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User adoption of Access-Based Product-Service Systems

A Case study investigating barriers and enablers in the context of Access-Based Consumption and Product-Service Systems in the Automotive Industry

Master's thesis in Technology Management and Economics

EMELIE GERTMO
FRIDA HELLSTRÖM

DEPARTMENT OF TECHNOLOGY MANAGEMENT AND ECONOMICS
DIVISION OF ENTREPRENEURSHIP AND STRATEGY

CHALMERS UNIVERSITY OF TECHNOLOGY
Gothenburg, Sweden 2020
www.chalmers.se
Report No. E2020:048

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Report no. E2020:048
Department of Technology Management and Economics
Chalmers University of Technology
SE-412 96 Göteborg
Sweden
Telephone + 46 (0)31-772 1000

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EMELIE GERTMO
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Chalmers University of Technology

SUMMARY

The automotive industry is subject to two parallel and intertwining trends; Servitization into Product-Service Systems (PSS) and Access-Based Consumption (ABC), subsequently giving rise to an increased supply and demand for access-based PSS. The two fields, PSS and ABC, overlap in terms of questions regarding ownership, risk-aversion of users, as well as the financial benefits they may entail. This thesis aims to understand user adoption in the automotive industry by further connecting these concepts. A literature review focusing on the barriers and enablers of user adoption for PSS and ABC in general was conducted, and an automotive case study was done by interviewing automotive industry experts and users on Market X, the location of the case study. The focus in the case study was on regular car usage and the pain points and causes of frustration the users might experience in order to understand their needs beyond using the car as a tool taking them from point A to point B.

The findings of the literature review showed that most aspects from both fields can act both as barriers and enablers for user adoption. The main barrier for user adoption of PSS appeared to be the need for the user to change their behaviour and mindset from the traditional product-oriented and ownership-model towards redistributing tasks and responsibility to the PSS-provider. Examples of impacting factors are financial benefits, prior knowledge of the user, consciousness, as well as public policies, technology development and innovation. The main barrier of user adoption for ABC appeared to be the presence of materialism and possessiveness. However, it can also act as an enabler for ABC. It is a barrier in the sense that people have a desire to own, and enabler as it entails a higher circulation of possessions and simplicity in acquisition. Other enablers identified emerge from how ABC requires less responsibilities and commitments than ownerships, subsequently reducing the perceived risks of the user.

All needs identified can be derived from a need to minimise risks. Users perceive the risks and their significance differently, depending on factors such as prior experiences of the user, contextual factors, and external impact. The most significant need is to minimise is the financial risk, followed by the performance risk, and lastly social risk. Financial risk can be manifested in unawareness of Total Cost of Ownership and performance risk in terms of trust for the offer provider. Social risk and the users need for approval from others in terms of status is suggested to carry minor importance, however it is important to consider the social network of the user. Moreover, this study challenges the importance of status as well as the users' altruistic need for sustainability suggested by previous research.

Keywords: Access-Based Consumption, Ownership, Non-ownership, Product-Service System, PSS, Servitization, Barrier, Enabler, User Adoption, Automotive.

ACKNOWLEDGEMENT

This thesis has been a collaboration between Volvo Cars' subsidiary Care by Volvo and Chalmers University of Technology performed during spring of 2020 by us, two students at the Master programme Management and Economics of Innovation.

We would like to give a huge thank you to all involved from Care by Volvo. Especially a massive thank you to Kristina Hedin who helped guiding us through this project, you were there for us during all the ups and downs and always managed to leave us more excited than when we came. Also, a big thank you to our official supervisor Fredric Ghatan who has provided us with great support and insights.

We would also like to acknowledge all interviewees who were willing to participate in this study, it has been truly interesting and inspiring to talk to so many different people. Suffice to say, without you this study would not have been possible.

Also, thank you to Chalmers and our tutor, Ida Eyi Heathcote-Fumador, for the feedback given. Thank you to our examiner, Robin Teigland, a truly inspiring woman! A big thank you to all other Chalmers employees for inspiring us throughout our time at Chalmers ultimately impacting this thesis into what it is.

Emelie Gertmo and Frida Hellström,

Gothenburg, June 2020.

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ABBREVIATIONS

ABC	Access-based Consumption
B2B	Business to Business
B2C	Business to Consumer
IT	Information Technology
MaaS	Mobility-as-a-Service
OEM	Original Equipment Manufacturer
PSS	Product-Service System
TCO	Total Cost of Ownership
TCU	Total Cost of Usership

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1 INTRODUCTION

This chapter introduces a *background* to the thesis and presents its relevance in the context of the automotive industry. This is followed by the *research aim*, *research question* as well as *limitations* of the study.

1.1 BACKGROUND

How consumers access, buy, and use products as well as services is changing. Ownership is just one possible mode of consumption and alternative modes of consumption and acquisition have emerged since the beginning of the 21st century (Bardhi & Eckhardt, 2012; Schaefer et al., 2016). A popular theme is *access*, or *usership*, instead of ownership, or as stated by Aristotle in the Ancient Greece: “*On the whole, you find wealth much more in use than in ownership*” (Teubner, 2014, p.322). Previous research stresses that, in terms of opportunities to create new business models, this changing view of ownership may be as important as the Industrial Revolution (Price & Belk, 2016). This usership-focused phenomenon is known as Access-Based Consumption, hereby referred to as ABC, where access-based services enable customers to acquire the usage time of a product (Schaefer et al., 2016). Subsequently, business models shift from selling products to selling their use.

The traditional view has long been that non-ownership, such as sharing and access, is something that occurs in a private context, and not in a market-mediated setting firms can profit from (Albinsson & Perera, 2012). In the consumer market has access historically been existing in the non-profit sector and public sphere, such as the consumption of art by museum visitors and the borrowing of books from libraries (Bardhi & Eckhardt, 2012). However, this has changed, and offers that are access-based and provide the consumers with a limited and temporary access to products have got increased attention as a substitute for owning (Schaefer et al., 2016). The concept of accessing products instead of acquiring them through ownership is attracting consumers more and more (Lawson et al., 2016). Overall economy is shifting from valuing possessions to valuing experiences and owning do not have the same value it once had in society (Lawson, 2011). Thus, it becomes essential for firms to understand the enabling factors as well as barriers for why users value ownership over usership and vice versa.

Another emerging trend is how manufacturing companies in traditional industries increasingly are changing their originally product-oriented offers by adding more services (Lee et al., 2015; Mahut et al., 2017). The concept of adding services to a product is known as Servitization (Baines & Lightfoot, 2014; Vandermerwe & Rada, 1988) resulting in a Product-Service System, hereby referred to as PSS, which is a bundle of tangible and intangible goods (Mahut et al., 2017). The idea behind Servitization can be traced back to 1969 (Lay, 2014, p.2) and the quote from Theodore Levitt: “*Last year, one million quarter-inch drills were sold not because people wanted quarter-inch drills but because they wanted quarter-inch holes*”. This depicts the shift of focus from providing the customer with products, the drills, to instead offering functionalities and solutions, the holes.

There are several reasons why manufacturing firms are shifting towards offering a PSS instead of a pure product. Servitization can act as a way for differentiation (Lee et al, 2015), or be driven by the insight about the need to constantly find new sources of

value (Pezzotta et al., 2014). By offering a PSS, higher customer satisfaction can be reached than if the customer were offered the products and services separately (Pezzotta et al., 2014). This entails a vast change for manufacturing companies as their focus traditionally have been product-oriented with transaction-based relationships to their customers. The emergence of PSS is, however, turning the focus towards being customer-oriented with long-term relationships (Gaiardelli et al., 2014a).

1.1.1 The Context of Automotive

The automotive industry is a frequent example of both ABC and PSS (Bardhi & Eckhardt, 2012, 2017; Mahut et al., 2017). Actors within the automotive industry are well aware of the opportunities these concepts entail and the OEMs (Original Equipment Manufacturers) have made initiatives to seize these opportunities. It is argued that Servitization and offerings in the form of PSS is the “obliged evolution” and the new paradigm for the automotive industry (Gaiardelli et al., 2014b). New and more innovative offers focusing more on access and services are emerging within the automotive industry in both the B2B and B2C sector (Mahut et al., 2017). The OEMs have geared their focus towards also offering bundles of integrated goods and services, that is, PSSs (Grieger & Ludwig, 2019). Cars are nowadays viewed as part of a greater system rather than stand-alone products, and connect several devices, functionalities, data, and stakeholders in order to create and deliver value (Grieger & Ludwig, 2019).

Changing user behaviours highlight new user needs such as availability and convenience. This entails that users no longer want to handle issues such as insurance, parking costs, and maintenance, or any other of the hassles connected to car-ownership (Genzlinger et al., 2020). New, access-based business models such as car sharing and car subscription have emerged, challenging the need for owning a car and focusing on fulfilling the need for using it. For OEMs to leverage on ABC and Servitization, they need to change their mindset and focus from the product to the usage of the products, which further highlights the importance of understanding the users’ needs.

One example of how the OEMs aim for better fulfilling user needs is Volvo Cars’ car subscription offer Care by Volvo. Care by Volvo Servitizes Volvo Cars’ product with the vision of making the car-ownership as hassle free as possible. Examples of services included in the Care by Volvo offer are maintenance, repairs, insurance, and change and storage of tyres, i.e. the burdens of ownership. Subscription in the context of Care by Volvo is defined as an open-ended access-based offer, where an access fee is paid at a regular basis and it is possible to terminate the access whenever without additional fees. Leasing differs from subscription by not being open ended, i.e. a lease is an access-based offer where the duration of the access is predetermined, typically more than three years. The two concepts of ABC and PSS are particularly applicable at Care by Volvo’s offer as it consists of both a product and related services. Moreover, there is no transfer of ownership in the subscription model which makes the offer access-based.

1.2 RESEARCH AIM

Two parallel emerging trends can be seen within manufacturing companies in general and automotive firms in particular: an increase in PSS-offers as well as access-based offers. The focus on usership over ownership is something the two trends, PSS and ABC, have in common. There is plenty of previous research on each trend, among other things in regard to barriers and enablers of user adoption. Main focus in the research on PSS is, however, firm- and industry-centric. By utilising the existing user-centric theory of ABC as well as actual user needs, the focus of this thesis is where existing research is currently lacking; the user-centric perspective of PSS. The findings from a review of previous research are further explored through a case study of a specific market in the automotive industry, where barriers and enablers of adoption in relation to user needs are the main focus. Barriers and enablers are regarded as something that influence a user's decision to adopt an offer, where a barrier is something of negative influence and an enabler something of positive influence. The aim is to understand the barriers and enablers for user adoption of access-based PSSs and to analyse these in relation to the user needs within the automotive industry, thus achieving a both theoretically and empirically grounded study.

1.2.1 Intended outcome

The intended outcome of the thesis is an identification of the barriers and enablers for user adoption of PSS and ABC, as well as to explain the needs of users within automotive and how they align with the barriers and enablers of adoption. The thesis brings a theoretical and empirically grounded perspective why automotive users would or would not choose to adopt an access-based PSS. The practical implication of the study is guidance for automotive companies aiming at further Servitizing offers in an access-based manner.

1.3 RESEARCH QUESTION

The research question and main issue under investigation is:

RQ: What user needs affect the adoption of an Access-Based Product-Service System within the automotive industry?

In order to answer this, three sub-issues are investigated as illustrated in Figure 1:

1. *What are the barriers and enablers for user adoption of Product-Service Systems?*
2. *What are the barriers and enablers for user adoption of Access-Based Consumption?*
3. *What needs that affect user adoption can be identified within the automotive industry?*

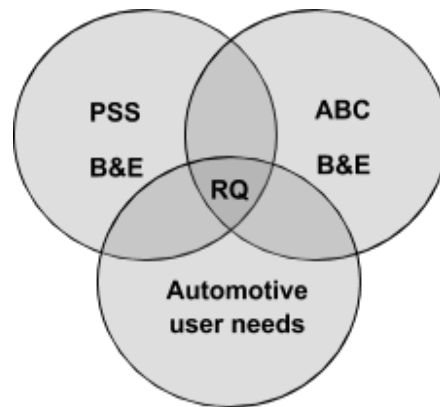


Figure 1: The overlapping of the three research focuses: PSS Barriers & Enablers, ABC Barriers & Enablers, as well as automotive user needs.

1.4 LIMITATIONS

The limitations presented in this section are made in order to focus the scope of the thesis according to the aim and time frame.

- ABC has a close relationship to sharing economy. However, research on sharing economy includes papers of a rather overall approach to sharing, such as in terms of sharing gifts. This thesis is limited to not focus on that perspective of sharing and only on the perspective where consumers have the possibility to access objects they traditionally been owning.
- There is plenty of previous research on organisational or industrial barriers and enablers for PSS. These are excluded from the analysis as they do not support the user-centric approach. For the same reason, the assessment of PSS and ABC is based on a user perception point of view and not from a firm-centric or organisational point of view.
- The thesis does not focus on the Productization aspects of PSS, i.e. where a product is added to a service, in order to keep the study focused on the automotive industry, which is subject to Servitization, not Productization.
- The thesis is limited to only investigate passenger cars and no other means of automotive or transportation, i.e. not trucks or public transportation.
- Marketing tactics are excluded from this thesis, although it can enhance user adoption.

2 THEORETICAL FRAMEWORK

This chapter aims to provide the reader with a wide base of knowledge of each theoretical concept, *Product-Service System* and *Access-Based Consumption*, as well as presenting their connecting to the automotive industry. Their connection to this study and each other as well as some clarifications are given in the final section, *Synthesis*.

2.1 PRODUCT-SERVICE SYSTEM

This section is providing a theoretical foundation for PSS. It starts in general terms by giving a definition of a PSS, moving on to the different categories of PSSs, as well the changed interaction required between a user and provider of PSS. The section is concluded with describing PSS in connection to the automotive industry.

2.1.1 Definition of a Product-Service System

There are several definitions for what a PSS is where four different examples are presented in Table 1. Many definitions are claimed to have been made in order to fit what they have been researching, where sustainability in terms of the environmental benefits frequently been included in the definitions (Mahut et al., 2017). Other frequently included aspects are economical purposes, business models, and value chains (Mahut et al., 2017). What many definitions of PSS have in common is the fact that they include a product and a service as well as being customer-centric (Baines et al., 2007; Mahut et al., 2017).

Table 1: Definitions of PSS.

Definitions of PSS	Author
A product service-system is a system of products, services, networks of “players” and supporting infrastructure that continuously strives to be competitive, satisfy customer needs and have a lower environmental impact than traditional business models	Goedkoop et al. (1999) as cited in Mahut et al. (2017)
An innovation strategy , shifting the business focus from designing (and selling) physical products only, to designing (and selling) a system of products and services which are jointly capable of fulfilling specific client demands	Manzini & Vezzoli (2003)
A PSS is an integrated bundle of products and services which aims at creating customer utility and generating value	Boehm & Thomas (2013)
Product Service-Systems (PSS) may be defined as a solution offered for sale that involves both a product and a service element, to deliver the required functionality	Wong (2004) as cited in Mahut et al. (2017)
A mix of tangible products and intangible services designed and combined so that they are jointly capable of fulfilling final customer needs	Tukker and Tischner (2006)

The first published research article on PSS was in 1999 by Goedkoop and colleagues (Baines et al., 2007). The evolution of PSS can be viewed from two starting points: either starting from the product or the service. Starting from the product, services are added to it and later integrated in the offer. This is called *Servitization*, a concept coined by Vandermerwe and Rada in 1988 (Lay, 2014; Baines et al., 2007). The second starting point implies starting with the service and adding products, and is called *Productization* of services (Baines et al., 2007). This means that service companies start adding tangible products which in the end results in offering bundles consisting of services and products (Vandermerwe & Rada, 1988). These two separate concepts, Servitization and Productization, have merged into what is considered a PSS as illustrated in Figure 2 (Baines et al., 2007).

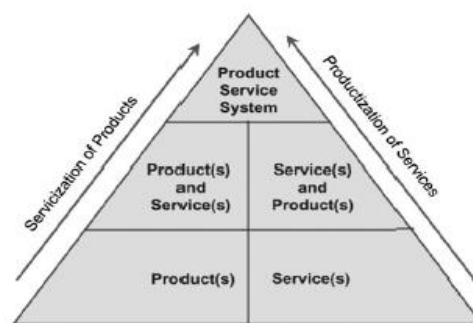


Figure 2: Evolution of PSS (Baines et al., 2007).

Another way of defining a PSS is by defining its three different parts (Baines et al., 2007, p. 2110):

“Product: A tangible commodity manufactured to be sold. It is capable of ‘falling on your toes’ and of fulfilling a user’s needs.

Service: An activity (work) done for others with an economic value and often done on a commercial basis.

System: A collection of elements including their relations.”

The approach of looking into the three different parts of a PSS allows a structured approach to analysing and assessing an offer. PSS holds several different definitions which have been created to support the research that have been conducted. As this thesis aims to understand user needs and behaviour in an exploratory manner, the definition chosen holds a wide stance. By holding a wide stance, the research does not risk becoming misguided into one specific area, ultimately missing what might be of main importance to the users. Thus, for the purpose of this thesis, the customer-centric and wide definition of PSS by Tukker and Tischner (2006) have been chosen to guide the research:

“A mix of tangible products and intangible services designed and combined so that they are jointly capable of fulfilling final customer needs”.

2.1.2 Categorisation of Product-Service Systems

The categorisation of PSS is a fundamental part of previous research, where there are distinct differences between the various categories of a PSS. When examining the categories of PSS, it becomes evident that the categorisation of it also makes it easier to relate to ABC. A PSS can be considered as a continuum ranging from focusing on products to focusing on services, and based on this be divided into three main categories (Tukker, 2004):

1. Product-oriented PSS
2. Use-oriented PSS
3. Result-oriented services PSS

Differences between the three categories consider aspects such as ownership, risks, and how product or service intense the PSS is (Tukker, 2004). Each of these categories holds their own sub categories as can be seen in Figure 3 and is further described in the upcoming section.

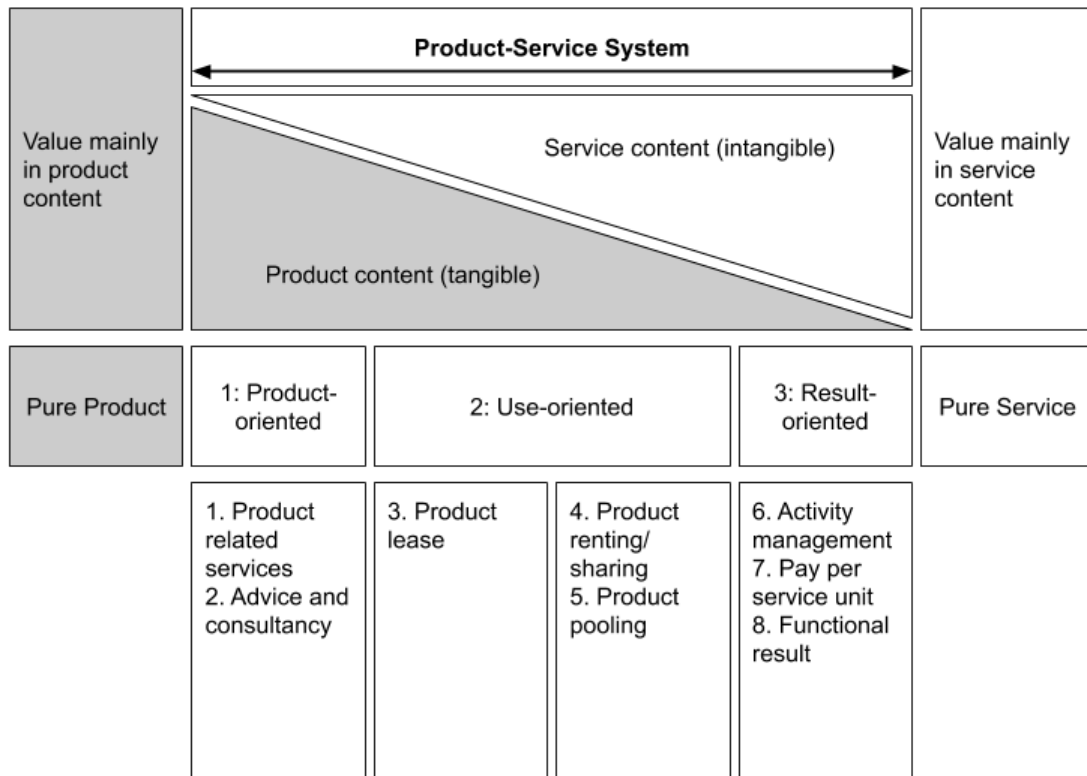


Figure 3: PSS categorisation and subcategories (Pessôa & Becker, 2017; Tukker, 2004).

2.1.2.1 Product-Oriented Product-Service Systems

Product-oriented PSSs are most similar to pure products on the PSS continuum, where focus mainly is on selling a product with the addition of a few services (Tukker, 2004). There is a disagreement in previous research whether the ownership of the product is transferred or not, where some authors argue it is (Pessôa & Becker, 2017; Tukker, 2004) while others argue it remains with the PSS-provider (Baines et al., 2007). In this study, a transfer of ownership is assumed to take place as it aligns with examples of complementary services to car ownership such as maintenance contracts. The product-oriented PSS can be further divided into two subcategories:

1. *Product related services* entail that, in addition to selling a product, supporting services are provided during the product's use phase. Examples of these services are financing plans, maintenance agreements, supply of consumables, and take-back contracts enforced when the product's end of life is reached. (Tukker, 2004)
2. *Advice and Consultancy* entail that the PSS-provider helps the customer by giving advice of how to use the product most efficiently after it has been sold. Examples include advice on organisational team structure to use a certain product, or suggestions of how to improve surrounding logistics when a product is used in production. (Tukker, 2004)

2.1.2.2 Use-Oriented Product-Service Systems

Use-oriented PSSs are located in the middle of the PSS-continuum. Although focus is not primarily on selling a product, the product still holds a vital role (Tukker, 2004). In a use-oriented PSS, the ownership and risks remain with the PSS-provider (Pessôa & Becker, 2017). Use-oriented PSSs can be further divided into three subcategories:

3. *Product lease* entails that the user have sole and unlimited access to the leased product (Tukker, 2004). The user pays a specific price for the leased product to be available to them independent of how much they use it (Van Ostaeyen et al., 2013). Product lease is the only PSS type that risks having a worse environmental impact in comparison to usage of a pure product due to user behaviour changes toward becoming less responsible (Tukker, 2004).
4. *Product renting/sharing* implies that the user has sole access at a certain point in time, but other users may access the same product at another point in time (Tukker, 2004). This means that in order for the users to access the PSS, they need to make some sort of sacrifice, such as spend time and effort for going to the product location (Tukker, 2004). In contrast to product lease, payment is only done for the usage of the PSS which can including both a starting fee and hourly rate (Van Ostaeyen et al., 2013).
5. *Product pooling* means that the user has no sole access to the product, i.e. several users may be accessing the product at the same time (Tukker, 2004). Similar sacrifice is needed as for product renting/sharing (Tukker, 2004), and product pooling is charged similar to product renting/sharing (Pessôa & Becker, 2017).

2.1.2.3 Result-Oriented Product-Service Systems

Result-oriented PSSs are located closest to pure services on the PSS continuum. This means that the customer and the PSS-provider agree on an outcome, i.e. the result, of the PSS and there is no involvement of a predetermined product (Tukker, 2004). For a result-oriented PSS, both the ownership and risks remain with the PSS-provider (Pessôa & Becker, 2017). The more service oriented a PSS is, the more vaguely defined are the requirements of the customer towards the PSS-provider, and it is up to the PSS-provider to decide how to meet the customer needs. Ultimately, it is harder for both the user and the provider to know if the needs have been fulfilled (Tukker, 2004). Result-oriented PSSs can be further divided into three subcategories:

6. *Activity management/outsourcing* means that a portion of a company's activity is being outsourced to an external party. Outsourcing can be measured in various performance indicators, where an example of outsourcing is office cleaning services. (Tukker, 2004)
7. *Pay per service unit* entails that the user purchases the output by a product but never the product itself, where an example is the photocopier. (Tukker, 2004)
8. *Functional result* means that the customer in abstract terms defines a desired final result whereas the provider is free to fulfil this however the provider find it most suitable, as it is not tied to a certain technological system. An example is if a customer orders an office climate system where the need, or expected result, could be defined as "pleasant climate". This contrasts to a specific office cooling equipment set at a specific degree which might be the case for a product- or use-oriented PSS. (Tukker, 2004)

2.1.3 Relationships in Product-Service Systems

The nature of the relationship between the user and the PSS-provider changes when moving from selling traditional products to PSSs (Gaiardelli et al., 2014a; Penttinen & Palmer, 2007; Vandermerwe & Rada, 1988). The relationship can be seen as a continuum ranging from discrete transactions to relational, where the more complete an offer is, the more relational nature of the relationship is required (Penttinen & Palmer, 2007). By having a more relational connection between the user and provider, there is more potential for developing a successful PSS as the PSS can be further customised to its target group or specific user (Gaiardelli et al., 2014b; Pessôa & Becker, 2017). When the responsibility of the product lies with the provider, it means that the providers also need to provide support to the users throughout the lifetime of the PSS, further strengthening the dependency between the provider and the user (Barquet et al., 2013). The importance of the relationship is also highlighted by Genzlinger et al. (2020, p. 215) who state that strategies of companies "*rests upon the evolving nature of the relationship between manufacturer and buyer, which is increasingly notable over the last decades*". This means that there are great incentives for the provider to ensure that a good relationship is maintained with the user. Moreover, IT has played an important role in maintaining strong relationships between the PSS-provider and user due to its role in facilitating communication (Penttinen & Palmer, 2007).

