har därför nyligen bosatt dig i en ny stad. Din bil har gått sönder och går inte längre att använda. Du använder främst bil några gånger i veckan när du behöver transportera dig längre sträckor, och funderar nu över hur du ska lösa din vardagliga transportsituation. Dina två primära val som du står emellan är huruvida du ska börja använda dig utav stadens utbud av bilpooler eller om du ska köpa dig en ny bil.

Q2 **Jag har tagit del av ovanstående information och är införstådd med den beskrivna livssituationen**

○ Ja (1)

Scenario 2 Som nyinflyttad i stan får du hem erbjudanden och annonser från olika lokala aktörer varav en av dessa är en annons för en bilpool:

Jag har tagit del av ovanstående information och är införstådd med innebörden av erbjudandet

○ Ja (1)

Scenario 1 Som nyinflyttad i stan får du hem erbjudanden och annonser från olika lokala aktörer varav en av dessa är en annons för en bilpool:

Q3 **Jag har tagit del av ovanstående information och är införstådd med innebörden av erbjudandet**

○ Ja (1)

Baserat på det jag läst upplever jag beskrivningen av erbjudandet som...

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	
Faktabaserat	○	○	○	○	○	○	○	Värderingsladdat
Sakligt	○	○	○	○	○	○	○	Anspelar på känslor
Neutralt	○	○	○	○	○	○	○	Emotionellt

Q4 Nu kommer du att få svara på några frågor om hur du uppfattar erbjudandet du blivit presenterad för. **Svara på frågorna baserat på det du läst.**

Baserat på situationen och det jag läst upplever jag att...

	Stämmer inte alls (1)	(2)	(3)	Stämmer varken eller (4)	(5)	(6)	Stämmer mycket bra (7)
Det är troligt att jag kommer använda en bilpool inom en snar framtid (1)	○	○	○	○	○	○	○
Om valet står mellan att köpa en ny bil eller använda en bilpool skulle jag välja att använda bilpool. (2)	○	○	○	○	○	○	○

Baserat på situationen och det jag läst upplever jag att...

	Stämmer inte alls (1)	(2)	(3)	Stämmer varken eller (4)	(5)	(6)	Stämmer mycket bra (7)
Jämfört med att köpa en ny bil är det mer ekonomiskt för mig att använda PoolCar's bilar (1)	○	○	○	○	○	○	○
Jämfört med att köpa en ny bil, ger PoolCar mig mer värde för pengarna (2)	○	○	○	○	○	○	○
Genom att använda PoolCar's service kan jag sänka mina transportkostnader jämfört med att köpa en ny bil (3)	○	○	○	○	○	○	○
Jämfört med att köpa en ny bil, ger PoolCar mig möjligheten att spara pengar (4)	○	○	○	○	○	○	○

Baserat på situationen och det jag läst upplever jag att...

	Stämmer inte alls (1)	(2)	(3)	Stämmer varken eller (4)	(5)	(6)	Stämmer mycket bra (7)
Jämfört med att köpa en ny bil, sparar PoolCars tjänst på naturresurser och energi (1)	○	○	○	○	○	○	○
Att använda PoolCars tjänst reducerar skadliga effekter på miljön i jämförelse med att köpa en ny bil (2)	○	○	○	○	○	○	○
Att använda PoolCars tjänst är bättre ur miljösynpunkt än att köpa en ny bil (3)	○	○	○	○	○	○	○
Jämfört med att köpa en ny bil, reducerar PoolCar konsumtionen av naturresurser och energi (4)	○	○	○	○	○	○	○

Baserat på situationen och det jag läst upplever jag att...

	Stämmer inte alls (1)	(2)	(3)	Stämmer varken eller (4)	(5)	(6)	Stämmer mycket bra (7)
Att använda PoolCar gör att jag sparar tid på underhåll av bil jämfört med att äga en bil (1)	○	○	○	○	○	○	○
Jämfört med att äga en bil minskar PoolCar den nedlagda energin på underhåll av bil (2)	○	○	○	○	○	○	○
Att använda PoolCar gör underhållet av bil smidigare än att äga en bil (3)	○	○	○	○	○	○	○

Baserat på situationen och det jag läst upplever jag att...

	Stämmer inte alls (1)	(2)	(3)	Stämmer varken eller (4)	(5)	(6)	Stämmer mycket bra (7)
Jag känner mig orolig över att det inte alltid finns en ledig bil nära mig när jag behöver det. (1)	○	○	○	○	○	○	○
Jag känner mig orolig över att det inte alltid finns bilar som matchar mitt behov (4)	○	○	○	○	○	○	○
Att använda PoolCar får mig att känna att jag behöver planera mer jämfört med att äga bil (2)	○	○	○	○	○	○	○

Baserat på situationen och det jag läst upplever jag att...