2.1.4 Product-Service Systems in Automotive

The general PSS aspects described can be applied to the automotive industry. However, some case specific studies on the automotive industry illustrates examples which also provides a deeper understanding for the industry, the OEM, the customer, and their interaction as well as the automotive offer characteristics. In general, Servitization of the automotive industry entails a shift from being product to process and people-oriented, i.e. from vehicle to driving and driver focused (Gaiardelli et al., 2014b). The evolution of Servitization can be considered starting from product-oriented services, moving on towards use-oriented and ultimately onwards to result-oriented PSS (Mahut et al., 2017).

The product-side of automotive industry is considered mature where the product, the car, in Europe is used during an average of 8 years (Mahut et al., 2017). The traditional

sales of cars can be defined as a product-oriented PSS as after-sale services are commonly produced by the OEM (Mahut et al., 2017). Additional services primarily act to improve or support the car's availability and reliability, i.e. the services aim to both enhance performance of the car and help making the users operations more efficient, or in other ways facilitate for the users (Gaiardelli et al., 2014b). Furthermore, services may be a way for the OEM to differentiate through, for example, upgrades in functionality and design, cleaning, and help during termination of use (Gaiardelli et al., 2014b). As these services are mainly active during the use-phase of the vehicle, the user does benefit from a stronger relationship with the provider (Mahut et al., 2017). These services might be provided to users in packages to either support the product or facilitate the ownership of the car, for example via maintenance offers for seasonal check-ups or via all-inclusive maintenance contracts with full-coverage in case of an accident (Gaiardelli et al., 2014b).

Services may also be packaged to ensure value retention of the car fleets, which mainly is the case for use-oriented PSS such as leasing and rental schemes (Gaiardelli et al., 2014b). These services are usually combined with financing, maintenance, training, and business consultancy contracts (Gaiardelli et al., 2014b). Another example of use-oriented PSS is car sharing which together with leasing and rental schemes are competing more and more with the traditional product-oriented PSS. The most distinct difference from product-oriented PSS is the ownership, or rather a lack thereof, as well as improving the car's reliability, utilisation grade, quality over time, and safety (Gaiardelli et al., 2014b; Mahut et al., 2017). The difference between leasing, renting, and car-sharing or pooling is similar to their general definition as presented in the section *Categorisation of PSS* above; leasing provides the user with sole access and utilisation at any point in time, renting entails sole access and utilisation at a given point in time, and car-sharing/pooling implies shared access at a given point in time. This means that the utilisation of the car itself is the highest for car-sharing or pooling services (Genzlinger et al., 2020).

In use-oriented PSSs, the value created is strongly connected to how well the entire system supporting the PSS can provide the services connected to the use-oriented PSS (Mahut et al., 2017). However, this may not only consider the PSS-provider but also other users as in the case of car sharing, where the interaction between users and how users leave the cars are beyond the control of the provider (Genzlinger et al., 2020).

An example of a result-oriented PSS within automotive is *Mobility-as-a-Service*, which is an increasingly researched subject, gaining more and more momentum (Genzlinger et al., 2020) This, however, includes a wider spectra than passenger cars and is thus beyond the focus of this thesis.

2.2 ACCESS-BASED CONSUMPTION

This section provides a theoretical framework of the concept of ABC. This includes defining it as well as presenting its main distinctions from ownership, where the latter draws on risk perception theory and psychological theories of materialism and possessions. Finally, the concept of ABC is described in the context of automotive for the purpose of this thesis.

2.2.1 Definition of Access-Based Consumption

Schaefer et al. (2016) stress the core of access-based services to be that an object is used by several individuals, i.e. shared, over time. Rather than to satisfy one individual's, i.e. the owner's, need for unlimited access of an object, the access-based services are satisfying several individual's needs of temporary access (Schaefer et al., 2016). In market-mediated cases of access, the users are paying for the use of a product and time with it (Bardhi & Eckhardt, 2012). This payment model enables users to access products or networks they otherwise could not due to e.g. financial or space restraints (Bardhi & Eckhardt, 2012). When accessing instead of owning products, the users gain value from having the right to use the products or services or being part of a network on access-based or rental payments. This gives rise to the concept of ABC, which Bardhi and Eckhardt (2012, p.188) define as:

“Transactions that may be market mediated in which no transfer of ownership takes place.”

Another definition, emphasising the monetary transactions, is given by Schaefer et al. (2016, p. 571):

“Market-mediated transaction that provide customers with temporally limited access to goods in return for an access fee, while the legal ownership remains with the service provider”

The definition that guides this thesis holds a wide definition in order to maintain an exploratory mindset while focusing on the main important aspect, no transfer of ownership. Thus, the definition by Bardhi and Eckhardt (2012) is used.

2.2.2 Access vs. Ownership

Another way of understanding ABC is by considering it a non-ownership and instead understanding ownership. Ownership of an object authorises the owner with control, use, and management of the object as well as the right to transfer the possessed object to others (Lawson, 2011). Non-ownership, on the other hand, is related to any mode of consumption where transfer of ownership does not take place. However, access is not synonymous to non-ownership but rather a subcategory of it. Bardhi and Eckhardt (2012) describe *owning* as a special relationship between a person and an object, where the relationship is expressed by ownership and the object is the owner's *possession* or *personal property*. Bardhi and Eckhardt (2012) further state two primary differences between ownership and access:

1. The nature of the relationship between the self and the object
2. The regulating and governing rules of the relationship

Thus, the relationship between the consumer and object in ABC may differ from the one in ownership. Ownership is characterised by a long-term interaction with the

possessed object, while access is a circumstantial and temporary mode of consumption. An owner has complete property rights over their possessions which affects the actions, behaviours, and incentives related to the possessions. The ownership facilitates responsibility and freedom towards the possession in the sense that it creates distinct boundaries between the owner and others. On the other hand, ownership comes with certain responsibilities and risks which are further described in the section *Burdens of Ownership*. Additionally, the owner has the mandate to control, or even deny, access to others, and also to use, sell or generate profits from the use of the object. In access does not any ownership of the object exist, and the governance and nature of the relationships are not as obvious as in ownership. (Bardhi & Eckhardt, 2012)

2.2.3 Burdens of Ownership

In contrast to ownership, access provides flexibility rather than responsibility (Lawson, 2011). A main point of distinction as well as significant reasons for users to decide to access instead of own are the so called “burdens of ownership”; the commitments, responsibilities, and risks that owning a product entail (Bardhi & Eckhardt 2012, 2017; Lawson, 2011; Schaefers et al., 2016). This may be particularly significant to those who own a car or a home, who need to deal with burdens and responsibilities such as storage, maintenance, and the risk of making a bad purchase decision (Schaefers et al., 2016). The risk of obsolescence and decrease in value are further burdens associated with ownership, where access liberates consumers from the commitments and burdens linked to owned products (Lawson, 2011). While non-owners attain the right to use a product, the burdens and risks of obsolescence, maintenance, and storage stay with the provider. Thus, access gives the users flexibility to use different kinds of products without the commitment and hassles ownership entails (Lawson, 2011).

2.2.3.1 Risk

People generally want to avoid risks, thus a too high perceived risk of a purchase decision may lead to consumers choosing to not purchase at all or seek another mode of consumption instead (Schaefers et al., 2016). At the most basic level, risk can be defined as “*the possibility of something bad happening*” (Cambridge Dictionary, n.d), or as the chance that a certain outcome will differ from the expected outcome (Chen, 2020). The former definition highlights how risk is negatively associated, and the latter highlights how risk is relative to expectations of the individual, thus people perceive risks in different ways.

Except for the risks of the product becoming obsolete and not utilising the capacity of the product sufficiently, Schaefers et al. (2016) refer to risk perception theory and argue ownership to come with three risks which are significantly higher for ownership than access; *financial risks*, *performance risks*, and *social risks*.

Financial risk relates to the uncertainty about the possible economic loss that may come from a purchase decision, where the financial risk in general is increasing with the price of the product. In contrast to ownership, users are only required to pay per unit of usage (e.g. per hour, day, or month) when they access a product. The fees per usage unit are much lower than the price of purchasing the product, although the accumulated fees over time may be higher. However, each of the fee payments for

accessing an object are lower and they are also more predictable than the total costs of owning an object, and the opportunity costs for access is not as high either. (Schaefers et al., 2016)

Performance risk relates to the uncertainty regarding if a product will have the expected performance. The performance risks include the risk of the need for repairs, maintenance, and replacements as well as the risk of not being able to utilise a purchased product to its maximum potential as a result of product failure. A high performance risk causes a higher probability of further costs after a purchase, in addition to mental and physical efforts linked to the handling of performance failure. However, in access-based services is the provider responsible for handling the performance issues. The customers do not have to think about or deal with maintenance efforts as they only pay for their actual usage. (Schaefers et al., 2016)

Social risk relates to what degree the customer believe that others may judge their purchase decisions and influence the social standing. Purchasing and thus possessing an object is in general sending signals towards others about the purchaser's self. A high social risk entails uncertainties about how others may judge the buyer based on a purchase decision. Ownership usually entails a more long-term commitment than ABC, subsequently sending out clear messages to one's peers. When accessing, the users engage in a limited and temporary relationship with the object rather than committing to it. Past research indicates that those who decide to access are more prone to seek social approval than those who decide to own. (Schaefers et al., 2016)

2.2.4 Materialism

A common theme in terms of ownership versus access is the attachment to possessions individuals experience and to what extent possessions are considered a part of the owner's extended self. This highlights the relevance of materialism and how the presence of it affect users' preferred mode of consumption. There is a general acceptance in previous research on how possessions are defining their owners (Lawson, 2011). Objects perceived having a high effect on the self are vehicles, clothes, jewellery, and books. Cars, clothing, and housing is according to Belk (1988) purchased as "*a second skin*" others may see the owner in. A way for a car to become a part of the self is by customising it a and give it care and maintenance (Belk 1988).

The most basic fact in consumer behaviour has long been "*we are what we have*" (Belk, 1988, p. 139), and Sartre stressed back in 1943 that the only way to know who we are is by recognise what we have. When owning an object, the owner identifies with the possessed object, which the owner subsequently might make a part of their extended self (Bardhi & Eckhardt, 2012). Possessions are an extensive contributor of how individuals' identities are reflected and are regarded as parts of themselves (Belk, 1988). Possessions can further symbolise the extended self as they may act as a way to convince both the individuals themselves and others that they are a different person than without the possession (Belk, 21988). Ultimately, an individual can be considered being a sum of their possessions. The most obvious situations that demonstrate how possessions are a part of the self is when they get stolen or lost and is followed by a feeling of loss and melancholy (Belk, 1988).

A common illustration of attachment to possessions is materialism, where materialists believe possessions to be the key source of happiness, or unhappiness, in life (Belk,

2007). Materialism is acquisition centric, where the acquisition per se is considered being the pursuit of happiness, and possessions are a symbol of success (Richins & Dawson, 1992). Materialism also implies a conviction that the way to develop self-identity is through extensions into possessions (Belk, 2007). Belk (1992) explains that the love of things held by materialists may be an unsatisfactory alternative for love of people. A definition of materialism is given by Belk (1984, p.291), who defines it as the following:

“The importance a consumer attaches to worldly possessions. At the highest levels of materialism, such possessions assume a central place in a person's life and are believed to provide the greatest sources of satisfaction and dissatisfaction.”

Another, somewhat simplified and more recent definition of materialism is provided by Belk (2007, p.131):

“The importance a person attaches to possessions.”

By people attaching themselves to certain objects, the objects are becoming a part of their extended self where the attachment per se can be considered an investment of psychic energy in the object (Belk, 1992). This psychic energy and the objects are perceived part of the self as they have emerged, or grown, from the self (Belk, 1988). Previous research suggests that possessions can become a part of the extended self only when the attachment emerges from emotional factors rather than functional (Belk, 1992). For instance, it is rare for an umbrella to be a part of its owner's self, whereas it is common for a pet to be so.

2.2.5 Access-Based Consumption in Automotive

The phenomenon of ABC has enabled creation of new business models, which in automotive challenges the need for owning a car (Szamatowicz & Paundra, 2019). A recent trend within automotive is car subscription services, a relatively new access-based mode of transportation which is not yet available at as many locations as ridesharing or carsharing. Companies such as Volvo, Porsche, Cadillac, and Ford have recently introduced subscription services which demonstrates its importance for the automotive industry. In comparison to other access-based transportation services such as carpooling, car subscription services provide users with access to cars for a longer period of time (minutes vs monthly). This implies that subscription users are able to partially personalise the accessed car, which presents an opportunity for the user to develop a perceived sense of ownership of the car even though the legal ownership remains at the provider (Szamatowicz & Paundra, 2019).

Business models based on subscription are particularly prevailing and established in the software industry, while being rather new in automotive (Szamatowicz & Paundra, 2019). Subscription-based business models in the automotive industry are by some claimed to fall under the *Mobility-as-a-Service* category (Szamatowicz & Paundra, 2019). Car subscription services share similarities to leasing or renting but differs in some ways. Lawson (2011) separates them by emphasising that leasing usually is based on an agreement that is contractual and includes recurring payment over time. In contrast to leasing, the commitment in subscription is lower and the car can be returned within the termination period which commonly ranges between weeks to months. Moreover, car subscription includes all costs of maintenance and insurance

and allows the user to switch car, which leasing and rental providers usually do not allow during the contract period of the rent or the lease (Szamatowicz & Paundra, 2019). Subscribed cars can also be driven with family and friends, another flexibility factor that may make car subscription appealing to consumers (Szamatowicz & Paundra, 2019).

2.3 SYNTHESIS

A global trend of increase in PSS as well as ABC can be identified. In order to understand the barriers and enablers for user adoption of an access-based PSS, it is evidently relevant to start by understanding what ABC and PSS entail. When reviewing previous research on the fields of study, one main distinction appears; the focus on psychological factors such as materialism and extended self has a much higher significance within the field of ABC. These factors are not as elaborated on in previous PSS research, constituting a good complement for the existing PSS research. There is a consensus within previous research about the fact that the ownership, or non-ownership element is an important factor that needs to be considered when discussing PSS (Baines et al., 2007; Gaiardelli et al., 2014b; Mahut et al., 2017; Tukker, 2004; etc.). Considering the subcategories by Tukker (2004), both the use-oriented and result-oriented PSS can be considered as access-based. Hence, it becomes relevant to further discuss PSS in terms of what psychological factors that affect why customers may prefer owning over access, i.e. non-owning and vice versa.

There are differences in regard to maturity level of PSS and ABC and combining these two fields of study is argued to be a way to further examine and expand the access-based aspects of PSS. The predecessor of PSS, Servitization, is a relatively mature field of study as it can be traced back to Vandermerwe and Rada in 1988 within academia. ABC is, however, a rather newborn field of study with pioneering studies conducted by Belk in 2007. The most common examples of access-based business models are AirBnB, Netflix, Uber, and the carsharing service Zipcar (Bardhi & Eckhardt, 2012; Teubner, 2014). While Uber and Zipcar are related to the automotive industry, there are certainly additional modes of access such as leasing and subscription in the automotive industry to further examine. However, the research field of materialism and attachment to possessions in consumer research is significantly older, where cars is a common example of possessions are considered being a part of the owner's extended self.

The most striking similarities in previous research on ABC and PSS is how burdens of ownership and risks are frequently occurring, and how both ABC and PSS is considered decreasing these burdens and risks. The fact that the technological development is a major enabling factor for the development of both fields is also clear. It is also evident that researchers consider both fields to have great future potential. Access-based alternatives to ownership is argued to be equally important as the Industrial Revolution (Price & Belk, 2016), and PSS is argued to give rise to a new paradigm for the automotive industry (Gaiardelli et al., 2014b).

2.3.1 Clarifications

In previous research are the terms “user”, “customer”, and “consumer” used rather synonymously, although they may have distinct and separate meanings. Their meanings are usually linked to who is paying for the car, and who is actually using it. This is mainly evident in a B2B setting where the one who is paying is the employer whereas the user might be the employee. In a B2C setting, this is more likely to be the same person. However, it may also be another person if the one using the car has a shared economy with somebody, e.g. a spouse. Thus, for the purpose of this thesis, no distinction is being made between user, customer, and/or consumer.

Furthermore, when “sustainability” is discussed, it is always in terms of “environmental sustainability”, thus no other dimensions of sustainability such as social or economic sustainability.

3 METHODOLOGY

This chapter aims for describing the methodology of conducting the thesis in a transparent manner, as well as describing and critically discussing potential shortcomings of the methodology. This is done by first introducing the *research approach*, followed by an explanation of how the *data analysis* was done, and finally a section discussing the *research quality* of the study.

3.1 RESEARCH APPROACH

The thesis was initiated in collaboration with Volvo Cars, who is to launch a car subscription service in a new country, hereby referred to as Market X. It started with an introduction meeting with the representatives at Volvo Cars to understand their issues and concerns about this launch. An introduction meeting with the tutor at Chalmers University of Technology was also conducted in order to make sense of Volvo Cars' issues from an academic standpoint. The research subject was refined and narrowed down in several iterations before settling with the final one, were the challenges were in finding a subject that both covered an academic gap and could contribute to practical outcomes helpful to Volvo Cars and their car subscription launch.

The research approach of the thesis is of abductive character as existing research and theory generations have been used while the thesis also aimed for generating novel knowledge by integrating results from a case study. The abductive approach can be considered a mixture of a deductive and inductive approach, where the former is about developing theories for existing theories to test in reality and the latter about generating theory from data collected from the real world (Dubois & Gadde, 2002). For the purpose of this study, this entailed utilising existing knowledge gathered from a literature review on the topics of PSS and ABC and combine said data with insight from interviews with industry experts and users on Market X.

As the thesis looks in depth at one organisation and a small group of individuals at Market X, the case method was chosen for the study (Easterby-Smith et al., 2015). Case studies are not limited to exclusively be qualitative or quantitative, but can be either one or both (Eisenhardt, 1989). The case study in this thesis is, however, qualitative as it is exploratory and aims to uncover new information in the context of Market X. The researchers hold a strong constructionist epistemology, assuming that there is not one single reality but rather many different realities. A graphical overview of the methodology can be found in Figure 4.

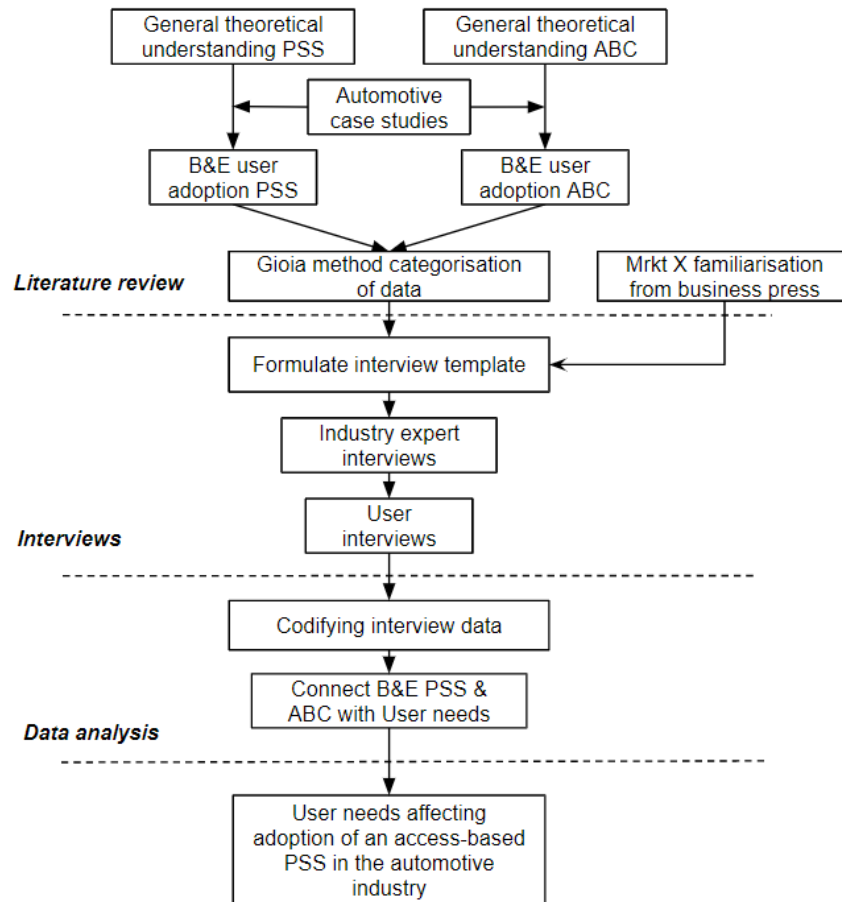


Figure 4: Methodology overview.

3.2 DATA COLLECTION

The data collection constitutes of both secondary and primary data; secondary data from a literature review and primary data from interviews.

3.2.1 Literature Review

A literature review was conducted in order to put the thesis in the light of existing body of knowledge of the areas of PSS and ABC (Easterby-Smith et al., 2015). A literature review is further essential to achieve a methodological fit and avoid reinventing the wheel (Edmondson & McManus, 2007). It was conducted online through Chalmers online library and Google Scholar. Keywords such as “PSS”, “Product Service System”, “Product-Service System”, “Servitization”, “Access-Based Consumption”, “Access-Based PSS”, “Nonownership”, and “Non-Ownership” were typed in the search for relevant literature. These keywords were further typed together with “Barriers”, “Obstacles”, and “Hinders” as well as “Enablers”, “Drivers”, and “Motivators” in addition to “Adoption”, and “Acceptance”, as well as “User”, and “Customer”. These search terms were kept general in order to obtain a wide theoretical foundation to the study. Subsequently, the terms “Automotive”, “Cars”, “Subscription”, and “Leasing” were also used in order to catch the current state-of-art of access-based PSS in automotive. Literature was also found via snowballing, i.e. by further investigating cited sources from the reviewed literature.

In order to ensure a systematic and structured approach while reviewing the literature in terms of barriers and enablers of user adoption, quotes from the literature were codified according to the Gioia method as can be seen in Figure 5 (Gioia et al., 2012). This entailed categorising the quotes representing first order concepts into second order themes, subsequently categorising the themes into aggregate dimensions. The Gioia categorisation was based on 19 papers on PSS and 11 papers on ABC, where 355 quotes respectively 116 quotes formed the first order concepts. As PSS is a older field of study than ABC, it is argued to justify the fact that more papers as well as quotes for PSS have been used.

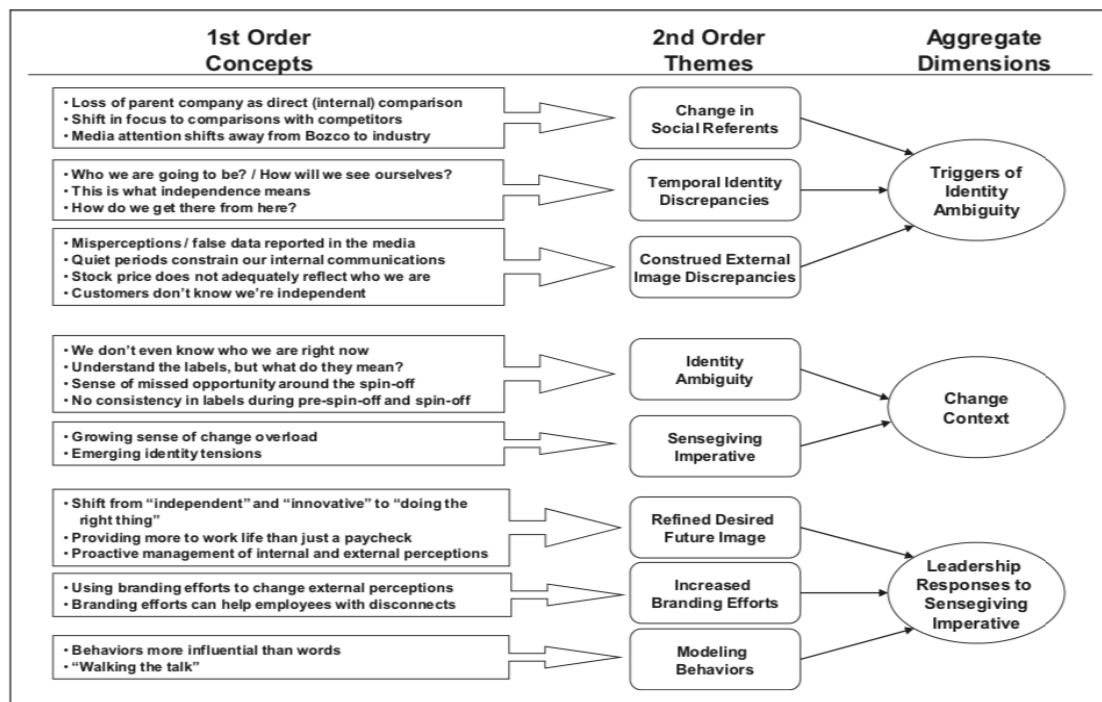


Figure 5: Example of Gioia method (Gioia et al., 2012).

3.2.2 Interviews

The study consists in total of 16 interviews of different interviewees where 11 were live interviews, conducted by phone and video, and five were email interviews. All live interviews were qualitative, explorative, and semi-structured in nature, as it is beneficiary when wanting to compare various interviews with each other (Fallahi, 2019).

Prior to each interview, an email was sent with a rough agenda including the purpose and areas of discussion to enable the interviewee to prepare for the interview. During the live interviews, the set-up always included an interviewee, a main moderator asking the questions and keeping track of all topics being covered in the topic guide, and a note-taker who also supported with follow-up questions if required. As the interviews were semi-structured, the questions were not necessarily asked the same order in each interview. This was to prevent interrupting the flow of the interview and allow the interviewee to present what they felt most passionate about.

A topic guide was prepared as proposed by Easterby-Smith et al. (2015) to keep the topics relevant while not being too tied up by them. The topic guide was based on

findings from the literature review and the customer journey when acquiring a car via buying or leasing (see Appendices A and C). For the user interviews, follow-up questions were mainly formulated to get the interviewee to expand on their answers, making them exemplify how they acted in a certain situation and why. However, all interviews covered the general topics in the topic guide that were prepared. Following each interview, the information received was discussed in a general sense and making additional notes or thoughts directly. All interviews were transcribed and main themes were highlighted and key takeaways noted down within five days.

The email interviews all had the same initial questions but were followed by different follow-up question based on the answers to the initial questions (see Appendix D). In addition to the same questions asked during the live interviews, additional insights from the live interviews generated further questions.

3.2.2.1 Expert Interviews

Five industry experts were interviewed. The purpose of the industry expert interviews was to gain a general understanding of the automotive industry in terms of the evolution of offers and customer needs and behaviours. Although the study focuses on the user needs, it is also relevant to understand the OEMs' point of view.

The expert interviewees had overlapping knowledge with a slight difference in main expertise within automotive as well as prior experience. Their experience ranged from one year to 17 years within automotive which included market analysis, offer development, sales, leasing, and marketing. They complemented with previous experience from other fields such as entrepreneurship and software development. All were employees at, or on a subsidiary to, Volvo Cars where all had their current focus on the commercial segment such as market analysis, offer development, and sales.

A general interview guide was prepared based on the identified barriers and enablers from the literature review connected to PSS and ABC. All the interviews were performed over online calls due to physical meeting not possible in respect to the current COVID-19 pandemic.

3.2.2.2 User Interviews

The user interviews were considered customer discovery interviews in order to understand how the current mobility solutions at Market X are doing the job-to-be-done for the users (Christensen et al., 2007). This entailed a focus on solutions, and what problems there may be with these solutions, rather than focusing on the product itself. It is commonly known that the customers do not know what they want, which is well illustrated in the context of automotive by the famous quote of Henry Ford "*if I had asked people what they wanted, they would have said faster horses*" (Vlaskovits, 2011 p.1). Thus, the users were not directly asked about what their needs are but rather about their current usage of and relation to cars and perceived causes of frustration and pain points in their current and previous car usage. By asking about specific situations in the past and how they acted and reasoned in these, rather than about speculative scenarios in the future, more accurate answers were provided as "*anything involving the future is an over-optimistic lie*" (Fitzpatrick, 2013, p.16). This included asking about current mobility solutions such as owning a car and leasing to understand why they have chosen one over another in the past, and not making them speculate whether a car subscription service would be something they may consider adopting.

Prior to the user interviews, a short questionnaire revolving around personal information as well as car specific experience was sent out (see Appendix B). This helped optimise the time management of the interview as well as enabled making minor adaptation to the interview guide based on the user's prior experiences of ownership and leasing. Furthermore, this customer discovery interview approach emerges from an entrepreneurial standpoint as Care by Volvo is pioneering in subscription and there is no current offer to benchmark towards other than leasing, which is most similar to subscription.

To be eligible for being an interviewee in the study, there were three requirements: being citizens Market X, living in Market X, and having a driving license. This was required as it means that the interviewees are influenced by the societal and cultural norms of Market X, and they have sufficient prior experience of cars in order to make statements of adoption possibilities and elaborate on why or why not they adopted certain offers in the past. Why not more requirements were set was due to the fact that the sample of interviewees should represent the population of Market X as well be potential car offer adopters. However, it early became evident that gathering people interested in participating in an interview was hard thus the sampling was performed ad-hoc, i.e. based on ease of access and availability (Easterby-Smith et al., 2015). Snowballing, asking the participants if they knew potential candidates to be interviewed, were also done (Easterby-Smith et al., 2015). The 11 users interviewed originated from six different sources: an online forum, acquaintances to one of the industry experts, acquaintances of friends and family of the researchers, an acquaintance of a Chalmers employee. Furthermore, as it was hard finding people who had time to spare for an interview, those who did not want to participate in a live interview instead participated in an email interview.

3.2.3 Data Analysis

The data analysis started with collecting and compiling quotes from previous research during the literature review. These were later codified according to the Gioia methodology, where the concepts of PSS and ABC were done separately. Thus, a subjective lens was applied whilst creating the 2nd order themes and aggregate dimensions. This was done iteratively, where the same quotes were re-reviewed after they had been compiled in a separate document from its original source. However, to ensure that nothing was taken out of context, comments on the quotes describing its context were made when necessary. Some influences of themes and ideas were shared between the two fields of PSS and ABC. It was evident that most topics mentioned in previous research could act as both a barrier and enabler, thus when finally presenting the barriers and enablers for user adoption in the report, they are collectively presented and discussed.

The interviews allowed further distinct themes to emerge which aided in the categorisation of the literature review by another iteration, ultimately resulting in the four final aggregate dimensions of each of the two fields of study. Where possible, the same typology is used in order to show the similarities between the two fields. Although appealing, PSS and ABC do not share the exact same dimensions as previous research in the areas have different focus and did not want to be forced into a specific mould unless fit to. By utilising these dimensions, the significance and the importance of the different barriers and enablers could be estimated.

3.3 RESEARCH QUALITY

An initial problem was encountered in the fact that the thesis was initiated in collaboration with Volvo Cars, who has an incentive to use the research for monetary gain rather than contributing to the world of academia. Finding an academic gap that matched Volvo Car's incentive was a challenge, and several iterations were required before finding a match. In order to balance incentives was the supervisor at Chalmers utilised, whose main incentive is contributing to academia. However, in the end made these iterations major improvements on the validity of the study; both the internal validity, construct validity, and external validity (Gibbert et al., 2008).

3.3.1 Prior Knowledge of The Researchers

Both authors of this study have prior experience within the automotive industry which may affect their assumptions about reality and cause bias. One of the researchers has previously worked at Volvo Cars, thus already possessing some Volvo Cars specific information as well as how it is to work within the automotive industry. However, this was mainly based on development projects within the Research & Development Software & Electronics, i.e. not directly connected to the commercial side of the Volvo Cars which focuses on innovative business models, e.g. Care by Volvo. The other researcher has experience at a first-tier supplier of fastening solutions to various automotive companies, thus possessing the knowledge of the complexity of the supply chains and how the impact of changes in one part impacts the rest of the supply chain.

3.3.2 Literature Review

There are some aspects of the literature that could be discussed in terms of its research quality. PSS and Servitization are mature fields of study which have been developed since 1999 and 1988 respectively, thus there is a risk of important articles being missed out on. However, those frequently cited which could be found have been read and included in the literature review. There were some papers, e.g. Goedkoop et al. (1999) which could not be accessed. For transparency towards the reader of this report, when the original source has not been read it is always referred to "*as cited in [secondary source]*", e.g. "Goedkoop et al. (1999) as cited in Baines et al. (2007)". Moreover, in order to be able to grasp the vast body of knowledge that exists on focusing on understanding fewer articles, limitations were made for both PSS and ABC. For example, Mobility-as-a-Service is just nudged on and have not been dug deeper into in terms of PSS and automotive as it reaches outside of the scope of passenger cars. In terms of ABC, the literature review refrained from digging deeper into sharing economy as it by some researchers is considered being a part of ABC. Moreover, literature on sharing economy tend to focus on peer-to-peer networks which, for the purpose of this study, is not considered relevant although interesting.

The fact that the reviewed PSS and ABC literature revolve around other industries than only automotive brings both advantages and disadvantages. The main disadvantage entails that some of the findings might not be fully applicable on the automotive industry. The advantages, however, are that it contributes to a higher generalisability for future research of the findings in the barriers and enablers identified when investigating the sub-issue 1 and 2. When investigating sub-issue 1 and 2, utilising the Gioia methodology also brings risks. When using the Gioia methodology, a subjective lens is required to create 2nd order themes and the aggregate dimensions which ultimately is coloured by previous experiences of the researchers. Furthermore, while

categorising quotes, i.e. the input to the first order dimensions, there are cases where the quotes could have fit in several second order themes. In these cases, the theme where it was considered to be most coherent was chosen and the same logic applies for categorising the second order themes into aggregate dimensions.

3.3.3 Interviews

One of the benefits of interviews is that more than simply the words can be interpreted from the interaction as conclusions can be made based on face and body expressions as well (Easterby-Smith et al., 2015). Remote interviews entail missing out on this to some extent. However, as the interviewees were both far away, geographically sparse, and affected by the current COVID-19 pandemic, face-to-face interviews were not possible. This entailed that all live interviews were held in the same online format making them more similarly treated.

The user interviews focused on frustrations, or pain points, from the users from a “Mom test” perspective as suggested by Fitzpatrick (2013). This requires the researchers to interpret user need which adds another subjective lens that risks being coloured by biases from the researchers, which may affect the validity of the results. However, from Fitzpatrick’s (2013) point of view, this is still the better option than asking speculative questions. Furthermore, quotes are included and/or description of what the user said in the interview allowing the reader to make their own judgement whether they agree with the conclusion or not.

Referring back to the quote by Fitzpatrick, “*anything involving the future is an over-optimistic lie*” (2013, p.16), he does make sense saying this. However, when the users themselves decides to share something that have not been asked about it should be considered as they believed it to be important enough to share. It can thus be interpreted as representing their values in general, however uncertain if they will act in the way they claim. To maintain transparency, all speculations about the future is separated into its own section.

The sampling of the user interviews is not big enough to represent the whole population of Market X. However, the aim of the interviews was not the test a predetermined hypothesis but rather to conduct exploratory customer discovery interviews. Holding a constructionist epistemology view of the world, the aim is to reveal some of the existing realities rather than one definite. This viewpoint is important as each user views the world differently based on their own values and beliefs, thus giving rise to different type of needs where one could not be considered more correct than the other. However, the answers provided by the users risk portraying a slightly skewed picture of Market X as the users were mainly male as can be seen in Table 6 at page 53. Market X has a high Gender Equality Index compared to the average in the world, i.e. being significantly more equal than many other countries (European Institute for Gender Equality, n.d.). However, what impact this may have on the quality of this study is unknown and can only be speculated about. However, the two women interviewed shared similar answers, stating that it is mainly their boyfriend and husband who is using their car. Two of the users interviewed were married to each other and had traditional gender roles regarding who was responsible for the car and its finances, namely the man. However, this might also have been due to him having a technical academic background whereas she had an education within social sciences. Thus, the educational background of the users might impact more than gender. Also, all

interviewees were highly educated. This may be relevant in the context of Care by Volvo, as Volvo Cars is a premium brand, under the assumption that with a higher education, an individual earns more money and can thus afford a premium car. However, access-based offers within automotive appeal to new and younger segments who are in their early 30s, compared to traditional ownership-based offers where the customers on average are in their early 50s (Genzlinger et al., 2020). This emphasises the value of performing an exploratory study on a more diverse sample as it is uncertain who the final users are. Furthermore, a majority of the users were considered car enthusiasts, which also may skew the results, as their prior experiences and general perceptions can favour cars in another way than the general public might. However, as collecting interviewees was proven difficult, it was necessary to receive as many respondents as possible. It is hardly a surprise that when openly asking the public about a certain topic, it is those who have a certain interest in the topic who are willing to participate. The interviewees who did not have a car interest also highlighted that their answers might be wrong or not help the study. This was met with attempts to empower the users by explaining that they do represent Market X and that their view of the world are just as accurate as the car enthusiasts', as it is one of the many truths. It would further be desirable to have conducted all of the user interviews live through video or phone call, but as some of the interviewees were reluctant to do so, an email interview was considered still being able to add insights to the results.

3.3.4 Generalisability and Dependability

The generalisability, that is, to what extent the results vary in different circumstances (Gibbert et al., 2008) is considered being high for the findings in the literature review although rather low for the user interviews. The literature review is comprehensive and based on research from various industries until a saturation was reached, i.e. further data would not contribute more to what will be presented (Strauss, 1987). The overall generalisability of the answer to the research question is, however, considered low. The focus is solely on Market X and the sample size cannot act as a representation of the whole market, although some general insights may be applicable for the automotive industry in its whole. Furthermore, interviews being a social construct and therefore reliant on the participants cannot be fully replicated by others as the rapport built between them might be a determining factor (Easterby-Smith et al., 2015). Additionally, current circumstances also might impact the responses given. The interviews were performed during a world crisis, the COVID-19 pandemic, which is a rare occasion and might shape and change the society and the users' perceptions. In terms of reliability, which is characterised by transparency and replication (Gibbert et al., 2008), the study is considered rather high. As mentioned, a saturation was reached in the literature review and if another researcher would conduct it with the same methodology, the result would probably not differ much. That does, on the other hand, not apply to the findings of the interviews. As interviews are social constructs, the findings would probably not be the same if the interviews were to be replicated. The transparency factor in the reliability is, however, aimed for being high.

On the other hand, the transparency of the study is to some extent jeopardised by the confidentiality issues concerning Market X. However, these were the premises given by the collaboration partner of the study, and out of the control of the researchers. In order to provide the reader with a clear picture of the contextual factors impacting the study, as much information as possible have been given. Alternatively portraying the

information in another light which still provides the essence of the information, for example through translating holiday destinations to the distance driven. This allows all results to be presented, although anonymised, without comprising the trust of the collaborating company.

4 FINDINGS

In this chapter the findings of the three sub-issues are presented which are *barriers and enablers for user adoption of PSS and ABC* and *user needs within the automotive industry*. For the convenient reader, a summary of the findings of each sub-issue is presented in the end of each section. These findings constitute the basis for understanding users' behaviours and values, consequently providing insights to identifying what user needs there are which may affect whether the users adopt an access-based PSS or not.

4.1 BARRIERS AND ENABLERS FOR USER ADOPTION OF PRODUCT-SERVICE SYSTEMS

After collecting and compiling quotes from 19 articles on the topics of PSS and Servitization focusing on the user's point of view in various industries, four aggregate dimensions and 18 2nd order themes were identified (see Table 2). Some articles combined the point of view of the user with the PSS-provider and the industry. In these cases, only the information relevant to the user perspectives has been collected and noted in Table 2. Further explanation is provided in the next sections, followed by a summary answering sub-issue 1 in the end.

Table 2: The identified aggregate dimensions and 2nd order themes of PSS.

Author	Year	Financials		Prior knowledge		Consciousness		Personal Lifestyle		Relationship		Redistribution of task		Redistribution of responsibility		The PSS		The Product		The Service		Ownership Model		Situational factors		Institutional Norms		Government involvement		Technology development and innovation	
		The Individual	The Provider	The Offer	External Impact																										
Baines, T. S., Lightfoot, H. W., Evans, S., Neely, A., Greenough, R., Peppard, J., ... & Alcock, J. R.	2007	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Barquet, A. P. B., de Oliveira, M. G., Amigo, C. R., Cunha, V. P., & Rozenfeld, H.	2013	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
D'Agostin, A., de Medeiros, J. F., Vidor, G., Zulpo, M., & Moretto, C. F.	2020	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Gaiardelli, P., Resta, B., Martinez, V., Pinto, R., & Albores, P.	2014	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Gaiardelli, P., Songini, L., & Saccani, N.	2014	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Genzlinger, F., Zejnilovic, L., & Bustinza, O. F.	2020	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Mahut, F., Daaboul, J., Bricogne, M., & Eynard, B.	2017	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Mont, O.	2002	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Pessôa, M. V. P., & Becker, J. M. J.	2017	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Rousseau, S.	2020	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Schenkl, S. A., Rösch, C., & Mörtl, M.	2014	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Schmidt, D. M., Bauer, P., & Mörtl, M.	2015	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Schmidt, D. M., Braun, F., Schenkl, S. A., & Mörtl, M.	2016	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Schmidt, D. M., Malaschewski, O., Fluhr, D., & Mörtl, M.	2015	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Schotman, H., & Ludden, G. D. S.	2014	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Talberg, J. V., & Rasmussen, T. D. M.	2016	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Tukker, A.	2004	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Vandermwerwe, S., & Rada, J.	1988	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Wong, T. C. H., Jang, M. K., Moon, S. K., Chua, Z. Y., Zhang, H., & Oh, H. S.	2018	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		

4.1.1 The Individual

The major aggregate dimension that could be identified was connected to the individual user and their values and behaviour. This could further be broken down into the themes *financials*, *prior knowledge*, *consciousness*, and *personal lifestyle* where the user's' individual beliefs ties into each aspect.

4.1.1.1 Financials

There are several financial aspects playing an important role for whether the user adopts a PSS or not, where one of the main barriers connects to the misconception of lifecycle cost or the Total Cost of Ownership (TCO). Previous research states how users are unaware of how much money they spend owning a certain type of product (Mont, 2002; Rousseau, 2020; Schenkl, 2014; Schmidt et al., 2015a; Talberg & Rasmussen, 2016). Thus, this is also linked to the prior knowledge of the users. Consequently, when comparing accessing a PSS to owning a product, the users forget to include all the expenses they have for the ownership, ultimately making an inaccurate and unfair comparison of the two modes of consumption in favour of ownership (Talberg & Rasmussen, 2016).

Not having to buy the product and instead having a renting price can act as an enabler leading to an actual or a perceived lower TCO (D'Agostin et al., 2020; Gaiardelli et al., 2014a; Rousseau, 2020; Schmidt et al., 2015a, 2016). This can further be connected to the duration of use the customer has estimated to have the product. For example, in the study by Rousseau et al. (2020) on smartphones in Belgium, some users estimated that they changed their phone every two years whereas other users changed it every three years. Thus, it was more financially viable for the users with shorter use-phase to access a phone via leasing, and more beneficial to own the phone for those with a longer use-phase, subsequently resulting in different preferences.

There are also cases where a long use-phase promotes use-oriented PSS, especially when the responsibility of the products' functionality remains with the PSS-provider, relieving the user of responsibility. This may be exemplified by logistic companies with truck fleets, that instead of buying product-related services for maintenance rather focus on long-term proactive solutions in order to maintain a higher utilisation grade, subsequently improving for the overall business case of the user (Gaiardelli et al., 2014b). This ties into resource efficiency, which is an enabler for PSS as it generates financial benefits. Tukker (2004) describes this in a B2B setting, where the user can save management time, human resources, and potentially even physical capacity by utilising PSSs. Moreover, by having an external party performing certain services, which is offered in a PSS, the specialisation within an area the external party is possessing makes the performance of the activity more efficient than if the user would perform it (Vandermerwe & Rada, 1988).

Additional financial benefits of PSS that enables user adoption is that accessing a PSS relative owning have a lower initial investment. It allows users to receive a higher performance for a lower price which is interesting for users if they, for example, are seeking social status with the product (D'Agostin et al., 2020) or when companies do not have the financial capabilities of making a purchase (Schenkl et al., 2014). There are different type of financial benefits of PSS and the fact that the user can reduce their costs by turning towards a PSS is evident in several cases (Baines et al., 2007; Barquet et al., 2013; Mont, 2002; Rousseau, 2020; Schenkl et al., 2014; Schmidt et

al., 2016). Tukker (2004, p. 251) explains that users are “*willing to pay more than would be justified on the basis of ‘rational’ calculation*” if the PSS-provider adds intangible value. Intangible value, however, is low in the cases of renting and sharing as they do not “*contribute to (self-)esteem, or ‘priceless’ experiences*” (Tukker, 2004, p. 253). Barquet et al. (2013) agree that value holds subjective dimensions such as commitment, trust, and attraction. Thus, linking the financial aspects into other softer values of the user.

4.1.1.2 **Prior Knowledge**

Prior knowledge, or rather a lack thereof, is mainly stated as a barrier for user to adopt a PSS in previous research (Barquet et al., 2013; Gaiardelli et al., 2014b; Pessôa & Becker, 2017; Schmidt et al., 2015a, 2016; Schotman & Ludden, 2014; Talberg & Rasmussen, 2016). Users are in general unaware of the benefits PSS might have, which generates uncertainties regarding risks, responsibilities, and costs as well as misunderstandings of terms and conditions in contracts (Pessôa & Becker, 2017; Rousseau, 2020; Schmidt et al., 2016; Talberg & Rasmussen, 2016). Gaiardelli et al. (2014b) point out that customers are unaware of the services actually included in the PSS. Additionally, lack of prior knowledge has been identified in regard to how the PSS works and the usage of it (Barquet et al., 2013; Schmidt et al., 2016). In the context of carpooling and electric vehicles, users are not comfortable with the new technology and afraid to miscalculate the driving range of the car, thus impeding the adoption (Schmidt et al., 2016). Unawareness can also be connected to the user themselves where the users are not aware of their own needs until they have encountered and tried a certain function or PSS, subsequently giving rise to a new demand (Schmidt et al., 2015a). On the other hand, if the user has prior knowledge favouring the PSS it acts as an enabler for adoption. This may be exemplified by knowledge about sustainable benefits (D’Agostin et al., 2020), or that users are technology receptive as this increases the possibility for the PSS-provider to provide services to the user (Vandermerwe & Rada, 1988).

4.1.1.3 **Consciousness**

Sustainability is frequently mentioned as one of the benefits of PSS as well as an enabler for user adoption (Baines et al., 2007; D’Agostin et al., 2020; Rousseau, 2020; Schmidt et al., 2015a, 2016). Schmidt et al. (2016) suggest that environmentally concerned users are willing to pay a premium for environmentally friendly PSS. Additionally, in 2015 it was stated that “*Environmentally friendly and sustainable products are ever more demanded*” (Schmidt et al., 2015a, p. 5). Schmidt et al. (2016) further argue that users are willing to make other than monetary sacrifices, e.g. of convenience and comfort by travelling a longer distance, in order to use a more environmentally friendly alternative even though other alternatives were more conveniently close by in terms of geographical proximity. They continue to explain how users also achieved a sense of emotional reward by making more environmentally friendly choices, thus being willing to make these sacrifices. This act as an enabler when the PSS is environmentally friendly or when the user perceives the PSS as the more environmentally friendly alternative (Rousseau, 2020).

Another aspect of consciousness acting both as a barrier and enabler for user adoption of PSS is status (D’Agostin, 2020; Mont, 2002; Schotman & Ludden, 2014; Schmidt, 2016). Status is tied to the concept of ownership (Mont, 2002), where ownership only

occurs in the product-oriented PSS (Tukker, 2004). Therefore, with the loss of ownership, a loss of status might also occur. On the other hand, the perceived status may increase as the user is able to access a product via a PSS that they would not have afforded to buy (D'Agostin, 2020; Schmidt et al., 2016), thus connecting to financial aspects. Additionally, Schmidt et al. (2015a, p. 4) state “*A low market penetration of a certain product might be a problem for the customer. However, a too high market penetration could be also a barrier for purchase because of the lacking exclusivity*”. This implies that if the status of a product is dependent on its exclusivity, the status gained from it may decrease if an increased number of users have the possibility to access it.

4.1.1.4 **Personal Lifestyle**

The most prominent barrier for user adoption linked to the individual user is when there is a need for user to make a change in behaviour and/or mindset (Rousseau, 2020; Pessôa & Becker, 2017; Schotman & Ludden, 2014; Talberg & Rasmussen, 2016). It is further highlighted that users must value other ways of having their needs fulfilled rather than owning the product (Talberg & Rasmussen, 2016). Pessôa and Becker (2017) highlight the dependency and collaboration required between the user and the provider of the PSS. This entails that both the provider and the user have to make adjustments in their behaviour to adapt to each other. For the user, this means that they need to “*learn how to handle new product components, like implemented machines or self-service devices; they further have to adapt to service times that are offered by providers, even if this affects their own activities*” (Pessôa & Becker, 2017, p. 165). Schotman and Ludden (2014, p. 196) highlight that it does not matter which type of PSS is being adopted when stating that “*the problem with many PSSs is that they are designed to offer a familiar result in a way that differs too much from existing use patterns*.” They further highlight how some people have “*intrinsic and personal driven motivation to use the PSS*” in order to maintain or revive an old behaviour which have been lost due to factors beyond the control of the individual, e.g. old age (Schotman & Ludden, 2014, p. 199). It is important to consider what stage in their life the user is in, as well as their age which ultimately impacts their behaviour and needs (D'Agostin et al., 2020).

4.1.2 **The Provider**

Provider-user involvement entails any exchange which is done between the user and the PSS-provider. The three main themes identified in regard to this is the *relationship* that connects the user and provider, and *redistribution of tasks and responsibilities*.

4.1.2.1 **Relationship**

The relationship is highly dependent on the trust the user has to the PSS-provider (Barquet et al., 2013; Genzlinger et al., 2020; Mont, 2002; Rousseau, 2020; Schmidt et al., 2015a, 2015b; Schenkl et al., 2014; Tukker & Tischner, 2006). When offering a PSS, the provider might be able to access sensitive data belonging to the user, and trust thus becomes vital for adoption (Mont, 2002; Schenkl et al., 2014; Rousseau, 2020). Additional aspects of trust ties to the fact that the user must be able to trust that the provider will deliver according to agreed time, quality, and cost (Schenkl et al., 2014). Not doing so is a barrier to adoption as users are afraid that unexpected costs emerge, for example if a leased phone is stolen or need repair (Rousseau, 2020). Mistrust can also be rooted in the users' experiences with similar products,

subsequently creating a barrier for adoption (Schmidt et al., 2015a). A user's trust for a company can even grow so strong that the user chooses to only get their services from that company (Schmidt et al., 2015a).