	Stämmer inte alls (1)	(2)	(3)	Stämmer varken eller (4)	(5)	(6)	Stämmer mycket bra (7)
Att betala för användandet av PoolCar känns som bortkastade pengar jämfört med att äga en bil (1)	○	○	○	○	○	○	○
Att betala för nyttjande av PoolCar över en kortare period känns som bortkastade pengar jämfört med att äga bil (2)	○	○	○	○	○	○	○
Det kommer kosta mycket att använda PoolCar jämfört med att äga en bil om jag kör ofta (3)	○	○	○	○	○	○	○

Baserat på situationen och det jag läst upplever jag att...

	Stämmer inte alls (1)	(2)	(3)	Stämmer varken eller (4)	(5)	(6)	Stämmer mycket bra (7)
Att använda PoolCar ger mig mindre flexibilitet än att äga en bil (1)	○	○	○	○	○	○	○
Att använda PoolCar får mig att känna mig mindre spontan än att äga en bil (2)	○	○	○	○	○	○	○
Att använda PoolCar får mig att känna mig mer bunden än att äga en bil (4)	○	○	○	○	○	○	○

Q5 Vad handlade texten du läste om?

- ○ En swimmingpool (2)
- ○ En bilpool (4)
- ○ En rekryteringspool (5)

Q6 Nu kommer du att få svara på några frågor om dina personliga värderingar. **Du behöver inte ta hänsyn till köpsituationen du läst om.**

	Stämmer inte alls (1)	(2)	(3)	Stämmer varken eller (4)	(5)	(6)	Stämmer mycket väl (7)
Sakerna jag äger, säger mycket om hur väl jag klarar mig I livet (1)	○	○	○	○	○	○	○
Att köpa saker ger mig mycket glädje (2)	○	○	○	○	○	○	○
Jag beundrar personer som äger dyra hus, bilar och kläder (3)	○	○	○	○	○	○	○
Mitt liv skulle vara bättre om jag ägde vissa saker som jag inte gör I dagsläget (4)	○	○	○	○	○	○	○

Kön Jag identifierar mig som...

- ○ Kvinna (1)
- ○ Man (2)
- ○ Icke-binär (3)
- ○ Annat (4)
- ○ Vill ej svara (5)

Ålder Vilket år är du född? Svara med fyra siffror, t.ex. 1990.

_____

Hushåll Hur många bor i ditt hushåll?

- ○ Singelhushåll (1)
- ○ Två (2)
- ○ Tre eller fler (3)

Boende Var bor du?

- ○ Större stad (Stockholm, Göteborg, Malmö) (1)
- ○ Medelstor stad (mer än 50 000 invånare) (2)
- ○ Mindre stad (färre än 50 000) (3)
- ○ Landsbygd (4)

Har du testat en bilpool tidigare?

- ○ Ja (1)
- ○ Nej (2)

Äger du en bil?

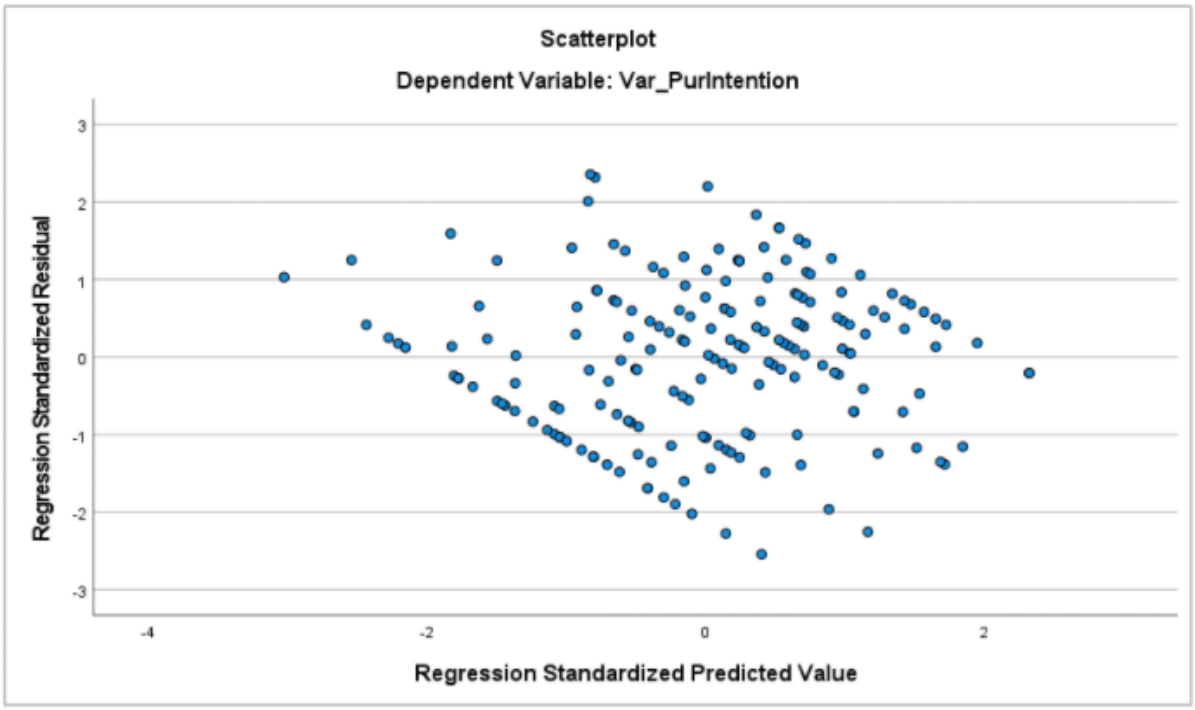
- ○ Ja (1)
- ○ Nej (2)

9.6 Appendix 6 – Independent Samples T-test Framing

Summary of the differences in terms of peceived values and risks between the control and treatment goup.