Co-creation of value in different forms is a frequent recurring topic in previous research on PSS (Baines et al., 2007; Barquet et al., 2013; Gaiardelli et al., 2014b; Genzlinger et al., 2020; Rousseau, 2020; Schmidt et al., 2015b). When discussing the development process, Schmidt et al. (2015b, p.288) state that "*customer integration is noted to be important for providing successful PSS*" thus improving the PSS to better suit customer needs. Co-creation could therefore be considered an enabler of user adoption. Examples of ways of co-creation is by utilising feedback received from users (Gaiardelli et al., 2014b) or "*the connectivity of the car enables the localization of the vehicle and the user, the interaction between them, and hence the co-creation of value*" (Genzlinger et al., 2020, p. 222).

Schmidt et al. (2015b) propose that switching from product-oriented relationships to a service-oriented relationship increases user adoption. Similarly, previous research highlights the importance of a partnership and the increased interaction between the user and the provider (Barquet et al., 2013; D'Agostin et al., 2020; Goedkoop et al., 1999, as cited in Baines et al., 2007; Pessôa & Becker, 2017; Schotman & Ludden, 2014; Vandermerwe & Rada, 1988).

The customer feeling an overdependency, as they tie their operation or daily tasks to the PSS-provider, might act as a barrier for user adoption (Gaiardelli et al., 2014b; Pessôa & Becker, 2017; Vandermerwe & Rada, 1988). This may cause the customers being locked-in (Gaiardelli et al., 2014b) and the sensation of lack of freedom (Vandermerwe & Rada, 1988). However, Tukker (2004) presents other context where the user remains their freedom and are not locked in, yet have a dependency on the PSS-provider, thus generating user loyalty which may be interpreted as an enabler for adoption. Pessôa and Becker (2017) highlight another barrier with overdependency in the context of outsourcing, as it may be a loss of know-how while utilising the outsourcing types of PSSs.

Pessôa and Becker (2017) pinpoint that that lack of confidence from the customer can prevent them from purchasing a PSS. Moreover, the purchasing process of a PSS is normally more time consuming and complex than traditional purchases of product and/or services. Thus, a high investment is indeed needed from both the customer and the provider.

4.1.2.2 Redistribution of Tasks and Responsibilities

A PSS can also entail a redistribution of tasks (Baines et al., 2007; Gaiardelli et al., 2014b; Schenkl et al., 2014; Tukker, 2004). Redistribution of tasks may act as an enabler for user adoption as it entails resource efficiency as previously mentioned (Gaiardelli et al., 2014b; Tukker, 2004). Furthermore, it is important that the PSS-provider focus on non-core activities of the user as this act as enabler and the opposite, trying to take over the users core-activities, act as a barrier (Baines et al., 2007; Schenkl et al., 2014).

As tasks and ownership is redistributed, the responsibility is redistributed as well. This can both act as a barrier and enabler for user adoption as it is depending on the risk-

averse nature of the user as well as what they perceive causing the risk (Baines et al., 2007; Barquet, 2013; Mont, 2002; Pessôa & Becker, 2017; Rousseau, 2020; Schenkl et al., 2014; Schmidt et al., 2016). In other words, the higher the perceived risk connected to the PSS, the less likely adoption is to occur (Schmidt et al., 2016). The fact that the PSS-provider is absorbing the risks which once was with the users is, however, enabling user adoption of PSS (Schmidt et al., 2016). This includes risks linked to finances, technology, and the organisation (Schenkl et al., 2014) as well as avoiding responsibility for the product-lifecycle and end-of-life management, whilst also receiving a functional guarantee of the PSS (Barquet et al., 2013). Mont (2002) argues the risk-reduction being something that the user expects from a PSS and has been identified as one of the main drivers for adoption. Risk perception can also be tied to the PSS and act as a barrier. Pessôa and Becker (2017, p. 165) explain how this barrier can arise during the purchasing process: *“Evaluating PSS’ providers and their offerings is much more difficult than in case of stand-alone offerings. The difficulties in the evaluation process raise customers’ perceived risk, which is defined as a combination of the probability and magnitude of negative consequences in case of a poor purchase decision.”* Similarly, Rousseau (2020) connects the risk perceived by users while highlighting that not having perfect information and certainty is a barrier towards leasing. She continues that although in theory many new innovations have great potential, they are not embraced with as open arms by the users in practice.

4.1.3 The Offer

The PSS offer comprises of three parts; the product, the service, and the system (Baines et al., 2007). Previous research stresses attributes of the PSS and the attitude the individual holds towards the PSS being highly intertwined. Schmidt et al. (2015a, p. 3) explain that product attributes *“describe barriers, which arise from the product itself as they are perceived by customers”*. It is therefore interesting to consider a combined approach of both the user’s attitude and the attributes of the offer together to gain an understanding for what the attributes of the offer actually means in term of user adoption. Previous research remarks are mainly made on the PSS in its entirety however, distinctions are also made that can be purely connected to either the product or the service. The findings in this section are therefore presented accordingly under the headlines *the PSS*, *the Product*, and *the Service*. Moreover, an important part of a PSS is the *ownership-model* which subsequently finalises the section.

4.1.3.1 The PSS

When considering the whole PSS, it holds several attributes that could be regarded as barriers and enablers for user adoption. The main benefit of PSS is the customisation attribute (Baines et al., 2007; Barquet et al., 2013; Gaiardelli et al., 2014b; Genzlinger et al., 2020; Mahut et al., 2017; Mont, 2002; Schmidt et al., 2015a; Wong et al., 2018). Mahut et al. (2017, p. 2113) explain how the provider should *“manage usage information, potentially personalised for each client and use it efficiently in companies’ various activities”*. Similarly, Genzlinger et al. (2020) state that this approach ultimately leads to delivering the highest possible value to the user. Gaiardelli et al. (2014a) mean that this leads to loyalty and retention. Customisation also ties into the fact that PSS are highly customer-centric, which can be viewed as an enabler of user adoption as a PSS is more focused on the user in contrast to simply buying a product (Baines et al., 2007; Schotman & Ludden, 2014; Vandermerwe & Rada, 1988). When introducing the concept of Servitization, Vandermerwe and Rada (1988) explained how broad

offerings are more in focus, which implies that the completeness of an offer can act as an enabler. Similarly, Baines et al. (2007) identified how completeness is a common recurring theme when reviewing successful PSSs. Mont (2002) further explains how adoption of a PSS from a wider customer base is achieved in some industries and B2B settings when the offer has a wider range.

Flexibility is in previous research considered an enabler for user adoption (Rousseau, 2020; Schenkl et al., 2014; Schmidt et al., 2016). Schmidt et al. (2016) exemplify the concept of flexibility as a success in the case of carpools where the users are free to choose which kind of car they want, such as an electric vehicle or a conventional car, depending on the users aim. If the user plans a long trip where the electric vehicle does not have enough range for, they could easily choose the conventional car for that trip (Schmidt et al., 2016). The fact that the users value flexibility makes them more prone to choose a PSS over buying a product (Schenkl et al., 2014). Some researchers suggest that users have become more result-oriented which promotes PSS as it no longer simply favours owning a product (Genzlinger et al., 2020; Rousseau, 2020). Rousseau (2020) also highlights that PSS enables a higher level of variety, acting as an enabler for user-adoption of PSS. However, Schenkl et al. (2014) pinpoint a barrier for user adoption in the loss of sense of control by the user. In particular are leasing schemes associated with a loss of freedom along with a lower service quality (Talberg & Rasmussen, 2016).

The convenience, or inconvenience, of a PSS is in previous research suggested to act as an enabler or barrier for user adoption. Inconvenience can be manifested in unavailability or ease of access, which Rousseau (2020) states acts as a determinant for user satisfaction of a PSS. Similarly, D'Agostin et al. (2020) categorise the unavailability of the product or service as the main barrier for user adoption in the context of bike-sharing. Schmidt et al. (2016) point out how carpool users value closer proximity over the product attribute; it is more important with closer distance than which kind of engine the car has. Furthermore, Schmidt et al. (2016) note how the barrier of unavailability relates both to the product itself and complementary assets such as spare parts, as well as to the supporting system such as availability and reliability of charging stations for electric vehicles. Moreover, simply the presence of users' disbelief in the system may act as a barrier for adoption (D'Agostin et al., 2020; Schmidt et al., 2015a). Users are to some extent holding biases, thus, irrationalities of the users could be considered a barrier (Schmidt et al., 2015a). D'Agostin et al. (2020) highlight users' disbelief in that prior expectations will be fulfilled. The prior expectations pinpointed are comfort, safety concerns, that the PSS of sharing truly contributes to environmental sustainability, as well as having to share the PSS with other users whom they do not personally know and the user's perception of hygiene. Ceschin (2014, as cited in Talberg & Rasmussen, 2016) adds that the sense of hygiene that is obtained when owning cannot be achieved for ownerless access, as is the case for the bikesharing case of D'Agostin et al. (2020). For use-oriented PSSs, Tukker (2004) adds that renting and sharing schemes discourage the use of the product due to the additional hassle which cannot be seen when having sole access to a product. This, however, has been identified to have environmental benefits increasing the PSS' level of sustainability (Tukker, 2004).

An additional aspect of the convenience of a PSS is the speed of delivery where Schotman and Ludden (2014) highlight waiting times in terms of taxi services as a major barrier. Rousseau (2020) explains that in the case of smartphone leasing, millennials have a resentment towards any technology service delays. Users expect their needs to be met more quickly which pushes the firms towards providing PSS (Genzlinger et al., 2020; Vandermerwe & Rada, 1988).

Schmidt et al. (2016) refer to Everett Rogers' (2003) five attributes for diffusion of innovation: relative advantage, compatibility, complexity, trialability, and observability. This means that there are enablers for adoption when the PSS have a relative advantage in comparison to other options, is compatible to the current situation of the user, is not too complex for the user to understand, and the user can try as well as observe the PSS before purchase. Similarly, Mont (2002, p. 94) explains how "*there is a general agreement in the literature that in order to gain higher customer acceptance of service-oriented solutions, companies need to provide more attractive offers or at least the same level of function and comfort as products*" meaning that there must be a relative advantage in order to achieve user adoption. However, Schotman and Ludden (2014) explain that although an offer has an obvious relative advantage, it does not ultimately mean that the user will actually choose that option, especially if the user already can obtain that result with other alternatives. Although mentioned as an important factor, observability was concluded in the study by Schmidt et al. (2016) to not have any major impact in terms of user adoption. Schotman and Ludden (2014) explain that the PSS's degree of success is dependent on how well all the elements in the system fit together.

4.1.3.2 **The Product**

The attributes of the product can act both as a barrier and enabler of adoption (D'Agostin et al., 2020; Gaiardelli et al., 2014b; Genzlinger et al., 2020; Mont, 2002; Rousseau, 2020; Schmidt et al., 2016; Schotman & Ludden, 2014; Talberg & Rasmussen, 2016; Tukker, 2004; Wong et al., 2018). The aesthetics of the product was brought up as a barrier in the case of Wong et al. (2018), where a case study was conducted on the Fitbit smartwatch. It appeared that as it was not compatible with other accessories already worn by their users, it resulted in rejection of the PSS. Additionally, Schotman and Ludden (2014) mention how the "odd design" of the vehicle they used to transport elderly in was a barrier. However, in the case of electric vehicles, the product performance is considered an enabler for adoption due to the product attributes of reduced vibrations and noise level, as well as faster acceleration (Schmidt et al., 2016). An additional enabler identified is the fast innovation cycles that the user can experience of the products while leasing instead of owning (Rousseau, 2020) or the fact that continuous improvements are made in order to improve the product life-cycle performance (Tukker, 2004). In the case of a human centred design approach, Wong et al. (2018) conclude that most importantly, functionality should be the first in focus for the product.

In the context of adoption of a bike-sharing PSS, i.e. a use-oriented PSS, D'Agostin et al. (2020) explain that compatibility of the product is an important factor. The compatibility they refer to is in terms of being consistent with the values, needs, and experiences of the user. D'Agostin et al. (2020) further highlight the importance of trialability, being able to try the product before purchase. Schmidt et al. (2016) suggest

curiosity to be the reason for why users try new type of products offered in the PSS, e.g. trying a new car type in a car sharing PSS.

What can be considered both a barrier and an enabler for user adoption in the context of automotive is the fact that people from younger generations do not share the same interest in cars as previous generations have done (Gaiardelli et al., 2014b). Genzlinger et al. (2020, p. 217) highlight that the car “*is losing its position as a status symbol*”. This can be viewed as an enabler for non-product-oriented PSS such as mobility systems (Genzlinger et al., 2020). In the case of leasing, status can be a barrier as the object that is leased sometimes is a second-hand or refurbished second-hand product which then can be considered of lower status (Talberg & Rasmussen, 2016).

4.1.3.3 **The Service**

Baines et al (2007) emphasise how the fact that a service is flexible to each interaction enables it to better suit the user’s needs. Additionally, Vandermerwe and Rada (1988) highlight how technical solutions, such as artificial intelligence, enable predictive services, subsequently also better meeting user needs. It is evident from previous research that services create additional value that a product cannot, and that the total value of the PSS is increased via the service elements (Baines et al., 2007; Barquet et al., 2013; Wong et al., 2018). Vandermerwe and Rada (1988) explain that services should aid the users to optimise the utilisation of the products and help if anything were to go wrong. However, attitudes towards services can be vastly different between users (Gaiardelli et al., 2014b), thus implied to be both a barrier and enabler of user adoption. The relative advantage of the service level must be clear in comparison to what is already done in-house or by contracted parties for a PSS to be adopted (Talberg & Rasmussen, 2016). Furthermore, Genzlinger et al. (2020, p. 224) pinpoint that “*customer service satisfaction and free-of-charge services will become more and more critical to keep customers close*”, implying that the service element of the PSS is crucial for retaining and keeping users satisfied.

4.1.3.4 **Ownership Model**

There are several aspects about PSS that have a clear connection to either to accessing or owning the product or to why users would choose one over the other. A PSS can be both accessed and owned, which motivates why presenting barriers and enablers in terms of access versus ownership in previous PSS research.

In order to adopt an access-based offer, previous research on PSS describes the need for a change in users’ beliefs and behaviour; the user must value having a need fulfilled more than owning a product (Baines et al., 2007; Gaiardelli et al., 2014b; Mahut et al., 2017; Schotman & Ludden, 2014). Genzlinger et al. (2020) argue that this is already happening when new generations are turning towards usership instead of ownership. Similarly, Schotman and Ludden (2014) argue that the attitude of users are becoming more and more result-oriented, that is, they are uninterested in the use and ownership of the product but rather interested in the result of using it. D’Agostin et al. (2020) explain that accessing a product instead of owning it may give a sense of freedom as the user only have to take responsibility for the product during the actual usage of it. However, accessing a product in the form of leasing can indicate a low socioeconomic status as it indicates that the users do not have sufficient financial

resources to buy the product (Talberg & Rasmussen, 2016). When the focus is shifting from owning a product to utilising it, there is also potential to achieve sustainability benefits (Baines et al., 2007).

Enabling ownership, thus being a barrier to ABC, is how users sometimes view products as a part of their extended self (Rousseau, 2020). D'Agostin et al. (2020) argue that if users either way are going to spend money on a product, they might as well own it. Rousseau (2020) brings up the financial aspect in terms of if the duration of use, and means that ownership may be favourable if the duration is long-term, while accessing is preferred for a shorter duration of use as it is more financially viable. Ownership, in contrast to accessing, also gives the user a greater flexibility along with a better feeling in comparison to renting (Schmidt et al., 2016). As status is connected to ownership, owning is favoured if the user seeks status (Talberg & Rasmussen, 2016). Furthermore, Rousseau (2020) highlights the fact that users sometimes believes "*my phone should be mine*", meaning that the products itself is considered to be part of the user's extended self.

4.1.4 External Impact

The external impact on the individual and the PSS also plays an important role in the user's decision to adopt a PSS. The external impacts can be divided into four subcategories; *contextual factors*, *institutional norms*, *government involvement*, as well as *technology and innovation*.

4.1.4.1 Contextual Factors

The context in which the PSS operates is important to adhere to in order to gain user adoption as the attitude of the user is relative to its surroundings (Baines et al., 2007; D'Agostin et al., 2020; Gaiardelli et al., 2014b; Pessôa & Becker, 2017; Schmidt et al., 2015a, 2016; Vandermerwe & Rada, 1988). The culture, religion, societal, and ethical norms can act as barriers and it is thus important to acknowledge these (Gaiardelli et al., 2014b; Schmidt et al., 2015a). Subsequently, the "*PSS must be designed, made, and delivered on a case-by-case basis and viewed from the client's perspective*" (Baines et al., 2007, p. 1549). This may be depicted by how PSS solutions are noted to have a wider acceptance in communal societies such as the Netherlands, Scandinavia, and Switzerland (Baines et al., 2007). Schmidt et al. (2016) explain how the adding of services may make an innovative product compatible with established technologies or ideas. This also connects to the importance of interoperability or compatibility with already existing systems, highlighting the importance of adhering to already existing standards.

4.1.4.2 Institutional Norms

D'Agostin et al. (2020) emphasise how the users impact each other within a society. For example, users may experience negative emotions and being guilt-tripped into adopting a certain behaviour that is accepted in their context, thus adhering to institutional norms. This can act both as a barrier and enabler for user adoption. For example, if the most sustainable option according to the wider public is to adopt a bike sharing PSS, the norms subsequently enables adoption of the PSS. On the other hand, if the norm says otherwise, it will act as a barrier for user adoption. Previous research suggests that the norm of owning is working against PSS in the sense that it demotivated ownerless systems (Talberg & Rasmussen, 2016).

4.1.4.3 **Government Involvement**

The involvement by a government usually occur via different kinds of public policies in the form of new legislations or deregulations, and is in previous research mainly stated as an enabler for user adoption of PSS (Baines et al., 2007; Barquet et al., 2013; Gaiardelli et al., 2014b; Mont, 2002; Schmidt et al., 2016; Vandermerwe & Rada 1988). Mont (2002) shows how a deregulation in the chemical industry caused an increase in customer demand for extended services. Schmidt et al. (2016) noticed how regulations in the B2B sector forced companies to adopt certain environmentally friendly alternatives. This implied including a certain type of product, electric vehicles, into their car fleets. This was, however, only noticed in the B2B sector and not in the B2C setting. In the context of machinery in Brazil, Barquet et al. (2013) noticed that some regulations financially favoured ownership of machine tools, thus acting as a barrier for adoption of the PSSs available within the sector of machine tool leasing. Gaiardelli et al. (2014b) discuss how pressure favouring environmentally friendly alternatives shapes the user into becoming more result-oriented and valuing sustainable mobility over ownership.

4.1.4.4 **Technology Development and Innovation**

Technology makes it easier for the PSS-provider to deliver and customise information to their users and to deliver services in real-time (Vandermerwe & Rada, 1988). The fact that the PSS-provider can access the data of the user with the help of technology enables not only optimisation of the services, but also with the help of artificial intelligence to predict what the user may need (Mahut et al., 2017; Vandermerwe & Rada, 1988). Technology also enables quicker delivery of services (Genzlinger et al., 2020). In order for the PSS to be adopted, it is important that the technology the PSS uses for communication is compatible with newer communication methods, such as smartphone applications, as this increases the attractiveness of the offer (Schmidt et al., 2016). However, technology can also be complex to users, thus it is important for adoption that it is easily comprehensible (Schmidt et al., 2015a, 2016).

Technologies that are exposed to innovations during a short time frame are more likely to be adopted by users in a leasing format than via purchasing (D'Agostin et al., 2020). Tukker (2004) explains that by PSS-providers gaining insights into user needs, faster and improved innovations can be obtained. However, Schmidt et al. (2015a) highlight a barrier in the fact that users may be unwilling to try new innovations as they tend to prefer keeping to familiar products.

4.1.5 **Summary: What are the barriers and enablers for user adoption of Product-Service Systems?**

To summarise the answer to sub-issue 1, several aspects acts as both barriers and enablers for user adoption of PSS. These can be linked to the individual user, the offer, the provider, and external factors which all are interdependent. In terms of the individual, one of the main barriers is that a change in behaviour, or mindset, is required to adopt certain PSS. However, users are becoming increasingly result-oriented and not as product-focused, which act as an enabler for the more service-intensive PSSs. Furthermore, the stage of life the individual is impact their behaviour and has to be taken into account for adoption to occur. For adoption to occur, the PSS must be financially viable to the individual, where factors such as TCO in combination with the duration of use is important. However, what is lost over spending a lot of

money on long duration of use might be gained from increased resource efficiency. Thus, if the user values a higher utilisation grade, the duration of use might not matter. Furthermore, by utilising an access-based PSS, the user can obtain a product with a higher performance for a lower price. This enables user adoption of PSS as it can help the user reach a higher perceived status. Previous research also highlights a need for users to be sustainable, something which can be achieved by utilising PSS as PSS in general are more sustainable with the exception of leasing services which, in fact, can have the opposite effect. Furthermore, the prior knowledge of the user might impact adoption. Users are often unaware of the benefits a PSS might have where users' unawareness of their own needs also might be an issue, thus not adopting the PSS. If the user holds prior biases, or has had poor prior experiences with similar products or from the same provider it might act as a barrier of adoption.

For user adoption of PSS, the provider plays a vital role where trust to the provider is an important enabler and invasion of privacy is a barrier. Furthermore, overdependencies and sensations of being locked-in might create barriers for adoption. If the PSS focuses on non-core activities of the use, this may act as enabler whereas the opposite is a barrier. The reduction in risks for the user is also cited as one of the main enablers for adoption.

The high level of customisation possibilities of the PSS is considered a major enabler for user adoption of PSS. Furthermore, convenience aspects such as completeness of the offer, flexibility, variety, availability and reliability, as well as speed of delivery are often connected with PSS and considered enabling adoption. The opposite similarly acts as barriers. Additionally, four out of the five attributes mentioned by Rogers (2003) could be applied for PSS; relative advantage, compatibility, low complexity, trialability, relative advantage are considered as important factors enabling adoption. The product included in the PSS can impact the adoption if the aesthetics or performance does not fit the user's preference. Furthermore, if the technology of the product is frequently changing, this benefits PSS as it enables the variety factor. Enabling data usage can also tailor the PSS additionally via predictive services further customised to the individual. In order for a PSS to be adopted, it is important that the user values fulfilling a need more than actually owning the product. Users might feel that if they are continuously spending money on a product, they might as well own it which act as a barrier for user adoption of access-based PSS.

Finally, whether or not a PSS is adopted by a user is also affected by external impacts. The PSS must adhere to the context of which the individual exists by being compatible with existing systems in the market as well adhering to cultural, societal, and ethical norms as well as institutional norms. Public policies also impact the users' needs and behaviour by creating financial incentives to adopt certain offers, mainly in terms of favouring more sustainable alternatives. Moreover, technology enables the delivery of many PSSs but it also required that the user is receptive to the technology used for the PSS in order for it to be adopted.

4.2 BARRIERS AND ENABLERS FOR USER ADOPTION OF ACCESS-BASED CONSUMPTION

By reviewing 11 articles on the topics of ABC, non-ownership, and materialism, quotes in regard to barriers and enablers for user adoption could be categorised into 11 2nd order themes and four aggregate dimensions. An overview of the articles reviewed and what themes and dimensions they covered can be found in Table 3. Further explanations follow in the upcoming sections followed by a summary answering sub-issue 2 in the end.

Table 3: The identified aggregate dimensions and 2nd order themes of ABC.

Author	Year	Segment and Society	Materialism	Perceived Sense of Ownership	Status	Duration of Use	Customization	Variety Seeking	Freedom from Ownership	Risk	Change in Technology	Institutional Norms
		The Individual				The Offer			Lifestyle Facilitator		External Impact	
Bardhi, F., & Eckhardt, G. M.	2012		•	•	•	•			•	•		•
Bardhi, F., & Eckhardt, G. M.	2017	•	•	•	•	•		•	•			•
Belk, R.	2007		•		•				•		•	•
Lawson, S.	2010					•		•				
Lawson, S.	2011				•	•		•	•			
Lawson, S. J., Gleim, M. R., Perren, R., & Hwang, J.	2016	•	•		•			•				•
Matzler, K., Veider, V., & Kathan, W.	2015										•	•
Price, L. L., & Belk, R. W.	2016	•										
Schaefers, T., Lawson, S. J., & Kukar-Kinney	2016				•				•	•	•	•
Szamatowicz, M., & Paundra, J.	2019		•	•			•	•		•		
Tunn, V. S., Fokker, R., Luijckx, K. A., De Jong, S. A., & Schoormans, J. P.	2019		•		•	•						

4.2.1 The Individual

The most frequent occurring dimension is *The Individual*. This dimension is the sum of themes that emerge from the individual user and their surroundings, such as the *segment and society*, *materialism*, and *perceived sense of ownership*, as well as *status*.

4.2.1.1 Segment and Society

Price and Belk (2016) pinpoint that access and ownership are socially constructed concepts. It is rooted in values, human emotions, cultural norms, and relations, and there are social constraints of accessing and owning as well as refraining from it. Bardhi and Eckhardt (2017) suggest the segment that is most prone to access to be millennials who are comfortable with digital consumptions, have mobile lifestyles, live in global cities, and belong to Western cultures.

Based on the factors economic consciousness, environmental consciousness, choice confusion, variety seeking, status consumption, possessiveness, materialism, and demographics, Lawson et al. (2016) were able to identify a couple of segments based on their attitude towards ABC. Those who appeared to be most likely to seek access were those who tend to seek variety in combination with not being especially materialistic or possessive. Individuals in this segment were mainly well-educated couples with relatively high income and large households. Enablers identified for promoting adoption of access-based offers to these variety seeking consumers is based in the fact that access-based offers generate opportunities to try a lot of new products without having to spend a lot of money, and without having to commit to a

specific product. Thus, a further enabler for adoption from this segment is the low commitment required when accessing. Given the large households, the segment probably consists of families, thus Lawson et al. (2016) propose an enabler for further adoption from this segment in adding services based on the children's development.

Those who appeared to be the least likely to seek access were those who are mainly driven by price, and often seeks public products to access. The individuals in this segment were high educated with an average age higher than in the other segments. This may indicate that the age acts as a barrier, as individuals within certain age groups from older generations are less inclined to feel comfortable using the technology necessary to access products. (Lawson et al., 2016)

4.2.1.2 **Materialism**

A main barrier for users to choose access over ownership is the fact that some individuals prefer owning an item rather than accessing it, which demonstrates how factors such as materialism and possessiveness inhibit access (Lawson et al., 2016). Similarly, Bardhi and Eckhardt (2017, p. 585) refer to materialism and "*a desire to own*" as a main barrier for users to adopt access-based products. Lawson et al. (2016) share another view on materialism; low materialism may be a reason for not accessing product, as these individuals do not feel a need to access materialistic objects in order to impress their peers. This is contrasting to previous research which suggests that individuals with low materialism would be more inclined to participate in ABC (Belk, 1985, 2007; Kleine & Baker, 2004).

Lawson et al. (2016) also discuss the role of materialism and possessiveness to be minimal to some segments and industries, as ABC enables the user to try a lot of different products, which may appeal those who want to follow the latest trends and constantly stay up to date. Lawson et al. (2016) argue this to be particularly true for fashion and technology. Moreover, Bardhi and Eckhardt (2017) argue materialism to be an enabler for ABC, as the circulation of possessions and simplicity to acquire may be characterised as materialistic. Likewise, Bardhi and Eckhardt (2012) propose materialism to be an enabler for ABC as it allows users to afford a luxury lifestyle, something they would not be able to afford otherwise.

Tunn et al. (2019) expand this further by stating that a user's desire to own an object goes beyond pure control, as it also brings emotional value and can express a social status. Bardhi and Eckhardt (2012) stress that a high symbolic value for the owner, such as the value derived from owning your first car, act as another barrier for adoption of access-based offers. Similarly, Bardhi and Eckhardt (2017) state that the lack of a strong connection to objects that are accessed is a barrier for users to adopt access-based offers.

Szamatowicz and Paundra (2019) pinpoint a barrier in the context of accessing cars, stressing that people have a stronger emotional attachment to their *owned*, private car. They further elaborate that an access-based service such as a car subscription in theory could generate a psychological attachment, however not as strong as towards an owned car. Szamatowicz and Paundra (2019) argue the stronger attachment to owned cars is due to the fact that owning a car includes a longer commitment than accessing one, where the commitment is a contributing factor in developing perceived sense of ownership.

4.2.1.3 **Perceived Sense of Ownership**

The barrier of materialism can, to some extent, be overcome by the development of a perceived sense of ownership. This means that users do not have to legally own an object in order to experience a sense of ownership and feel possessive about the object (Bardhi & Eckhardt, 2012; Belk, 2007; Szamatowicz & Paundra, 2019). A perceived ownership is the feeling of something being “mine” without the product actually being owned by the individual (Bardhi & Eckhardt, 2012). Previous research suggests that by controlling objects, simply touching them, getting to know them, or creating them, the users can develop a perceived sense of ownership or even identify the object as part of their extended self (Bardhi and Eckhardt, 2012). The longer the duration of use, the more likely the individual is to get to know the object. In terms of creating an object, customisation can play a role as a car owner has higher control in that sense as they can moderate its performance or appearance however, they wish to (Szamatowicz & Paundra, 2019). Moreover, financially investing in an object creates a higher perceived feeling of control, which in turn leads to stronger psychological attachment (Szamatowicz & Paundra, 2019).

Szamatowicz and Paundra (2019) discuss perceived sense of ownership in the context of car subscription. They mean that as a subscribed car is only used by one subscriber during the subscription period, it is possible to partly personalise a subscribed car, thus enabling the user to develop a perceived sense of ownership of it which overcomes the barrier of materialism. However, as the provider of the subscription service most often offer a limited collection of cars, it may be hard for users to find a vehicle that fits their preferences to the extent that they emotionally attach to it, and subsequently developing a perceived sense of ownership (Szamatowicz & Paundra, 2019).

4.2.1.4 **Status**

Besides economic restraints, access-based offers may also appeal to those who are not able to or want to buy certain products due to space constraints or environmental concerns (Bardhi & Eckhardt, 2012). In urban areas, access has proven to be particularly popular due to the space limitations these areas entail, e.g. parking or storage. Lawson et al. (2016) noticed a desire to seek status among consumers, where access enables reaching a status the consumer would not be able to reach with ownership due to different constraints. Lawson et al. (2016) refer to this as “status consumption”, and use the definition presented by Eastman et al. (1999, p. 42) of this:

“The motivational process by which individuals strive to improve their social standing through the conspicuous consumption of consumer products that confer and symbolise status for both the individual and surrounding significant others.”

Access has historically been viewed as inferior to owning, and access in the form of traditional rental services has been considered uncertain, wasteful, and restricting the individual’s freedom (Bardhi & Eckhardt, 2012). Therefore, individuals who rented rather than owned were traditionally seen as “*feckless consumers who were misallocating their purchasing power*”, consequently given a lower status (Bardhi & Eckhardt, 2012, p.883). Previous research indicate that those who decide to access are more prone to seek social approval and status than those who decide to own (Bardhi & Eckhardt, 2017; Lawson, 2011; Schaefer et al., 2016). Schaefer et al. (2016) elaborate on this in terms of risks and social risk and propose that users who see a high social risk in ownership are more prone to adopt an access-based offer.

Lawson (2011) discusses this by describing how users by accessing can use the best and latest products, services, and trends, giving them a higher social status but at a significant lower initial cost. Belk (2007) expands the discussion on status further taking a community perspective. He explains that if the consumer can access something they cannot afford to own, it makes them a part of a community which may be perceived as exclusive and giving the consumer increased social status. On the other hand, if the objects of the community can be accessed by basically anyone, it might lose its high status. Moreover, Tully et al. (2015) suggest that the existence of financial constraints among consumers increase their desire for possessing material goods during a longer period of time. Bardhi and Eckhardt (2017) argue this to be particularly true for the middle-class segments.

Lawson et al. (2016) highlight the aspect of brand loyalty and relationship, which may act both as an enabler and a barrier. On the one hand, brand loyal consumers may be less prone to access products as they do not seek change in an actively manner (Lawson et al., 2016). Furthermore, Bardhi and Eckhardt (2017) argue that when the brand has a high relevance for the self to the consumer, they may prefer to own the object. On the other hand, access may act as a way for consumers to evaluate which product they appreciate, which makes ABC an alternative way to future brand and product loyalty (Lawson et al., 2016).

4.2.2 The Offer

The dimension of *The Offer* constitutes of themes related to the offer the individual seek to adopt, such as the *duration of use*, *customisation* possibilities, and how it may facilitate *variety seeking*.

4.2.2.1 Duration of Use

Bardhi and Eckhardt (2012) refer to how past research has shown that factors such as price, the perceived quality, and duration of use may affect users' adoption decision. Similarly, Bardhi and Eckhardt (2017) suggest prices, the temporary nature of use, and flexibility to be the main enablers for users to access a product instead of owning it. Lawson (2010) emphasises the seasonality and temporary characteristics of an offer as well as of an industry are aspects determining whether a consumer prefer to access or own an object. She means that if the consumers are aware of changing trends depending on season, one may suppose they will use the product during a shorter period of time, which results in a greater motivation to access the product rather than to buy it. The expected duration of use affects the preferred consumption mode, where a short use duration promotes non-ownership (Lawson, 2011).

A longer duration of use may, on the other hand, act as an enabler in the sense that it promotes the development of a perceived sense of ownership (Bardhi & Eckhardt, 2012; Szamatowicz & Paundra, 2019; Tunn et al., 2019). Tunn et al. (2019, p.274) emphasise another dimension of the duration of use in the context of access-based PSS when stating that "*intangible value increases product preference in an AB-PSS when consumers use a product for an extended period*". Thus, the importance of intangible value derived by the user depends on the duration, and when a user uses an access-based PSS for a longer period of time, the importance of intangible value increases.

4.2.2.2 **Customisation**

Tunn et al. (2019) argue that when consumers compare the options of accessing and buying a product, buying is usually the more attractive option as the products available for purchase often matches the consumer's individual preferences better. They mean that with ownership comes a higher potential to customise, something that is valued by the users. The customisation aspect can, however, be argued to be relative. Szamatowicz and Paundra (2019) elaborate on customisation in the context of car subscription service in comparison to car sharing. As the car in the case of car subscription is solely used by the subscriber during the subscription period, a subscription service makes it possible for the user to partially personalise the car which is not possible for car sharing. This personalisation may further enable the subscriber to establish a perceived sense of ownership of the car, although the legal ownership is not theirs.

The product can be customised to increase the attraction of the offer to one consumer, but on the other hand leads customisation leads less typical products as users' preferences differ (Tunn et al., 2019). Thus, a larger group of users are less interested in a customised product, and it is therefore a challenge in balancing broad user acceptance with the satisfaction of single users. Tunn et al. (2019) suggest a solution enabling user adoption to this in a temporary customisation of the product: customising a small attribute of the product that easily can be added or removed every time the product is accessed by a specific user. In the context of a bike-sharing system, this temporary customisation may imply the possibility to choose a certain pattern at a part of the bike that can be easily removed or changed for the next user (Tunn et al., 2019)

Customisation may, however, imply different things. Tunn et al. (2019) refer to customisation as the infusing of meaning and intangible value, aiming at that in turn may lead to greater market acceptance as well as greater satisfaction among individual consumers. Moreover, Tunn et al. (2019) state that acceptance of consumers increases when an offer meets intangible needs together with functionality needs. In B2C segments where the lack of emotional or intangible value act as barriers to user adoption, a customisation of products could be a way to reach this segment. By offering users a few different low-impact customised offers, access-based offers have the potential of being attractive to these segments while also enabling adoption in future use phases by different users (Tunn et al., 2019).

4.2.2.3 **Variety Seeking**

Lawson (2011) as well as Bardhi and Eckhardt (2017) propose variety seeking and flexibility as enablers for users to adopt an access-based offer; when choosing to access in the context of cars, consumer can use a variety of cars and car types instead of only one as when owning.

Choice confusion is a further enabler described by Lawson et al (2016), as trying a product decreases consumers' perceived risk, consequently favouring the ABC. Although users want choice options, they may feel overwhelmed by the variety of available choices which can result in them abandoning the purchase decision or search for additional information (Lawson et al., 2016). Lawson et al. (2016) argue ABC to serve as a source of information in the sense that it allows the consumer to try the product before making an eventual commitment to buy it, subsequently reducing the perceived risks of purchase.

Lawson et al. (2016) noted another enabler for user adoption of ABC in the possibility to “test run” a product without having the responsibilities of ownership. If a product is accessed and the user do not like it, they can simply return it and only lose an access fee. Accessing a product could be a way to try it out before committing to buying it, as access facilitate trial seeking (Lawson, 2011; Lawson et al., 2016). From that point of view, access may be a way to promote future ownership rather than to forgo it. The possibility to experience something that otherwise would not be possible to experience was also something noted as an enabler by Lawson et al. (2016). Variety seeking has a lot of influence on consumption (Ratner et al.,1999; Simonson, 1990), which is strengthened by respondents in the study by Lawson et al. (2016) mentioning that they like having a lot of new things. A desire to seek status was also noted, as their respondents stated that through access, the individual can pretend to be someone else for a day and do things they otherwise do not get to do.

4.2.3 Lifestyle Facilitator or Complicator

The *Lifestyle Facilitator* dimension emphasises how accessing an object in most cases are more convenient than owning it, although there are some exceptions. These exceptions act as barriers for user adoption, that is, the user perceive them as *Lifestyle Complicators*. Lawson et al. (2011) identified *freedom from ownership* and *risk avoidance* as two themes for consumers to seek a non-ownership mode of consumption, which also summarises this dimension well.

4.2.3.1 Freedom from Ownership

Ownership comes with liabilities (Bardhi & Eckhardt 2012, 2017). These liabilities are by Schaefer et al. (2016) referred to as burdens of ownership; the responsibilities and risks that owning a product entail. These burdens inhibit freedom, practicality, and flexibility, something that is becoming increasingly valued by users (Bardhi & Eckhardt, 2012). Through access, consumers are liberated from the liabilities and restrictions linked to ownership and can rather fit the accessed object into their personal lifestyle needs. Moreover, access constitutes an enabler for consumers who lack the required financial means to consume certain brands, products, and services, they otherwise would not be able to consume (Bardhi & Eckhardt, 2012).

Bardhi and Eckhardt (2017) discuss how consumers desire to own act as a mean to reach a sense of control, stability, and security, and suggest that consumers who are facing financial uncertainties often prefer ownership. On the other hand, during circumstances such as global economic crisis, ownership may be perceived as a more uncertain option due to the uncertainties in labour and increasing costs of both acquiring and maintaining the ownership (Bardhi & Eckhardt, 2012). Furthermore, uncertainties can emerge from professional insecurities where these kinds of uncertainties rather act as enablers for adoption of access-based services. In a B2B setting characterised by contingent and flexible work assignments, access-based services may be a way to manage unpredictability and uncertainties as it provides the users with the flexibility required by their unpredictable work schedule (Bardhi & Eckhardt, 2017). Professional uncertainties may thus act as an enabler for ABC, as it simplifies the professional flexibility and mobility required by the nature of the work.

Bardhi and Eckhardt (2012) state that convenience is an enabler for access, and in particular when the location of the accessed product is closer to the residence of the

consumer. They further argue this to be true for the case of car sharing, while false for traditional car rentals where the cars mainly are accessed in transportation hubs. Schaefers et al. (2016) suggest in their case study of car sharing that usage of access-based services increase the likelihood of reducing ownership. The higher the risk of owning perceived by the consumer, the more likely is an increase in the usage of access-based services. The responsibility of repairing and maintaining the possession is also included in these risks. Due to these risks, access-based services make it possible for consumers to economise at the expenses of ownership as the only risks faced by access-based service consumers are those related to choosing between different services (Schaefers et al., 2016).

4.2.3.2 **Risk**

Schaefers et al. (2016) discuss the affection of performance risk as a factor for whether the consumer choose to access or purchase a product, where performance risk implies the risk of not being able to use the product as expected, due to e.g. a need for repair or maintenance. Schaefers et al. (2016) argue that the higher performance risk perceived by the consumer, the greater the enabler for adoption of ABC. However, in the context of accessing a car, not being able to drive unlimited number of miles may entail performance risks favouring ownership and act as a barrier for many users (Szamatowicz & Paundra, 2019). Szamatowicz and Paundra (2019) further explain that this is closely related to the concern users may have when driving electric vehicles. Users' driving patterns are irregular, and mileage limitations, as with electrical vehicles and leasing contracts, hinder users from spontaneous car use or driving longer distances. In the context of car sharing, Szamatowicz and Paundra (2019) argue that mileage limitations may act as a barrier for users to adopt the service, and Sharp and Davison (2019) stress mileage limits to prevent use of a leased vehicles. Bardhi and Eckhardt (2012) highlight how, in the case of car sharing, the provider needs to have some kind of governance model to monitor the whole system. This may result in users feeling monitored, and subsequently, to some extent the sensation of freedom having a car disappears may act as a barrier for users to choose access over owning (Bardhi & Eckhardt, 2012).

There are also uncertainties about the potential economic loss that comes from a purchase decision, where these uncertainties, or *financial risks*, in general are increasing with the price of the object (Schaefers et al., 2016). Schaefers et al. (2016) argue high financial risk to be an enabler for accessing a product, as each of the fee payments for accessing a product is lower than the upfront cost for purchasing, and they are also more predictable than the total costs of owning. However, it may be argued that the financial risks have a close relationship to performance risks, at least in terms of repair and maintenance. Lawson et al. (2016) conducted a study on perceived consumer motivations for engaging in ABC where the most common positive motivation was the economic benefits related to short-term access, i.e. accessing certain products is a more cost effective option than buying or owning them. The positive effect on the environment of accessing products was also a prevalent occurring positive motivator, however it can be discussed if this rather is a positive side-effect of the economic benefits than an actual enabler.

4.2.4 External Impact

Another dimension that emerged is *External Impact*, consisting of the themes *technology development* and change in market and customer perception and behaviour, that is, change in *institutional norms*. Both these themes solely act as enablers for user adoption; how is described in the upcoming sections.

4.2.4.1 Technology Development

Belk (2007) means that the high pace of technological development enables a shift towards non-ownership consumption alternatives. Similarly, Schaefer et al. (2016) stress how the development of technologies has facilitated access-based services for both the accessor and service provider, and also enabled a greater reach. Matzler et al. (2015) highlight collaborative and social software, network technologies, and consumers' changing behaviour as contributors to the increasing trend of non-ownership.

4.2.4.2 Institutional Norms

Belk (2007) emphasises an enabler for user adoption of ABC in the fact that it is possible to get the most benefits out of ownership without actually owning and without having to deal with costs for e.g. maintenance. Non-ownership enables individuals to leverage their lifestyles to an extent far beyond the possibilities they attain from ownership (Belk, 2007). Besides, what consumers perceive as value is constantly changing; what is valued today may not be valued tomorrow, further promoting access as no long-term commitment is required (Bardhi & Eckhardt, 2012). The attachment to objects is temporary, and the value derived from them is dependent on the context.

The rapid pace of change of social structures, technological transformations, shorter product life cycles as well as perceived obsolescence result in the value gained from, and the consumers' relationships with, services, objects, and experiences is temporary and context specific (Bardhi & Eckhardt, 2017). This promotes ABC, together with the fact that consumer research suggests that experiences under some conditions make consumers happier than material possessions and are more appreciated as gifts than material objects (Bardhi & Eckhardt, 2017). An explanation for this is provided by Carter and Gilovich (2012), who mean that experiences are more closely linked to the consumer's self than what possessions are. While the traditional basic fact within the field of consumer behaviour research has been that we are what we have (Belk, 1988), the study of Carter and Gilovich (2012) shows that we rather are what we do. Similarly, Bardhi and Eckhardt (2017) emphasise that the practical benefit offered by an object may be valued by consumers to an increasing extent, rather than the linking value that connect them to their identity and self. Thus, these changes in how consumers value experiences may promote ABC over ownership.

Furthermore, Bardhi and Eckhardt (2012, p.881) refer to changing consumer desires as an enabler for user adoption of ABC when stating that "*ownership is no longer the ultimate expression of consumer desire*". This is enhanced by a study conducted by PwC in 2014, where overall revenues from ABC were estimated to globally rise from \$15 billion in 2014 to more than \$300 billion by 2025 (Lawson et al., 2016). Bardhi and Eckhardt (2012) discuss that there is a shift in the sociocultural politics on the market, where access is not considered inferior to owning to a great extent anymore, and access has rather emerged as a trendy, cool, hip, and green alternative to possessions

and ownership. Bardhi and Eckhardt (2012) argue access to be a less complicated type of consumption than ownership, as access is socially shaped by how value increasingly is gained by intangible resources. The intangible resources enable both flexibility in identity and an ecologically friendly consumption. Bardhi and Eckhardt (2012) explain that as the social conditions are becoming increasingly unstable due to rapid changes in society, it is difficult for social structures to guide actions and long-term strategies of life. This may be considered to act as an enabler for user adoption of ABC as ownership entails a longer commitment, subsequently a long-term strategy of life of the user.

Bardhi and Eckhardt (2012) argue that attachment to possession become rather problematic when social and institutional structures constantly change. As ABC enables flexibility and a freedom of lifestyle for the user, access is subsequently gaining sign value as it emerges as a more economically, sustainable, free, and flexible consumption alternative. Moreover, if the choice of not owning a car is no longer linked to status, as the choice is taken at a “smart” basis and not due to the consumer not being able to afford to purchase it, the importance for owning a car of symbolic reasons fades away.

4.2.5 Summary: What are the barriers and enablers for user adoption of Access-Based Consumption?

To summarise the answer to sub-issue 2, the main factors affecting user adoption of an access-based offer is suggested to be materialism as well as responsibilities and risks. The presence of materialism and possessiveness acts both as an enabler and barrier for user adoption. The barriers emerge from a desire to own, and that people have a stronger emotional attachment to objects that are legally their possessions. The enabler for user adoption materialism presents is that ABC allows users to try a lot of products, where the circulation of possessions and simplicity to acquire can be argued to be materialistic.

Similar to materialism, status may act as both an enabler and barrier for user adoption. As access facilitate variety seeking and allows users to easier utilise the latest and the greatest, it presents an enabler for ABC. Traditionally has access been regarded as inferior to owning, and individuals who acquired products for access rather than ownership has been given a lower status, which to some extent still constitute a barrier for users to adopt an access-based offer.

In order to compensate for the lack of legal ownership in ABC, previous research highlights how a longer duration of use and possibility to customise products act as an enabler for ABC in the sense that it promotes a development of a perceived sense of ownership for the user. Responsibilities and risks further act as enablers for ABC as users do not have to deal with the burdens of ownership and decrease their overall risks. In terms of financial risks it is rather a question of TCO, which after a certain duration of use becomes higher for access and owning.

Demographic factors also affect how prone the users are to adopt an access-based offer. Variety seeking, or in a stage of life where much is changing, enables users to adopt an access-based offer over owning, while stable life situation and older age groups are barriers for adoption.

External factors such as technology development and institutional norms further affect the user adoption. Technology has facilitated the access-based offer for both the user and the provider, and also enabled a greater reach. Social and collaborative software and network technologies are further enablers for users to choose to forego ownership, as it provides the users with most of the benefits from an ownership without the risk and responsibilities ownership entails. How institutional norms change enables user adoption as access is no longer considered inferior to owning, but rather as a cool and green alternative to possessions and ownership.

4.3 AUTOMOTIVE USER NEEDS

This section contains the findings from the interviews. Firstly, insights from the *industry expert interviews* are presented where main focus is on overall automotive industry trends and Market X and linked to the users when possible. Secondly, insights from the *user interviews* are presented, where focus is on the individual users' behaviours and needs. The section is concluded with a summary answering sub-issue 3.

4.3.1 Industry Expert Interviews

In order to set the scene for the automotive industry in its entirety, the industry expert interviewees (see Table 4) were asked about overall trends in the industry. They were further asked about more specific trends regarding how different offers have evolved, what global or local trends there may be, differences between the B2B and B2C segments as well as sustainability aspects. All industry experts agreed that the automotive industry is currently undergoing changes and has been doing so for quite some time.

Table 4: Overview of industry expert interviewees.

Identifier	Position	Automotive Experience	Main Experience	Interview date
Expert1	Project Aftersales Business Manager Market X	22 years	Automotive retail sales and import in Market X	2020-03-26
Expert2	OEM Acting head of Offer	1 year	Product and business development	2020-03-30
Expert3	OEM Offer Development Manager	3 years	Worked mainly with offer development, but also with CRM platform implementation, technical research for new automotive solutions and IT services	2020-03-31
Expert4	Head of Care by Volvo Market X and neighbouring market	16 years	Marketing, Sales & Business development experience within automotive financial services	2020-03-31
Expert5	OEM Commercial Project Leader	15 years	Automotive, commercial strategy and product management	2020-03-31

4.3.1.1 **Societal Trends**

Two respondents, Expert2 and Expert5, argued that the overall trends follow the lines of society as a whole. This entails changes rooted in digitalisation and technology advancement, sustainability awareness among users along with a governmental push for it, as well as a change in ownership to renting schemes, i.e. ABC. Thus, also impacting the offers demanded by and provided to the user. Expert5 described how it in the end of the 20th century was a lot of focus on luxury and premium, which meant a lot of horsepower and being able to customise the car into the smallest detail. However, this is more of a European trend and not as noticeable in, for example, USA where customers tend to go the dealership with a rough estimation of what they want and simply pick a car that is already available at the spot. Today, however, other aspects are valued such as environmental aspects and advanced technology. Expert3 highlights the technological advancements in terms of connectivity of cars and autonomous drive, and Expert5 has noticed that users to an increasingly extent are asking about these aspects.