		Mean		
	Variable	**Treatment group (N=97)**	**Control group (N=91)**	**Sig.**
Values	Economical	4,227	4,4588	0,877
	Environmental	5,5979	5,5687	0,877
	Variety	5,8119	5,7115	0,55
	Convenience	5,7629	5,8791	0,552
Risks	Performance	5,3918	5,315	0,291
	Financial	3,3763	3,0549	0,192
	Flexibility	4,9725	4,8132	0,453

9.7 Appendix 7 - Scatter Plot



9.8 Appendix 8 - Moderation Interaction Effect Analysis

Moderation Interaction Effect Analysis for Financial Risk

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	3.868	.121		31.891	<.001		
	Zscore(Var_Materialism)	.134	.122	.068	1.099	.273	.937	1.068
	Zscore (Var_FinancialRisk2)	-1.196	.123	-.602	-9.748	<.001	.930	1.076
	IntFinRisk	.271	.115	.141	2.354	.020	.981	1.019

a. Dependent Variable: Var_PurIntention

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Zscore (Var_Materialism)	Zscore (Var_Financial Risk2)	IntFinRisk
1	1	1.350	1.000	.09	.19	.21	.21
	2	1.147	1.085	.36	.17	.14	.14
	3	.769	1.325	.25	.49	.23	.25
	4	.734	1.356	.30	.15	.41	.40

a. Dependent Variable: Var_PurIntention

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.4195	5.8349	3.9335	1.17192	188
Residual	-4.63288	3.88514	.00000	1.60479	188
Std. Predicted Value	-2.998	1.622	.000	1.000	188
Std. Residual	-2.864	2.401	.000	.992	188

a. Dependent Variable: Var_PurIntention

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	IntFinRisk, Zscore (Var_Materialism), Zscore (Var_FinancialRisk2)[b]	.	Enter

a. Dependent Variable: Var_PurIntention

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin–Watson
1	.590[a]	.348	.337	1.61782	1.830

a. Predictors: (Constant), IntFinRisk, Zscore(Var_Materialism), Zscore (Var_FinancialRisk2)

b. Dependent Variable: Var_PurIntention

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	256.826	3	85.609	32.708	<.001[b]
	Residual	481.593	184	2.617		
	Total	738.419	187			

a. Dependent Variable: Var_PurIntention

b. Predictors: (Constant), IntFinRisk, Zscore(Var_Materialism), Zscore (Var_FinancialRisk2)

Moderation Interaction Effect Analysis for Flexibility Risk

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	IntFlexRisk, Zscore (Var_Materialism), Zscore (Var_FlexRisk)[b]	.	Enter

a. Dependent Variable: Var_PurIntention

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin–Watson
1	.466[a]	.218	.205	1.77202	1.884

a. Predictors: (Constant), IntFlexRisk, Zscore(Var_Materialism), Zscore (Var_FlexRisk)

b. Dependent Variable: Var_PurIntention

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	160.647	3	53.549	17.054	<.001[b]
	Residual	577.772	184	3.140		
	Total	738.419	187			

a. Dependent Variable: Var_PurIntention

b. Predictors: (Constant), IntFlexRisk, Zscore(Var_Materialism), Zscore (Var_FlexRisk)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	3.895	.130		29.941	<.001		
	Zscore(Var_Materialism)	-.044	.131	-.022	-.338	.736	.984	1.016
	Zscore(Var_FlexRisk)	-.843	.131	-.424	-6.447	<.001	.983	1.017
	IntFlexRisk	.324	.126	.169	2.582	.011	.996	1.004

a. Dependent Variable: Var_PurIntention

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Zscore (Var_Materialism)	Zscore (Var_FlexRisk)	IntFlexRisk
1	1	1.128	1.000	.20	.14	.28	.25
	2	1.111	1.008	.20	.32	.17	.19
	3	.919	1.108	.42	.24	.20	.21
	4	.841	1.158	.18	.31	.35	.34

a. Dependent Variable: Var_PurIntention

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.9232	7.7665	3.9335	.92686	188
Residual	-3.85107	3.88174	.00000	1.75775	188
Std. Predicted Value	-2.169	4.135	.000	1.000	188
Std. Residual	-2.173	2.191	.000	.992	188

a. Dependent Variable: Var_PurIntention