4.3.1.1.1 Digitalisation and Technology

The trend of digitalisation and everything becoming more digitised is noticeable according to all industry experts. Expert5 exemplifies it with the fact that an increased number of product releases, i.e. launches of new cars, are done online instead of at physical gatherings. Expert3 emphasises how the digitalisation enables the development of access-based automotive offers such as car sharing. Expert4 discusses a challenge for users with car sharing platforms in how they cannot guarantee the user to always have the car available when or where they want it. Expert3 states *“I believe that the core of the driving force is technology”* while explaining why the automotive industry is changing where the technology advancements have enabled many of the Servitized offers. Being more connected allows a faster delivery of services, something that also is expected by customers today according to Expert3. Expert5 agrees with this while also highlighting that there is a time management trend that users are concerned about. Not only should services and product be delivered quickly but they should also always be available to the user whenever they want them. Users do not want to spend their time on having to choose exactly what should be included in an offer, but rather expect that the right offer should be recommended to them. Thus, making the entire processes of choosing much simpler when not having to customise into the smallest details. Whether a certain market is able to adopt novel types of non-ownership offers is dependent on how mature and technology receptive the market is, as these types of PSSs are dependent on a supporting infrastructure of technology. Furthermore, in terms of the Care by Volvo offer, data from their subscription service in a neighbouring country to Market X shows that increasingly more customers order their car online. A significant share of those orders are also done without any contact with dealerships.

4.3.1.1.2 Servitization

The industry experts also noted the general trend of change in ownership models. These are similar to what other industries already has undergone towards subscribing to a product, and to the service that the physical product enables, rather than owning it. Expert5 explains that users are more experience-oriented than product-oriented nowadays, and that experiences per se are much higher valued than ownership. Moreover, the consumption behaviour of users is also depicted to have shifted from

valuing ownership to wanting the latest and greatest. There is a great interest from users to receive the car instantly and not having to wait, and they are willing to disregard customisation in order to receive the car faster.

A strong need for flexibility was emphasised by all industry experts, and how all-inclusiveness, convenience, and transparency is increasingly prioritised by the customers is something all industry experts agreed on. Expert5 described this in another way in his narrative "*customers prioritise to make smart choices rather than buying an expensive car*". Expert5 further discussed how ownership implies a sensation of restriction, and that users want to turn away from this by instead accessing products in leasing schemes. Expert5 means that access provides a greater freedom and adaptability to changing circumstances in the users' life situations. "*Once you start leasing, you never go back*" Expert5 argues, meaning that once the users got used to the convenience leasing entails, they do not want to own a car ever again. Expert4 states that for the mobility providers, there is a big challenge in the balance between convenience, flexibility, and pricing when explaining "*there's always a balance between the convenience part, and the flexibility part, and the pricing part. Because there's a tipping point saying that now it's very flexible, and very convenient but now it becomes a little bit too expensive*". The challenge is to understand where that tipping point is and to what degree people need to be flexible as in the end, according to Expert1, "*it all comes down to money*".

Another challenge related to the pricing point of Servitized offers highlighted by several industry experts is the fact that customers are seldom aware of what their TCO when owning a car is, where they believe it to be significantly cheaper than it actually is. This makes the customers favouring ownership when comparing owning a car to acquiring it in another way. Expert5 explains how the depreciation in value of cars are often underestimated when people calculate on their ownership, and emphasises the fact that the salesman the car is bought from often is a better negotiator than the customer, subsequently making customer pay a slightly overpriced amount. The same reasoning applies when selling the car; the customer does often receive less than the actual value of the car.

Expert4 mentions another challenge in communicating the service parts of an offer, as it is difficult to communicate how well a service actually works. It is first when something negative occurs that customers actually experience the quality of the service, and thus understand the quality. Expert1 gives an example of when he was mystery shopping, i.e. disguised himself as a regular customer interested in buying a car, at the dealership of premium brand in Market X and experienced a terrible service. However, this premium brand in question is one of the major players at Market X which implies that the status of the brand makes customers ignore the fact of bad service. Expert2 discussed another challenge for the OEMs when turning towards Servitization in finding a profitable business model that is not as dependent on product sales and economies of scale.

4.3.1.1.3 Situational Factors

Expert4 elaborated on how the users' stage of life affects their needs, and that at some point everybody needs a car in his narrative "*what I think you see in every market is that younger generations that are coming from university are saying that they don't really need a car in that stage of life. And that phase of your life you probably also don't*

need a car. You can use car sharing platforms, you have public transport, you can use anything. But at some point, let's say they start a family and they have a small family then there is always a need for a car. It doesn't matter if they are generation Y, Z or whatever, at that stage they also buy a car. Or they make sure they have a car, lease it or buy it".

There are also a lot of cultural differences regarding what is valued by the customers, where services such as pickup-and-delivery is very important in some countries while people in other countries prefer to pick up the car themselves. Moreover, different markets can be considered having reached different maturity levels in how well the inhabitants are adapted to technology. Different legislations also play a big part in different local and global trends.

4.3.1.1.4 Environment

The automotive industry has been heavily recognised for its impact on sustainability, especially since the Volkswagen Dieselgate scandal in 2015. Expert5 elaborated on the impact of the scandal when stating *"it has left deep scars, not only in Volkswagen's stock but also in how companies choose to prioritise their R&D budgets, how individuals are buying and selling cars, how governments are building taxations and regulations"*. He further explains that the scandal has caused suspicion amongst users both towards the OEMs as well as what future regulations will include, and heavier regulations promoting more environmentally friendly cars. Furthermore, the technology behind electric vehicles and their battery reliability is still new and users are therefore reluctant to invest in a fully electric car as they hold many uncertainties. These uncertainties include factors such as depreciation of value for the entire car and battery deterioration.

A consensus amongst almost all industry experts is that it is the regulations that have been enforced subsidising environmentally friendly cars that is the driver of the sustainability choices made by the users. Expert2 discussed how *"it doesn't feel like it's coming from an altruistic desire that 'I want to be sustainable', but rather that, in Germany, for example, B2B customers are paying half the benefit value for a hybrid car which makes them sell well"*. Thus, there is no innate need for users to be environmentally friendly, but rather financial.

4.3.1.1.5 Relationship with The Customer

Both Expert2 and Expert5 expressed a major challenge for the OEMs in the changing industry landscape and the fact that the OEMs do not "own" the end users in the same way dealerships do. When turning towards Servitization, it becomes challenging for the OEMs to handle and create a relationship with the end users as this has traditionally not been a part of their operations. They have sold the cars to the dealerships who in turn establish and maintain the relationship with the end user. Expert2 describes the relationship with the end user in some contexts to be rather transactional when stating *"we have a direct relationship in the sense that we are billing the customer every month but we have no stronger relationship than that"*. Expert5 says that big data and sales number are today used to improve the relationship, but the feedback loop from the customer is by Expert2 highlighted as extremely important to further establish better relationships and interactions with the user. However, there are some challenges is this related to legislation protecting customers' privacy such as

GDPR, subsequently leading to additional barriers in terms of paperwork between the OEMs and the end users. Several industry experts also mentioned challenges for the OEMs in handling the relationship with the dealerships when aiming for closer relationship with the end users as the dealerships might experience the OEM as a competitive threat.

4.3.1.2 **Market X**

What appear to be the most significant characteristic of Market X in terms of automotive is that taxations make it very financially favourable to have a company car. Having a company car is considered the normal way of consuming cars. It is common to all employees, independent of where they are in the organisational hierarchy, to be offered a company car, something Expert1 exemplifies by stating “*even the cleaning lady has a company car*”. The cost for the car is then deducted from the pay check, where the cost only is significantly lower than it would have been for the employee to own or privately lease the car. Company cars at Market X are considered private cars in the sense that using it for private matters is the norm. Private leasing is therefore rarely existing at Market X, but in terms of operational leasing Market X is a very mature market overall, stresses Expert4. Expert4 further describes that there in general is a big interest and demand for cars at Market X as taxations are making them significantly cheaper than in other European countries. He also shares that cars have traditionally been an important status factor for the citizens of Market X, however not that much anymore even though having a big or premium car is still quite important to many citizens.

Another distinct characteristic of Market X is their big annual automotive fair in the capital. At this fair, people come to seek information as all OEMs are there and also representatives from the government informing about relevant legislations. Expert1 explained that it is common for people to believe that they receive discounts and reduced prices if acquiring their car through this fair which, in reality, is not true. Nevertheless, this fair is argued to constitute a big source of information and play an important role for customers’ decision making.

4.3.1.2.1 Modes of Car Consumption

It became evident that there are different modes of consuming and financing a car, and that some users are preferring one mode over another due to different financial, perceptions, and situational factors. In order to make clear what is meant by the different modes of consumption in the context of Market X in the upcoming sections, an overview with main characteristics and distinctions can be found in Table 5.

Table 5: Current possible modes of car consumption at Market X.

Owning or financial leasing	The legal ownership is on the customer, and that the car is acquired through paying for all of it at the same time. In the case of financial leasing is the car bought with help of a loan and a payment plan, but the legal ownership is at the customer even though a bank is paying. In both cases has the owner full responsibility to handle risks and deal with insurances, repairs, and maintenance.
Operational leasing	The leasing company legally owns the car and is also responsible of the risks and handling of repairs and maintenance, where the user pays a predetermined fee each month.
Company car	In the context of Market X, company car refers to when employees are offered to operational lease a car via their employer. The ownership remains at the leasing company the employer is using the leasing service from. The cost of the car is deducted from the employee's paycheck, where tax deductions makes it significantly cheaper to lease the car through their employer than to use private lease.
Renting	A one-time fee is payed to access a car for a certain, predetermined amount of time which the fee is based on. The legal ownership remains with the renting company.
Pooling or sharing	The providing company legally owns the car, and the users are paying to access them where the fee commonly is based per minute or per hour. The users are responsible for returning them in good shape. In the case of car sharing belongs the ownership of the cars to different private persons who shares them with others in return for a fee.

4.3.2 User Interviews

Eleven users were interviewed in order to reveal their behaviours and needs, where six of them were live online calls and five of them were via email. All interviewees have a driving license and have at some point in time owned a car. A summary of the user interviewees can be found in Table 6.

Table 6: Overview of user interviewees.

Identifier	Age	Gender	Occupation	Education	City/ Village*	Experience ownership/non- ownership**	Daily commuter	Car enthu- siast	Live/email interview and date
User1	40	Male	Small Business Owner	Marketing	Village	Ownership	No	Yes	Live interview 2020-04-28
User2 ¹	21	Male	Student	Engineering	Village	Ownership	Yes	Yes	Live interview 2020-04-29
User3	46	Male	Small Business Owner	Communication	Village	Both	Yes	Yes	Live interview 2020-04-30
User4 ²	33	Male	Researcher (engineering)	Engineering	City	Both	Yes	No	Live interview 2020-05-01
User5 ²	32	Female	Policy officer	Political Science	City	Both	Yes	No	Live interview 2020-05-01
User6	62	Male	Engineering	Engineering	City	Both	Yes	No	Live interview 2020-05-04
User7	45	Male	Production coordinator	Automotive Bachelor	Village	Ownership	Yes	Yes	Email interview 2020-05-06
User8	29	Male	Technical draftsman	Design and production	Village	Ownership	Yes	Yes	Email interview 2020-05-04
User9	34	Male	Engineer	Engineer	Village	Both	Yes	Yes	Email interview 2020-05-06
User10	47	Male	Official car inspector	Car mechanic	Village	Ownership	Yes	Yes	Email interview 2020-05-08
User11	28	Female	Personal assistant	Social worker	City	Ownership	No	No	Email interview 2020-05-01

* City/Village is based on the number of inhabitants. City>50 000 inhabitants>Village

** Experience of owning and/or utilising non-ownership modes of car transportation as primary means of transportation

- 1) Lives with his mother who is paying for the car, although User2 is the one using the car
- 2) Married couple

4.3.2.1 **Prior Knowledge**

Before deciding to make an acquisition, the users are affected by their prior knowledge and perception about the different modes of car consumption. It is thus interesting to consider how users perceive what owning respectively leasing a car entail. In the upcoming subsections are the answers presented to when users were asked to elaborate on their general perception towards owning and leasing. Another field all respondents brought up without being asked about is environmental factors, which also can be considered fitting into the section of Prior Knowledge.

4.3.2.1.1 General Perceptions

User1 stresses that it is more convenient for a company to operational lease a car as it is easier to plan due to the fixed amount it costs every month, but on the other hand it may be a hassle for the company to manage the fleet. Besides, if for some reason there is a need to cancel or a change a contract, it may be inconvenient to renegotiate. User1 further believes leasing is a good idea for someone who likes driving a new car often, however also expensive. The point for when it becomes financially beneficial to lease a car instead of owning is if one would change cars every two or three years, User1 believes. It was further emphasised by several respondents that the costs when operationally leasing a car is much more predictable, but there is on the other hand a risk of, for instance, losing your job and then be stuck in a leasing contract you may not be able to afford anymore.

User2 expresses an ultimate desire is someday owning a car and be able to say "*this is mine*". However, he also mentions that he knows how expensive owning a car can be, thus making it very important to him to receive a company car from his future employers. He also believes operational leasing is good but need to improve in terms of flexibility, making it possible for a small group of people to share a leased car.

User3 explains an option to finance a car, balloon financing, something offered by several of the OEMs at Market X. Balloon financing means that instead of paying for example 48 identical monthly payments, the lessee is paying 47 identical low payments and a 48th significantly higher payment in exchange for ownership of the car. There is also an option to not pay the 48th payments and return the car to the dealership who in turn sell it on the second-hand market and makes a profit from it. This makes cars available for people who do not have the cash or the opportunity to buy them by paying for the car up-front. This is also favourable for those who want to switch cars every four year or so as when the 47 months are up, one choice is to simply exchange the car for another, restarting the same process.

User4 believes leasing a car would be a lot more expensive than owning a car, although saying he has not done any calculations on it. User5 believes leasing to be more convenient as "*it's much easier to change a leasing contract instead of selling a car and buy a new one*".

User6 believes the main motivator for choosing operational leasing or owning is for how long you plan on keeping the car and how much you drive. He also expresses a main distinction between the two alternatives in regard to risks and uncertainties. He emphasises that repairs and maintenance often is a part of the operational leasing contract which make it less burdensome than owning a car, summarising that "*lease*

for me, that's the easy thing", which is grounded in him having experienced both owning and operational leasing of cars.

User7 believes owning a car is expensive but contributes to a feeling of freedom. Operational leasing on the other hand is something he does not like, as it would feel like driving someone else's car, subsequently giving him less feeling of freedom. User7 has bought both second hand and new cars, where he has been taking loans for the new cars, thus financially leased them.

User8 believes owning a car is a must as not everything is reachable by foot, train or bike. He stresses that leasing is not anything for him due to the fact that he would never buy a new car. Of the three cars he owned, none of them were new and he had the money to buy them up-front at the time for the acquisition.

User9 considers owning a car providing the feeling of being able to go anywhere whenever. Leasing a car is in his opinion identical to owning a car but without the worries about maintenance, handling breakdowns or accidents.

User10 shared that *"my perception of owning a car is that you can't live without it and it costs a lot for the little time you use it"*. He also added that leasing is nothing for him, only something that companies does.

User11, who owns a car together with her boyfriend, stresses that she really does not need the car, but her boyfriend does in order to commute to his work. She has never operationally leased a car and explain that she does not know anything about it, however she and her boyfriend took a loan to buy their current car, thus financially leases it.

4.3.2.1.2 Environmental Awareness

Several of the respondents mentioned or started discussing environmental aspects even though not directly asked to. User2 shared that it was important to him that his current car does not consume too much fuel for him to *"not have to feel guilty that I drive 40 kms every day"*. User6 emphasised an issue with electrical vehicles in the fact that they decrease the pollution in the cities but might risk moving the pollution to the countryside when production of electricity is coal driven, thus simply relocating the problem.

User4 expresses a dissatisfaction towards the current government tax breaks on operationally leased cars through companies, as it promotes having a car even if the user do not really need it. User7 admits to using his car in *"superfluous situations"*, that is, when he could easily used other means of transportation. User5 is on the same track as User4, stressing that these kinds of behaviours are a bad thing for the environment. User4 expresses that having sole access to a car impose a great inefficiency in the fact that the car 99% of the time stands on the street, saying that he would, from an sustainability point of view, prefer to borrow or carpool cars. User4 and User5 mention car sharing to be a much better option, something they tried for three months when their old car broke down. However, they found it inconvenient as they had to move the child seat of their son every time they were to use the sharing system, and that they sometimes needed to walk a bit to get to the cars. It was also perceived to be rather complex as they had to pre-book the car and specify a timeframe of use. Besides, it was not financially beneficial for User4 to use it for work as he had to pay

while the car was standing in the parking lot outside his work, even if he was not using it. Both User4 and User5 emphasise that they also have electric bikes which decreases their need for having a car.

User5 further elaborate on how wrong she thinks it is that the government is heavily subsidising company cars. She believes this to increase the usage and number of cars while also decreasing peoples' incentives to use other transportation means. She think it is very clear that currently, due to the COVID-19 pandemic, there are not as many cars in her city anymore which makes it much safer for children to play on the street, the air better, and an increase in quality of life. The sideways are small and there are no cycling paths in her city. The city has, however, started to develop more cycling paths but she explains that is due to the COVID-19 crisis, and that the city want to encourage people to not use public transport because of that. She believes that the public transport has some minor gaps in terms of geographical coverage over the city but is fine overall.

User3 on the other hand shared another view on governmental involvement. As the government in Market X currently is subsidising electric and hybrid vehicles, he can afford his current plug in hybrid car which he would not be able to do otherwise, thus having adopted a more environmentally friendly behaviour. On the other hand, he shares that this may not get the desired outcome as other people are choosing a hybrid car because it is financially favourable and choose not to charge the battery and only drive on petrol. He judges these people, stating that *"it's criminal, it's really criminal not to charge the battery and just use the gasoline engine. I really think whenever possible you should charge the battery, otherwise you mustn't buy a car like that."* User3 continues highlighting that the government has no means of controlling this is and that it, in fact, is not criminal by law.

4.3.2.2 **Acquisition**

User1 believes, similarly to Expert4, that everybody needs a car in some point of their lives, and believes it is more or less impossible to live without a car when becoming a parent. When becoming older, the life situation is more stable and the need for changing car is reduced. User6 explained this in terms of changing life situations, saying that the younger you are, the more your life is changing and the higher the need for different cars, especially as the family grows and children become older. User4 and User5 act as an example of this, stating that their need for having a car appeared when becoming parents. User5 shared that if it were not for their son, she would probably still be utilising the car sharing system she previously tried. Furthermore, buying second hand cars appeared to be very common amongst the interviewees. Benefits from buying them from authorised and private dealerships emerged, as well as differences in importance of relationship with the dealer.

4.3.2.2.1 Reasons for Changing Car

There are several different reasons triggering the need for a new car for the different interviewees. User2 had been involved in an accident where the car was totalled and there was no car left to drive. User4 and User5 had technical issues which resulted in a change. User6 had received a promotion at work which made him eligible for a new company car based on a larger budget. User3 was triggered to get a new car because his previous car became so expensive taxation-wise due to not being environmentally

friendly. User1, who drives an eleven-year-old diesel car, is currently looking into buying a new car for the same reason.

4.3.2.2.2 Preferred Car Attributes

Attributes that were sought after differed between the interviewees. Several interviewees said that it had to be a small car. Either because it should take up less space which can be an issue in a bigger city while looking for a parking spot, and/or to reduce the consumed amount of petrol. The reduction in petrol consumption was both to be more environmentally friendly as well as being a financially better alternative for a daily commuter. For User6, the audio was the one thing he would not bargain on and he wanted the top HiFi sound system in his car. Apart from that, the most important part of the car for User6 was the exterior shape, i.e. the car type. It was also important for him to have practical colours in the interior so he would not have to spend time on cleaning. It was mentioned by several interviewees that having children impacted the choice of car type or even the number of cars the family needed. User4 explained how he needs a car with sliding doors to get his child in and out more easily, and User6 explained needing an additional car in order to drive the children back and forth to their different activities. Moreover, several of the interviewees identified themselves as car enthusiasts and thought the driving experience was a major important factor; User3 wanted a rear-wheel drive, User8 wanted a car with great acceleration, and User7 wanted a highly customised car which represented his personality. The overall price also had a definite role to play for all interviewees.

4.3.2.2.3 Ways of Acquiring a Car

User3 bought his second hand BMW at an authorised BMW dealership. He shared that he often aims for buying a car that is 6-12 months old as it is then possible to get it significantly cheaper than the listed price for a new car, while still receiving a car with low mileage. Buying it at a BMW dealership was important to him as the car then had factory warranty, implying that any product failure within two years from the point in time of acquisition would be covered by this warranty. Similarly, User4 acquired their second hand car at an authorised Opel dealership as he wanted the car to be in good shape and not have any hidden defects. He further explained that *"you can get much cheaper prices if you buy it from a private individual, but you can get very bad surprises, and we didn't want that"*.

User1 explained that his acquisition process started at the big automotive fair at Market X for information collection, and afterwards went to different dealerships to test drive different cars. He then bought his Jaguar from a small family owned dealership, describing it as a personal contact. He further stressed the importance of the relationship with the salesmen at the dealership, and he thinks it is important that *"you are a person at the dealership and not just another number"*. He further shares that even if he would love a car but not like the dealership, he would not buy the car.

User2's current car was acquired since the previous one was totalled after being involved in an accident. As he and his mother did not plan on acquiring a new car, it was important for them that the price of the new one did not exceed the money they received from the insurance company for their old car too much. They decided on acquiring it from a second hand dealership that he described as *"a small group of friends and they have a small business where they sell cars in the area"*. He and his

mother thought that there was a possibility to bargain a little on the price at this dealership, something they did not believe was possible and the OEMs' dealerships for second hand cars. The fact that bargaining was a possibility was one of the main reasons why User2 chose said dealership.

User6 explained that his car is leased via his employer. He received a certain budget from his employer for a car and was free to choose any car matching the budget. He was then free to visit dealerships and make his decision. User7 is the only respondents sharing that he bought new cars. He explained that these were bought with the help of a loan and that it is possible to get interesting discounts when combining a loan with car insurance from the same company, where he once had a loan with 0 % interest.

4.3.2.3 **Use Phase**

User1 consider the car as "*a tool that gets you from A to B*" and he uses it at least locally every day, e.g. to go to the supermarket. He lives in a smaller town and believes it would be different if he lived in a bigger city as it then would be possible to utilise public transportation. User1 further states that, although not its main purpose, the car is something one may like to drive around in as well as having a luxurious sensation while inside it. Although driving every day, User1 explains that he is not a daily salesman driving to his customers all the time. However, if he has an appointment with a customer close by, he might drive but the customer might also come to him. He further explains that if the distance is greater, he often goes by airplane instead. Ultimately, his use pattern depends on who he collaborates with at work.

User2 shares that he uses his car at an everyday basis for going to university as he lives 20 kilometres away from his university. He states that it is too inconvenient to go by public transport there as "*I live so in the middle of nowhere*". To go by public transport, he would need two different subscriptions for bus and train as well as walking quite a bit, which makes going by car the best option for him. User2 further stresses the social use of a car and shares how he and friends go on shorter trips or out for drinks. When going for drinks, either he or one of his friends is assigned as the designated driver and he emphasises how he thinks it is important to be able to take on that role.

User3 explains that he uses a car every day; to go shopping, driving his kids, driving to family, and for work. He further explains that public transport would not work as a substitute and explains "*I don't live in a city, I live in a village so we don't have the luxury of being able to take the train or bus the bus anywhere easy*".

User4 stresses that his need for a car arose when becoming a parent, as it is very inconvenient without. However, he uses it to go to work sometimes as it is 30km to his work, but 50 % of time he uses an electrical bike to go there instead. He says that he prefers using his bike as "*It's less stressful to bike alone between the fields than to be on the traffic jam on the highway*". User5 stresses that she really prefers other transportation means than car because it is, similar to feelings of User4, less stressful and more relaxing. She uses that car once or twice a week for grocery shopping.

User6 uses mainly his car to go the office during the weekdays and for "entertainment" over the weekends. He explains that Market X is a small country, so there are not any long distances if he wants to go abroad for holiday or for business matters. Previously,

he drove a lot in his work but now he is working globally to a greater extent, so he is rather taking the airplane. He further shares how he needed a car when his son was younger in order to be able to drive him. User6 and his wife have two cars although one is not used very much, and he stresses the freedom of being able to always go anywhere and do not have to plan as the main needs for this.

User7 mentions having a car as a kind of “*necessary evil*”. He uses his car for daily commute and shopping. Same for User8, and also for User9, using it when it is too far to go by foot or bike or when the weather is bad. User10 states similar use pattern, mainly for commuting back and forth to work and daily transportation. User11 only uses a car once or twice a week to go grocery shopping and to a sewing class once a week. Her boyfriend is using it every day to work though.

4.3.2.3.1 Holiday

User1 states that he only drives longer distances when going on holiday with the car. However, there is a tipping point for how long he wants to drive. He considered a summer destination abroad 1000 kilometres away to be okay but further than that, to a destination 1250 kilometres away, he does not like. He thought about driving 1500 kilometres abroad on vacation last year but considered it being too far and decided to do something else. User1 further states he sometimes go skiing abroad at a destination 1000 kilometres away where winter tyres is required by law, something that is not in true for Market X. However, he discusses there is a risk of forgetting or simply procrastinating changing the winter tyres when arriving back home again if you do not have a contract on the car that reminds you of it, “*it is not just a small undertaking to change your tyres I believe*”. User1 further explains that it is required by law with winter tyres in some areas in neighbouring countries.

User3 also uses the car to go drive for summer holiday or go skiing and stresses the need for winter tyres when going skiing. User4 uses the car for going on holiday domestically while sharing that it is a tradition for many inhabitants of Market X to drive to summer vacation abroad with their car. Similarly, User6 mentioned the need of using the car for going to holiday to summer destinations abroad, but also skiing that he used to do when his son was younger. The need for winter tyres when going skiing was also mentioned by both User1 and User6.

4.3.2.3.2 Pain Points

Several of the respondents mentioned shortcomings or lack of performance of the car as sources of frustration, such as defects or having to buy a lot gas or maintenance due to the age of the car. Frequently recurring was also the frustration towards being stuck in traffic jams during their daily commute. Furthermore, several respondents highlighted that the density of cars in the area where they live were causing frustration. For User4 and User5, this dissatisfaction was rooted in the neighbourhood becoming polluted and it was unsafe for children to play in the streets. Another respondent, User2, was annoyed by the fact that there were too many tourists, bikes, and slow driving agricultural vehicles in the way when leaving his house.

Maintenance and service are also aspects several mentioned as sources of frustration which may be demonstrated by User7’s narrative “*I’m very demanding regarding maintenance, a sloppy performed maintenance or inaccurate bill means trouble*”. He further states that he is amazed by the great price differences between different

dealers. User1 also had frustrations in terms of maintenance of his Jaguar where he complained about the dealership: *“There were always problems there, they forgot to do things you told them to do, they didn’t do what you asked them to do”*. Another respondent, User6, had such frustrations with a brand that he refrained from buying a car altogether. He went to a premium brand dealership, the same as Expert1 went mystery shopping at, and felt poorly treated by the sales staff as they did not provide him any service. The reason for this is unknown. However, he speculated that *“it looks like when you enter the [premium brand] garage, they look at you whether you are the type of person that are allowed to drive a [premium brand] or not”*, and explained that a friend of his had had the same experience at another occasion. User6 was once in an accident with his leased car where the engine exploded while driving on the highway abroad. He simply called the lease company and got picked up, dropped off at the closest dealership, and received a new car. This happening he describes as *“it wasn’t any frustration but I was very surprised”* whereas the incident with the premium brand he described as *“to me, that’s really frustrating, the way they treat people, I was really surprised”*. In other words, being neglected is worse than an exploding engine for User6.

Some hassles with the paperwork of maintenance administration was mentioned by User2, who thought it would be more convenient if it was possible to do it online. User3 expressed a frustration in the fact that cars are becoming more and more expensive. He described this to be due to the increasingly complex technology in them, which is driven by technology advancement, increased safety, and regulations forcing emission control. He described this as a development he sometimes regrets and explains that these increased prices make it harder and harder for *“normal people”* to afford buying a car.

User10 also expressed that the changing taxations caused frustration by stating *“owning and maintaining a car in [Market X] can be expensive depending on the type of car you want. It’s frustrating when you buy a car and the government changes the environment taxes afterwards. A good buy today is maybe a disaster in a few years”*.

4.3.2.3.3 Views on Need for Insurance

There are essentially two different ways the respondents view insurance; either that they drive safe enough so it would not be financially beneficial, or it would be very expensive if they did have an accident thus being financially beneficial. User3 opts out from full-cover insurance and explains *“I’m prepared to pay 1000 EUR for repairs but not 5000 EUR for an accident”* as well as stating that *“I don’t think there’s a lot of chance my car breaks down, I have positive experience with BMW in that sense.”*. Another interviewee, User4, discussed insurance in relation to the car he has in his narrative *“a small older second hand car there is absolutely no need to have an insurance, it wouldn’t be worth the cost”*. He continued that additional insurance is only needed if the car is younger than three years old and mainly if it is a nicer car, such as a BMW, something he based on information from friends and family.

How much the actual cost for an insurance is depends on the type of car and the amount of horsepower it has, where more horsepower equals a more expensive insurance. User6 points out the benefit of insurance that it covers everything leaving him not to have to worry, however, he regards it as a rather expensive service. User7 mentioned that he had the opportunity to combine his insurance while taking a loan

resulting in a 0 % interest rate on the loan. User6 shared that he has never even thought about uncertainties with the car and if something were to happen, it would be up to leasing company to fix.

4.3.2.3.4 Status

User1 states that the car does show who you are and kind of defines you. He means it is like the clothes you are wearing, that it represents you. User7 and other car enthusiasts expressed themselves similarly. In contrast to the car enthusiasts, User6 does not indicate that he identifies himself with his car explaining *“I don’t feel more important or more attractive because I have a nice car”*. Several of the respondents said that it was for sure nice to have a nice car, but it was also clear that they did not want to appear like a show-off. User2 stated that he wants a car he thinks is nice, where he defines a nice car as *“something I can be proud of to drive, not to brag about”*. It was further noted that in some companies, the higher position you are at, the fancier car you get, indicating the car as symbol of personal wealth.

4.3.2.3.5 Concerns for Small Businesses

As a small business owner, User1 states that the car you are driving represent you if you are visiting a customer, and mean that the customer will have a different impression of you if you arrive in French car or in a Volvo or Mercedes. He explains that *“depending on your job and on your customer relationships it can be important that you have a decent car but that does not look cheap that reflects a certain level of financial success”*.

User1 explains that for smaller companies, financial renting is a very appealing option fiscally. When financially renting, the car is not considered an asset, thus not a long-term debt on the balance sheet and only considered as an expense. The business owner does not have to take depreciation into consideration and the taxations it entails, making it very financially favourable. Similarly, User3 talks well about financial renting in terms of how favourable it is for companies. The difference between financial renting and leasing is that when financially renting, the car is not on the balance sheet of the company, but on the balance sheet of the leasing company. After a couple of years, the company that is financially renting gets the opportunity to buy the car and own it for a predetermined share of its original value. User3 is emphasising how favourable this is for him as it not a long-term debt on his balance sheet: *“It’s much easier for your balance sheet to be positive if you don’t have a car on it. That’s why all these small companies, always all of them opt for financial renting which is not on the balance sheet. So rather technical choice, but I’m not the only one. Most small companies use that form of financing.”*.

4.3.2.4 **Thoughts about Evolution of Future Car Usage**

Several of the interviewees in the live interviews started talking about what they thought might occur in the future of the automotive industry, even though not asked about it. User1 talks about uncertainties in future taxation on company-owned cars when stating *“you always want to pay the least taxes that you can”*. As the owner of a small business, he is concerned that the tax office might change the number of years that a car’s value is depreciated over to a longer period of time. This would lead to a longer time that taxes for said car must be paid, thus negatively impacting the company financially.

As previously stated, User5 has thoughts about sustainable living and adds that for the future *“ideally it should be a lot less cars”*. Due to the current crisis of COVID-19 and people being in lockdown, she believes that other people might realise what she has noticed; how much nicer and liveable the cities are with less cars in the streets and cleaner air, subsequently making this behaviour of less car usage more permanent for other users as well. Furthermore, she states that *“people just see their cars as a privilege and something that is part of their status, but it is really making the city so much less liveable because of all these cars”* while proceeding to say that they should stop seeing having a car as their right. She wants to see a development where people with lesser means also can benefit from the transportation infrastructure, meaning that now goes most of the benefits to the car users if considering roads and who are using them. Moreover, in terms of public transports, she thinks it is quite good but continues *“more investment is of course needed and I think it has to go hand in hand with banning cars”*.

Both User2 and User6 started speculating about the increasing potential of car sharing. User2 talks about this in terms of being able to more easily share cars within a small group of known friends. User6 also includes connectivity and autonomous drive, and that cars will drive you around and you will be able to better enjoy the surroundings as well as the company riding along in the car. He closes with the statement about the future *“interconnection and any things in the car that makes you less and less dependent on the car itself and I believe it is not so far away any longer”*.

4.3.3 Summary: What needs that affect user adoption can be identified within the automotive industry?

To summarise the answer to sub-issue 3, the industry experts emphasised how the automotive industry is following similar trends as other industries emerging from technology advancements, increased awareness of sustainability, and a shifting focus from ownership to usership. They argue this also affects the user needs, where mainly the need for flexibility is increasing. The industry experts also highlighted how the needs of an individual depend on where the individual is in their stage of life. An increased demand and need for environmentally friendly cars was also discussed by the industry experts. However, they also shared how this may be due to the fact that environmentally friendly vehicles being subsidised, and not coming from a altruistic need to be sustainable. At Market X, taxations make it very favourable to have a company car, which is consider being the normal way of consuming cars.

The users expressed different perception of what owning and operationally leasing a car entail. When elaborating on the differences between owning and operationally leasing, the users discussed factors such as cost, duration of use, freedom, convenience, risks, and uncertainties. Several of the users started discussing environmental aspects, even though not asked to during the interviews where they shared their thought about the future evolution of car usage.

Some of the users shared that the need for having a car is especially strong when becoming a parent. In terms of acquiring a car, those who bought cars mainly bought second hand cars, where need for different dealership relationship was expressed. The need for customisation among the users appeared to be low, as many of them bought second hand cars. The attributes preferred by the users were of standard characteristics, such as decent audio or rear-wheel drive.

How the users expressed their need for a car differed. Some needed it mainly for daily commuting or daily activities as the public transport system in their town does not fulfil these needs. Others shared how they use their car to also go abroad for vacation or meeting customers. In regard to insurance, the users shared different views of their need for full coverage car insurance. Some found it a relief being totally covered, while others consider their driving being safe enough for not risking being involved in an accident. A need to show status was indicated in a B2B setting, while in a B2C setting the users mainly expressed concerns about not seeming boastful. In a B2B setting were also fiscal needs expressed, where being able to book keep the company car out the company's balance sheet as heavily emphasised.

5 ANALYSIS AND DISCUSSION

In this chapter, the findings are analysed and discussed based on the categories of *the individual*, *the offer*, *offer provider*, *situational factors*, and *external factors*. Interdependencies can be found both within and between these categories.

5.1 THE INDIVIDUAL

The needs an individual has are suggested to be linked to the values, beliefs, and prior knowledge of the individual. This further affects how the needs are prioritised of the individual, as well as how the person perceives financial benefits.

5.1.1 Need for Minimising Financial Impact

How new offers are financially benefiting the users was permeating the industry experts' discussions. This indicates that, rarely surprising, the main driver for user adoption is financial aspects. It further aligns with the reasoning of Schaefers et al. (2016) about financial risks; that customers seek the alternative with the least perceived risk of economic loss. What these risks entail are, however, individual and is suggested to depend on the prior knowledge and experiences of the user, which is evident from previous research and confirmed in the interviews (Mont, 2002; Schenkl et al., 2014; Schmidt et al., 2015a).

User1 emphasised predictable payments as a benefit for access in terms of leasing, similar to what Schaefers et al. (2016) mentions concerning financial risks. However, User1, who owns both a car and a smaller company, mentioned this in a B2B setting rather than B2C. With that said, a perceived benefit does not necessarily equal to an enabler for adoption.

The findings confirm what is already strongly proposed; people are not aware of their total cost of owning a car, which in general favours ownership over access. Thus, when people are comparing the different modes of consumption tend access to seem significantly more expensive, confirming the suggestion about TCO in previous research (Mont, 2002; Schenkl et al., 2014; Schmidt et al., 2015a; Talberg & Rasmussen, 2016). Genzlinger et al. (2020) suggest a barrier in that customers might expect services to be free, which may create further barriers when users are estimating their TCO. If they expect services to be free, the TCO calculation becomes inaccurate where PSS offers may be perceived to bear a higher financial risk than they actually do. Indirect costs such as depreciation in value of cars are often underestimated when people calculate on their ownership, and also the fact that the salesman the car is bought from often is a better negotiator than the customer, subsequently making what the customer is paying slightly overpriced as discussed by Expert 5. Same applies when selling the car, the customer does often receive less than the actual value of the car.

While TCO is a well recognised concept, it may not apply in an accurate way to access-based offers where the usership rather than the ownership is in focus. It is evident how ownership and usership differ and it is therefore suggested to also start discussing Total Cost of Usership, TCU, to shed light on how the costs for the different modes of consumption differ. However, when elaborating on the concept of TCU, it might not be as straightforward as TCO which simply considers monetary factors. For TCU, factors

such as the convenience the user may gain, or sacrifice, when accessing needs to be considered as well as sustainability benefits, such as sharing, or drawbacks, such as increased consumption.

5.1.1.1 **Need for Insurance**

The users shared different point of views of why they considered they needed different levels of coverage in regard to insurance. Overall, the reason for why they choose different insurances can be linked to how high the perceived performance risk is which directly affects the financial risk and may subsequently affect the users perceived TCO. If the users base their total cost on a certain level of insurance coverage, it affects how they value options when comparing ownership, where they decide the insurance themselves, to access-based alternatives, which often have full insurance to cover all risks. Thus, when developing access-based offers at Market X, it may be valuable to consider that not all users do experience a need in being fully insured and may forego access as they find it too expensive. However, the respondents' answers also showed how the view of insurance coverage required also depended on the age and quality of the car. Moreover, previous research states that in order for a user to adopt an access-based offer, they expect that the risk to be absorbed by the provider (Pessoa & Becker, 2017). This is confirmed by the users and their picture of leasing where, for example, User6 says *"leased car, the main advantage that you don't have to bother"*. This creates a paradox where although users do not really see the need for insurance and paying to remove risk for their owned cars, they expect somebody else, the PSS-provider, to be willing to do it when they access a car.

Furthermore, as highlighted by Expert 2, users may believe that an offer is too expensive if more is included than what they actually need. If this is combined with users' tendency to miscalculate TCO for owning, it further increases the misconception of TCO for accessing.

5.1.2 **Altruistic Sustainability Needs**

The findings show that users have a high level of awareness in terms of sustainability. However, it may be discussed whether previous research is over-optimistic in terms of the users' altruistic desire to obtain sustainable products. The desire for sustainable products is rather dependent on financial needs. The need for convenience can also trump the users' altruistic need for being environmentally friendly, as seen in the case of User4 and User5 trying a car sharing service but went back to owning a car due to physical and financial inconvenience. However, it may be discussed whether the presence of either a physical or a financial inconvenience, and not both, would have stopped them from using the car sharing service. The behaviour of User4 and User5 contradict Schmidt et al. (2016) who suggest that users are in fact willing to sacrifice convenience for being environmentally friendly. The inconvenience concerned both being geographically remote and having to plan far in advance when to use a car aligns with how D'Agostin et al. (2020) explain the importance of the convenience factor for user adoption of a PSS.

User2 indicated an environmental consciousness when describing that one of the main determining factors for deciding on his current car was that it did not consume too much gas in order to *"not feel guilty about driving 40 kilometres every day"*. If this arise from a true willingness to be sustainable or depends on the fact that gas is expensive

does not appear, although it may be interpreted as a desire to find a win-win situation between costs and sustainability. Considering the examples of User2, User4, and User5, it is suggested that sustainability in itself does not act as a true enabler but has to be combined with at least financial benefits or convenience.

It is evident that through ABC, it is possible for the users to drive cars they otherwise would not be able to drive due to no requirement of high up-front cost. This can be illustrated by User3 who drives a hybrid plug-in car, and shares that he would not afford to buy that car but through access, it is possible for him to do it. This also made him feel good as it is an environmentally friendly car, which indicates that even though he may not have an altruistic need for being sustainable, he does experience a need for a solution that benefits both his wallet and the environment, similar to User2. This aligns with how Schmidt et al. (2016) suggest that being environmentally friendly, or making environmentally friendly choices, give a certain emotional reward. The findings further illustrate how the prior knowledge may be manifested and act as a barrier. User4 and User5 did not know there were cheaper ways of being able to obtain environmentally friendly alternatives. For example, via a leasing scheme or other flexible financing solutions available on Market X, they could get access to a plug-in hybrid which would be more environmentally friendly than their current car.

User5 hopes that due to COVID-19, people will reduce their driving after realising how much nicer the city is with the reduced number of cars, and it may be discussed whether this will be the case or not. On the one hand, people have used their cars less as the need for transportation decreases due to the COVID-19 lockdown, which may be linked to the observability factor described by Rogers (2003) for motivating user adoption. Additionally, it taps into the trialability factor described by Rogers (2003) as well, as people try a life with less car usage and may even try other means of transportation, such as bikes, instead. However, when the lockdown is over, the need for transportation will increase again and it may be discussed whether people actually will continue with their decreased car usage. Moreover, User5 did not express that she herself would drive less in the future, implying that even though she holds strong sustainability values, they may to some extent be over-optimistic in terms of how she will change her own behaviour. On the other hand, User5 claimed that she already aims for using the car as little as possible by utilising other means of transportation instead, such as her electric bike.

5.1.3 Materialistic Needs

Barriers in the form of a need, or desire, to own, and thinking it is superior to access were noted by both the industry experts and Bardhi and Eckhardt (2017). In previous research, it is further elaborated on in terms of possessions as parts of the extended self and materialism (Bardhi & Eckhardt, 2012; Belk 1988, 1992, 2007; Szamatowicz & Paundra, 2019). The industry experts further noted that the customers tend to increasingly want the latest and the greatest. In terms of materialism, this may be linked to how Bardhi and Eckhardt (2017) discuss how circulations of possessions and simplicity to acquire can be characterised as materialistic and may act as an enabler rather than a barrier for ABC. As ABC allows the customers to afford a luxury lifestyle they would not be able to afford otherwise (Bardhi & Eckhardt, 2012; Rousseau, 2020), materialism in that sense may act as an enabler for users to adopt and access-based offer.

User2, the youngest respondent, expressed an ultimate desire in one day owning a car and being able to say, "*this is mine*", indicating materialism and possessiveness as described by Bardhi and Eckhardt (2017). However, he did not consider this hindering him from in the meantime, until being able to purchase a car, using a car through access. In other words, the desire for owning a car may not inhibit other options, perhaps especially not for the younger generation User2 belongs to as he is a millennial who Bardhi and Eckhardt (2017) suggest is prone to access. This may be considered to confirm, although partly, the argument of both Lawson et al. (2016) and Schmidt et al. (2016), who suggest that access could be a way to try out a product before committing to buying it. User2 did not express that he considered accessing cars as a way to try them out before being able to purchase one. He rather regarded it as an opportunity to save money to buy a car in the future, and aims for getting a job where a company car is included as it is financially beneficial and enables him to put money aside for a future car purchase. To some extent, this contradicts what Tukker (2004) suggests in the context of financial priorities; the user opts out from other options by choosing a PSS. Obviously, this is not the case for User2. On the other hand, this is also a speculation about the future as User2 never has had to pay for the car that he considers his himself meaning that it might be an over-optimistic lie (Fitzpatrick, 2013).

There is a consensus among previous research that with a longer duration of use, the user may develop a perceived sense of ownership towards an object, which in turn acts as an enabler for user adoption (Bardhi & Eckhardt 2012; Lawson, 2011; Szamatowicz & Paundra, 2019; Tunn et al., 2019). However, the significance of this enabler may be discussed. The perceived sense of ownership may act as an explanation for certain behaviours rather than enabling user adoption. As the development of a perceived sense of ownership occur over time with the adoption as a starting point, it does not affect the user at the point in time an adoption decision is taken, thus is no enabler for adoption either. On the other hand, it might lead to the user maintaining the offer for a longer period of time.

Only one of the users expressed a barrier in leasing in the fact that the car did not feel like his. All of the respondents referred to their cars as "my" or "our", independent of whether they were the legal owner or not, which indicates that the need for possessions is rather low. The presence of a perceived sense of ownership may, however, act as an explanation of this, which a long duration of use is suggested to be a prerequisite to develop (Bardhi & Eckhardt, 2012; Szamatowicz & Paundra, 2019; Tunn et al., 2019). On the other hand, while a longer duration of use contributes to a perceived sense of ownership it may simultaneously act as as barrier to adopting an access-based offer as a longer use phase would rather promote ownership due to an otherwise increased TCO (D'Agostin et al., 2020; Gaiardelli et al., 2014a; Lawson, 2010, 2011; Rousseau, 2020; Schmidt, 2015).

In terms of the extended self and to what extent users identify with their possessions, it may be more difficult to identify with a PSS than with a pure product providing the user with tangible value. As a PSS offer consists of both tangible value in the product and intangible value in the services and the system, the intangible parts might inhibit the user to make the PSS a part of their extended self. Subsequently, the barrier of materialism can be argued to be lower for user adoption of a PSS than for a pure

product. The findings further challenge the suggestion by Bardhi and Eckhardt (2012) about the nature of the relationship between the self and object is different in ownership and accessing. In terms of accessing in the form of leasing, the findings show that there is not significant difference in this relationship.

User6 is stressing the main difference between leasing and owning a car to be that there are several more burdens when owning, similar to how previous research describes "*the burdens of ownership*" (Bardhi & Eckhardt, 2012, 2017; Belk, 2007; Lawson, 2011). Even though other users stated ownership to be more burdensome, they do have a greater need for the freedom feeling they consider owning a car provides them with, than being liberated from the burdens of ownership. User7 stressed how he perceives owning a car comes with more freedom although he took a loan in order to finance the car. This indicates that being locked into a loan is perceived as providing the user with more freedom than leasing a car where another party is the legal owner. It also shows how a perceived sense of ownership may express itself as it is technically the bank who owns the car and not the user who took the loan.

It becomes evident how cars are objects with strong emotional and symbolic value connected to them, which for some users result in a need for having the legal ownership of them (D'Agostin et al., 2020; Schmidt et al., 2016, Szamatowicz & Paundra, 2019; Tunn et al., 2019). Some users wanted the car to represent themselves, comparing it to their clothes similar to a second skin as described by Belk (1988). However, the findings contradicted the effect of social risk as described by Schaefers et al. (2016): instead of highlighting that the car should represent a higher social status, the users expressed concern in terms of not wanting to seem boastful. Thus, it is suggested that the social risk is not primarily tied to seeming being of low status but rather to be a show-off portraying high status.

The findings challenge the traditional view on status. Previous research pinpoints how status is linked to ownership (Bardhi & Eckhardt, 2012; Belk, 2007; Lawson et al., 2016), while none of the respondents indicated to care about what others think in terms of owning or accessing a car. The users rather expressed that it was for sure nice with a decent car, but in terms of status they made no distinction in what mode of consumption the car is acquired through. The findings show, however, how status differ in a B2B and B2C setting, where the distinction can be argued to depend on who the car is representing: an individual user or a company. In a B2B context, it might be discussed if flaunting with an expensive car might be detrimental to the B2B user and their business. An expensive car may signal, in the eyes of the customer, that the customer is being overcharged. This highlights the importance of considering the type of social network the individual exists within. It becomes evident comparing B2B and B2C and it could be discussed if similar cases of how social settings might impact the individual's need for seeking status or the approval of one's peers. Furthermore, what is considered high status might differ between social settings. If a social network is very environmentally concerned, a small cheap car might portray the user as of higher social status than a large expensive one as a smaller car usually consumes less gas. Moreover, in order for the user to be judged by their peers, the user need to be associated with their car. In larger cities, where the cars often are parked randomly in communal areas, such as on the streets or inside multistorey car parks, it becomes

difficult to associate a certain car with a certain user. Contrastingly, in neighbourhoods where the cars are parked outside the user's house and clearly visible to everybody, the car might hold a higher symbol of status as it is easy to compare to one's peers.

Another aspect previous research ties to status is brand. None of the respondents indicated that a certain brand per se were important to them. It was rather a matter of what reputation the brand has in terms of quality, as a high-quality brand implies lower performance risk for the user and ultimately also lower financial risk and TCO. The users who identify themselves as car enthusiasts do not find a high value in having a brand-new car, which was something the industry experts indicated would be valued, perhaps especially by car enthusiasts.

5.1.4 Need for Customisation

Tunn et al. (2019) stress that customers tend to choose ownership over access due to the increased possibilities to customise the product. The findings from this study contradict this, as the users who bought a car chose a second hand car, thus having minimal opportunity to customise. Customisation is regarded as a main factor affecting the development of perceived sense of ownership (Szamatowicz & Paundra, 2019; Tunn et al., 2019), although none of the respondents who leased a car mentioned how the possibility to customise made them find leasing a better option. This may be explained that the need for, and meaning of, customisation is changing. Historically, customisation has implied that the customer can choose a lot of attributes and configure their car, while customisation now rather is linked to convenience in order to customise based on the life situation of the user (Tunn et al., 2019).

The fact that several users tended to choose second hand cars and did not highlight the importance of product customisation aligns with what was expressed during the expert interviews; the users have a stronger need for a lower price than they do to personally customise the car. Furthermore, as several users stated, it is possible to get a car that is "practically new" when going to a second hand dealership as the car could be less than a year old. This implies that, at least in the context of Market X, the barrier of users not wanting second hand cars highlighted by Talberg and Rasmussen (2016) can be discarded. It rather suggests that the perceived performance and financial risk, not social risk, are the main motivators when acquiring a car at Market X. Furthermore, the performance risk is not only related to how new the car is, but also in the trust to the dealership when buying a car. The users tended to choose smaller dealerships where they had personal connections as they found the personal relation important. This aligns with how previous research proposes that relational aspects are important factor for user adoption (Gaiardelli et al., 2014b; Genzlinger et al., 2020; Penttinen & Palmer, 2007; Pessôa & Becker, 2017).

How customisation of the product itself is tightly connected to the automotive industry is frequently recurring in previous research, in the expert interviews, and in the user interviews. Customisation of services, however, is not mentioned by users. In previous research, customisation and adaptation to the user is mentioned to be one of the enablers for user adoption of PSS (Baines et al., 2007; Barquet et al., 2013; Schotman & Ludden, 2014; Vandermerwe & Rada, 1988; Wong et al., 2018). This may be explained the fact that the OEMs have not yet managed to fully develop the offers, such as Care by Volvo, and still being in the pioneering stage trying to find out what is the best suitable for the users. Thus, since the users might not have experienced a

fully customised offer except for being able to customise the product when buying a new car, they do not know how they react to being able to customise a service or might even be unaware of the concept. Expert4 shared how communicating the benefit of the service in a PSS is difficult, and the user must experience it to truly understand it. This may be exemplified by User6 who was not frustrated at all over the fact that his engine exploded since the leasing company solved his situation by providing good service. This highlights the need for good service and meeting, or even exceeding, the users' expectations.

The findings show how the view of the industry experts and users differs, and mainly in terms of status and the importance of having a brand-new car. The industry experts indicated having a brand new car being almost an ultimate customer desire, which may be explained by the industry experts being path dependent and stuck in their old mindset, as the automotive industry traditionally been focusing on producing products that symbolise status. Second hand cars appeared to be very common when buying a car at Market X, and none of the user interviewees expressed that they found an importance in having a brand new one. User7 acts as an example of this when stating that he does not want to lease a car, although it is brand new, because it does not feel like his, but do not mind buying a second hand car. However, the reason for non-frequent behaviour of buying brand new cars amongst the users may also be explained by fact that the average age of buying a new car is older than 50 years, and only one of the interviewees were older than that. Then again, these are premium brands and there are brands which are cheaper which might appeal to a younger audience, assuming that it is the financial aspect that determines this. However, no certainty can be given as to why this is.

5.1.5 Needs depending on Stage in Life

It was confirmed during both the industry expert and user interviews that the stage in life did have an impact on user needs, something previous research also highlights (Bardhi & Eckhardt, 2012; D'Agostin et al., 2020; Schotman & Ludden, 2014). In other words, the individual user's need change over time along with which stage in life they are. Subsequently, one offer might be demanded by a user at one point in time but discarded by the same user during another point in time. The findings were, however, rather in terms of how the stage in life is impacting the choice during the actual acquisition of a car, and not that the stage in life affect the users by a need to change more frequently. These findings partly align with the suggestion made by Lawson et al. (2016), who mean that families tend to be more prone to seek access as their car need changes more frequently as they have children and they grow up.

5.2 THE OFFER

The offer and the provider are tightly connected in a PSS as the offer is dependent on the system in its entirety, i.e. the product and services provided by the PSS-provider. This becomes particularly evident in terms of access-based PSS due to a different ownership model and as the service intensity increases. As suggested in both previous research and in the interviews, the provider plays an important role and impact the adoption of the offer (Barquet et al., 2013; Genzlinger et al., 2020; Mont, 2002; Rousseau, 2020; Schmidt et al., 2015a; Schenkl et al., 2014; Tukker & Tischner, 2006). It is evident from both previous research and the interviews that the car no

longer is a standalone product, and that users have a need for mobility solutions where some needs support ABC more than others. For a PSS to function, it is important that all supporting features such as any infrastructure required is working for the offer to be adopted (Schmidt et al., 2016; Schotman & Ludden, 2014).

5.2.1 Modes of Consumption

How access is facilitating variety under the assumptions that users to a greater extent want the latest and greatest is highlighted as a motivator to seek access over ownership by both interviewees and previous research (Bardhi & Eckhardt, 2017; Rousseau, 2020). This was further elaborated on by User1, who considered a short duration of use favouring access and a long duration of use favouring ownership, based on the perceived financial impacts. This indicates that as the accumulated access fees over time becomes higher, owning is preferred after some point in time. This contradicts Schaefers et al. (2016) who suggest that the predictability of the costs and the lower opportunity cost for access would compensate for the fact that the accumulated costs become higher. However, it aligns with the suggestion that when customers plan on using a product for a shorter period of time access is preferred over ownership (Lawson, 2010; Rousseau, 2020). This also taps into the importance to add additional intangible value that compensate for the additional cost for users (Tukker, 2004).

Both industry experts and previous research stress how access, to a greater extent, tends to replace ownership (Genzlinger et al., 2020; Lawson et al., 2016). In terms of leasing, User6 expressed that he has undergone a change of mindset and nowadays prefers leasing over owning. Others, however, had experienced both leasing and ownership in various orders, switching back and forth between them and expressed similar to what their behaviour shows: not preferring one over the other. This partly contradicts Expert5 saying that once you start leasing, you do not go back to owning as well as Schaefers et al. (2016) who suggest that increased usage of access-based services reduced the likelihood of owning. However, those who have once tried leasing appeared more likely than those who have not tried leasing to choose this option again, thus the likelihood is to some extent increased as proposed by Schaefer et al. (2016). Furthermore, this ties into the trialability factor suggested to enhance the diffusion of an innovation (Rogers, 2003, as cited in Schmidt et al., 2016) as once the user has tried leasing, it increases the chances for adoption. This may, however, be explained by the fact that cost still is the main driver.

5.2.2 Need for Convenience

Convenience is frequently recurring in previous research and can be described in different terms. For instance, convenience may be discussed in terms of flexibility or in terms of different financing solutions. The increased needs for convenience and flexibility were also stressed by the industry experts similar to the reasoning behind burdens of ownership (Bardhi & Eckhardt, 2012, 2017; Lawson, 2011; Schaefers et al., 2016); an increased demand for solutions where the customers are liberated from the responsibility of repairs and maintenance (Genzlinger et al., 2020).

Several pain points were identified in regard to services such as maintenance and repairs. As the additional services is what distinguishes a PSS from a pure product and ultimately the difference between ownership and access, the PSS must be better

than simply a product in order for users to adopt it (Mont, 2002). This implies that the service must be at least satisfactory or more. This may explain why a user such as User7, who is very picky with maintenance and experience frustration when something is not living up to his expectations, chooses not to redistribute the entire responsibility to a PSS-provider. For users such as User7 who experience a need for control over their car, it does make sense that he refrains from leasing. Besides the responsibilities, ownership also comes with control (Bardhi & Eckhardt, 2012) and in order to adopt a PSS, the user has to give up some of their control (Schenkl et al., 2014). Furthermore, the performance risk as described by Schaefer et al. (2016) may also be tied to the service, not only the product.

Several of the interviewees stated how convenient leasing is. The users further stressed convenience factors in how leasing facilitates variety seeking as also proposed by previous research (Bardhi & Eckhardt, 2017; Lawson, 2011; Rousseau, 2020). The users perceive it to be more convenient to change car or terminate the car use when leasing than when owning, and User5 expressed that she thought it would be easier to change a leasing contract than selling a car. The latter was, however, based on a narrative from a user interviewee who never leased a car and also stated that she did not know much about it, thus simply grounded in her perception. Nevertheless, it contradicts what Rousseau (2020) proposes; users are afraid of leasing contracts as they are afraid of being fooled thus risking negative financial consequences.

Moreover, there are more convenience aspects gained from leasing offers than car sharing offers (Tukker, 2004). This was confirmed by User4 and User5 as the inconvenience was a major factor why they chose to stop using the car sharing system. The industry experts identified the same causes of the inconvenience as the users: the user often have to walk some blocks to reach the car and also have to pre book it. This aligns with the reasoning of Bardhi and Eckhardt (2012) and D'Agostin et al. (2020), who stress that convenience is an enabler for access when the location of the accessed objects is close to the resident of the user. However, Bardhi and Eckhardt (2012) exemplify car sharing as convenient due to this, which evidently is not the case according to the findings in this study.

The need for convenience and customisation of life situation becomes particularly significant when becoming a parent. When the need for convenience becomes strong enough, it does not matter how much or little it aligns with values and beliefs. This can be exemplified by User4 and User5 who both expressed a great dissatisfaction of the number of cars in Market X and how governmental subsidisations promote a car use. They tried carpooling, but it was simply not convenient enough due to three main reasons: they had to move the child seat of their son every time, it was financially not feasible to use it for daily commute as they had to pay for the time the car stands at the parking lot outside the work, and that you have to pre-book the car and now on beforehand for how long you will use it. User4 expressed how inefficient the current usage of cars is as they 99% of the time are standing unused at a parking lot and wanted to see sharing to a much bigger extent in the future. Referring back to Fitzpatrick (2013, p.16), *“everything considering the future is an over-optimistic lie”*, as User4 and User5 actually tried carpooling but that went back to owning a car. However,

any barriers in form of feeling governed were not expressed, indicating this barrier as described by Bardhi and Eckhardt (2012) to be very low or even not a barrier at all.

5.2.3 Need for New Offer

Expert1 shared that there is always a trigger for why users choose to change their car. From the user interviews, two main connections could be distinguished regarding what triggered them to seek a new car linked to the discussion of risks by Schaefers et al. (2016): performance risks and financial risks. In terms of performance risks, the users explained technical issues as shared by User4 and User5 concerning poor prior experiences. Financial risk mainly concerned taxations, thus government involvement, as further discussed in the section *External Impact*.

When in need of a new offer, the users always felt a need to be able to attain the lowest possible price for the best version of a car, confirming the importance of the financial aspects highlighted in previous research (Mont, 2002; Rousseau, 2020; Schenkl, 2014; Schmidt et al., 2015). For User2, this meant going to a dealer where he could bargain. According to Expert1, others go to the annual automotive fair as users believe that they can get a better deal there than by simply going to a dealership. User6 was, however, aware of this and expressed that it is common for people to believe there is a financial advantage to initiate an acquisition process at the fair, but he knew that it was not true. Nevertheless, several of the users shared that they often visit the fair, which still makes it an important source of information and an opportunity to present and share knowledge about different access-based services to influence potential users. However, these were mainly the car enthusiasts who also had an interest in cars.

5.3 OFFER PROVIDER

In order to provide an access-based PSS, the provider needs to have a certain level of involvement. Most prominent are the relational aspects as well as the redistribution of responsibilities and tasks.

5.3.1 Relationship Needs

Previous research highlights the importance of the relationship between the user and the PSS-provider (Gaiardelli et al, 2014a; Penttinen & Palmer, 2007), which also got confirmed during the user interviews. It could be seen during the acquisition phase, e.g. during the poor experiences of User6 where he completely refrained from buying a car from a dealership due to poor treatment. The opposite, gaining great service and having a personal connection, made User1 choose a certain dealership. Dealerships were discussed in several interviews, indicating that they play an important role for users in the acquisition process of cars at Market X, and it is suggested that the need for trust to the dealership affects the users in their acquisition process, confirming previous research. In the example of User4 and User5, they wanted to reduce the performance risk which subsequently resulted in the purchase of their car. Subsequently, it resulted in them having a requirement that the car had to be bought at an authorised dealer, as they viewed the seal of approval from the OEM as an assurance that they would get what was promised.

The importance of the dealerships may be discussed. The findings show how users at Market X commonly acquire their cars through a dealership, while Expert 3 shared how

a significant share of customers at a neighbouring market order their subscribed cars online, without visiting the dealership. In terms of a car subscription service as an access-based PSS, it is not a radical difference between that and a leasing service, as the main distinction is the timeframe of the contract. A shorter time frame of contract entails a lower commitment for the user, where the lower commitment generates a lower perceived risk for the users. Traditionally, the role of the dealerships has been to provide information and let the users test drive the car. When the commitment decreases, the need to test drive before purchase also decreases, and the need for dealerships can to some extent be argued becoming obsolete. However, situational factors impact the users' behaviours and needs, thus it is unclear how a car subscription service affects the role of the dealerships at Market X.

Previous research suggests that in order for a PSS to be delivered, involvement of the provider is inevitable subsequently the risk of privacy invasion experienced by the user (Mont, 2002; Rousseau, 2020; Tukker & Tischner, 2006). Not once was it mentioned by users that they experience privacy concerns. Neither did they feel other restrictions in terms of usage of the car, such as mileage restraints which Szamatowicz and Paundra (2019) argue may be a barrier for user adoption. However, as none of the interviewees mentioned this, only speculations can be made as to why. Either the providers are aware of how to respect their customers' privacy thus, never causing an issue leading to the users not feeling the need to mention privacy concerns during the interview. Another explanation could be that at Market X, concerns regarding privacy is not something frequently considered in general. However, being a part of the EU, Market X has experienced changes in terms of enforcement of GDPR legislations which has raised the discussion of companies invading the individual's privacy. Thus, the concern regarding invasion of privacy could be considered common knowledge in Market X.

5.3.2 Redistribution of Responsibility and Tasks

One of the two main differences between ownership and access suggested by Bardhi and Eckhardt (2012) is the governing rules of the relationship between the self and the object, where they argue ownership to enable freedom and responsibility towards the object. Similar arguments are made in the previous research where the redistribution of responsibility is highlighted, that is, the PSS-provider is responsible for the product instead of the user, subsequently acting as an enabler fulfilling the need of users to minimise risks (Baines et al., 2007; Barquet, 2013; Mont, 2002; Pessôa & Becker, 2017; Rousseau, 2020; Schenkl et al., 2014; Schmidt et al., 2016). However, some users have a need for a sense of control and feel that they are giving up their control by redistributing their responsibilities to another party, as in the example of User1 and User7, who had poor prior experiences in terms of bad services. Thus, the need for minimising risks may also act as a barrier for user adoption for access-based PSS as some users, based on their prior knowledge and experiences, find it less risky to do everything themselves. Ultimately, having another party performing tasks can either be considered a relief or a burden dependent on the prior experiences of the user.

5.4 CONTEXTUAL FACTORS

The findings from the user and expert interviews revealed that Market X is strongly influenced by contextual factors favouring company cars as well as the geographical position of the country. This aligns with the suggestion by Baines et al. (2007) about how PSS must be developed on a case-by-case basis.

5.4.1 Different needs B2B and B2C

At Market X, there is no clear distinction between a private and a company car from a user's point of view, especially not for smaller businesses since the user in that case also is the owner of the company. The findings from this study is thus mainly applicable for smaller enterprises whereas the user is close to, or equal to, the financial department and also the decision maker for whether an acquisition should take place. For bigger enterprises, the line between user and decision maker is more distinct. Larger companies also have different needs than the users, such as need for a fleet management tool to manage the company's car fleet. Thus, when discussing B2B is mainly smaller businesses in focus.

It appeared that the perception of social and financial risks differs between a B2C and B2B setting. For smaller enterprises, there is a need for being able to bookkeep the car as an expense rather than a long-term debt, thus keeping the car out of the balance sheet as it is beneficial fiscally. Moreover, as previously discussed in the section about *Materialistic Needs* (p.66), in terms of status and social risk there is a need for some companies to arrive to customer meetings in a decent car as it represents the success of the firm according to the company owners. Furthermore, within certain bigger companies the price point of the car represents where the employee is in the organisational hierarchy, indicating the car as a professional status symbol.

5.4.2 Low Frequency Needs

It emerged that, due to the small size and location of Market X, it is common to use the car for driving on vacation, both to summer and winter destination. This indicates that the needs of the users go beyond domestic driving. It can be illustrated by the requirement for winter tyres in bordering countries, as well how User1 shared that he determined not taking the car for vacation to destinations further away than 1250 kilometres as he believed he would be too tired to drive once arriving to the vacation location. He further shared that he in general preferred driving to his vacation location as he found it very convenient to have his car once there. This indicates a need for flexible solutions outside the borders of the country, such as being able to take an airplane to the vacation location and once there, through an access agreement, being able to access a car there. Subsequently, removing the risk of being too tired when arriving due to a long driving distance. The fact that the users are driving their cars abroad also implies that the car offers also must function and deliver the same quality of service abroad as domestically.

5.5 EXTERNAL IMPACT

External factors impacting the needs that lead to user adoption can be categorised into two categories: *public policy* as well as *industry trends and technological development*.

5.5.1 Public Policy

It was evident that government involvement enforcing taxation laws has the power to impact user behaviours and their needs (Baines et al., 2007; Barquet et al., 2013; Mont, 2002; Schmidt et al., 2016; Vandermerwe & Rada, 1988). The consequences this brought to the users at Market X appeared to be purely financial, although having an ultimate sustainability purpose. Consequently, it becomes more expensive for users to have a certain car, such as one with a diesel motors, making users refraining from owning that kind of car. On the other hand, the governmental involvement could also make certain cars cheaper via tax exemptions, creating a demand from users to choose hybrid plug in cars and electric vehicles (Schmidt et al., 2016). This confirms previous research suggesting that governmental involvement impacts the adoption of users. It further confirms how financial aspects are the main drivers for deciding upon a certain offer or mode of consumption. If it is not financially viable, an adoption will not occur even though users might have an altruistic need to be environmentally friendly, as seen in the case of User4 and User5. It was further brought into light how legislations intended to encourage sustainable consumption behaviour may backfire. User3 shared how the taxations subsidising hybrid plug in cars makes them cheaper than petrol cars, and results in many people buying them without driving on the battery of the hybrid engine, only the petrol, thus exploiting the system.

Governmental involvement and taxations further have a great impact on the possible financial agreements. Previous research, as well as the industry experts and some users, are stressing the possibility to use objects without the high upfront investment ownership requires as one of the main enabler for access-based PSS (Bardhi & Eckhardt, 2012; D'Agostin et al., 2020; Lawson et al., 2016; Schenkl et al., 2014). However, the findings from this study suggest the presence of different financial agreements to decrease the significance of this enabler. The possibility to finance a car through balloon financing in a B2C context, and financial renting in a B2B context, enables the user to acquire a car without a high upfront cost.

5.5.2 Industry Trends and Technological Development

In general, the automotive industry is following societal trends undergoing a Servitization paradigm, similar to what other industries already has undergone (Lay, 2014; Mahut et al., 2017). Overall, the industry experts view of the trends and current changes are in line with academia's view of it, although the industry experts have a greater focus on what motivates the customers and how the trends can lead to perceived increased financial benefits for the customers. This is well illustrated by Expert1 stating "*it all comes down to money*". However, as the purpose of this study is to identify barriers and enablers, the interview guide (Appendix A and C) was developed accordingly, thus it affected the line of discussion among the industry experts. Previous research is emphasising an increased user demand and need for sustainable products. The industry experts agreed to some extent, although meaning that it is linked to the fact that sustainable products are being subsidised and making them cheaper rather than an altruistic need for being sustainable.

The technological development pushing Servitization and ABC alongside legislations promoting more environmentally friendly alternatives might impact the users to no longer be completely free to choose which car offer to adopt. The legislations and available technology forces users into certain options due to other alternatives no longer being financially viable. Ultimately, this impact the financial risks perceived by the users. User3 exemplifies this in terms of “*normal people*” no longer being able to afford a car due to the increased prices of them. Liquidity wise, it is cheaper to accessing a car, i.e. adopting a use-oriented PSS, thus leaving the users with no other choice than an access-based mode of consumption. Moreover, the fact that most of the respondents started speculating about the car use of the future without asked to indicate perceived uncertainties about how future car usage will evolve. The development of autonomous and electric vehicles creates an uncertainty about the future mobility infrastructure at its whole. This uncertainty is suggested to affect the users to not want to commit for a certain car for a longer period of time as they are afraid its residual value would be close to zero when the new mobility infrastructure is developed. This, especially in combination with how cars become more and more expensive as described by User3, acts as an enabler for user adoption of an access-based PS as it does not require any commitment. Changes, both in the industry and in the mobility infrastructure at a whole as well as in the user’s life situation is thus an enabler for ABC as the changes increase the financial risks in ownership.

In terms of the specific case of Market X, it cannot be considered in isolation as the citizens tend to frequently go abroad. As an access-based offer is part of a greater system, together with supporting services, impact of being in other countries must be considered. Most of the country’s users mentioned they use to drive to are also part of the EU. Thus, these countries are covered by the same or similar legislations, especially in terms of the free roaming which stretches over all EU-member nations. This is important as users might need help whilst abroad, which was evident in the example of User6 and the exploding engine. The digitalisation and development of technology has been mentioned in previous research as one of the main causes for the development and evolution of Servitization (Vandermerwe & Rada, 1988).

6 CONCLUSION

This chapter presents the final conclusions drawn and the answer to the research question: *“What user needs affect the adoption of an access-based Product-Service System within the automotive industry?”*. This is followed by *practical implications* companies could benefit from as well as suggestion for *future research*.

6.1 WHAT USER NEEDS AFFECT THE ADOPTION OF AN ACCESS-BASED PRODUCT-SERVICE SYSTEM WITHIN THE AUTOMOTIVE INDUSTRY?

Users have a need to support their current behaviour and facilitate their lifestyle. The findings of this study suggest that all needs emerge from a desire to minimise risks, where the significance and level of perceived risk is dependent on the individual's prior knowledge, contextual factors, external impact as well as on the offers made available by the providers. Moreover, a need for convenience guide the users in their decisions and behaviours, however not at the expense of financial impact. Thus, independent of these factors, the automotive users prioritise their need to minimise their financial risks, then the performance risks, and last the social risks when adopting an offer.

The need to minimise financial risk can be translated into a need to minimise financial impact, which is a need that also impacts all other needs. This need acts as a barrier for users to adopt an access-based PSS, mainly due to the fact that users seldom are aware of their TCO for owning a car, and think it is significantly cheaper than what it really is. This is frequently suggested by previous research and got confirmed during this study. When users are estimating their TCO, they often forget to take depreciation of value into consideration. Moreover, some users do not value having a full coverage car insurance, something that is often included in an access-based PSS. This entails that when the users compare owning to accessing, the comparison becomes inaccurate and unfair in favour of ownership. As a PSS offer includes more than traditional ownership, it results in that the users compare two different things. This study also shows how several factors, such as the prior experiences of the user and planned duration of use of the car, impact the perception of the TCO. When users plan on a longer duration of use, they prefer owning whereas when they were more variety seeking and plan on changing car more often, they prefer access. Moreover, while TCO is a well recognised concept, the new concept coined in this study, Total Cost of Usership should be recognised as well, especially as more and more industries moves from ownership to usership. The TCU needs to consider the opportunity cost for ownership, environmental impact as well as what sacrificed there may be in, for instance, convenience, when choosing to access instead of owning.

Previous research frequently suggests an enabler for adoption in the fact that an access-based PSS allows users to access objects they would not afford to buy as it does not require a high upfront cost, subsequently minimising financial impact. However, in the case of this study and Market X, this enabler is argued to bear a lower significance than previous research suggests which shows how external impact can be manifested. The presence of different legislations and taxations at Market X offer the users financial solutions which provide them with the legal ownership of the cars without being required to pay the high upfront cost. While this might be mainly

applicable to Market X, the overall reasoning about the need for minimising financial risk may be generalised to the automotive industry at its whole.

In terms of performance risk, previous research highlights how moving from pure products to access-based PSS changes the nature of the relationship from one-time transactions to long-term and relational. This means that tasks are redistributed to the provider, who thus absorbs the risks, which may act both as an enabler and barrier for user adoption. Some users find it very appealing and consider it a liberation of responsibilities, while other users do not like it as it requires them to give up control, indicating a need for sense of control. The risk-averse nature of users is ambiguous, where some believe it is less risky to do everything themselves and some find it being a relief and creating peace of mind when not having to deal with anything. It thus highlights the importance of a user's trust for the offer provider, confirming previous research.

However, the exchange was rather to the dealership than the OEM where the users consider trust in different ways. Some focus on the dealership being authorised by the OEM as an assurance for quality, others want a close personal relation with the dealer and that this service would determine if they would buy a car or not, and some users prefer going somewhere they believe they can bargain a little on the price. Ultimately, it is boiling down to getting the best possible performance for the lowest possible price. Other users are simply not comfortable to give up control based on the risk they saw in another party taking over their tasks. Ultimately, the trust for the seller reduced the perceived risk of purchase, acting as an enabler for adoption independent on if it is access-based or transfer of ownership. Trust can also reduce the barrier for adoption loss of control of the user as the trust may reduce the perceived performance risk.

It was also evident how needs are contextual. Previous research highlights how needs are situational dependent, and that access-based PSS offers have to be designed at a case-by-case basis for users to adopt them. The findings from this study confirm this and provide some examples that illustrate it well. One example is how taxations at Market X have enabled different financing solutions which makes it possible for smaller companies to bookkeep a company car as an expense. This means that the company owner can keep the car out of the company's balance sheet, which is very interesting fiscally. Thus, in the context of Market X, if an access-based PSS offer is not possible to book keep as an expense, it will be a huge barrier for user adoption. Another contextual example is the geographical location of Market X which, in combination with the fact that it is a small country, creates needs that go beyond domestic driving. Holiday by car is very common at Market X, and in a B2B context it is also common the drive to meet customers abroad. Even though these contextual needs described only apply to Market X, it illustrates how factors such as a country's geographical position affect user needs as well as how legislations may create fiscal needs which may be applicable for the whole automotive industry.

In terms of social risk, previous research exemplifies how users seek high status via expensive cars. Since Access-Based PSS enables users to get hold of more expensive products without the upfront cost, it thus helps to satisfy users need for status. However, previous research also suggests that one who access instead of buying a car holds lower social status, which ultimately dissatisfies users need for status. However, the need for status in this study was expressed differently. The users

were more concerned to seem like a show-off if they had a too nice car than wanting to have a really nice car the flaunt with. Furthermore, the respondents did not indicate to care from a social approval perspective whether a car was accessed or not, contradicting previous research. Thus, the findings challenge the traditional view on the need for status and suggests that it is more about making smart choices that gaining other's approval. However, there was some distinction for small business owners who said that what kind of car one drives could impact their customers perception of financial success, ultimately highlighting the need to consider which social network the user exists within when evaluating the users need for status.

This study also challenges previous research on the users altruistic need to be sustainable. Previous research highly focuses on the sustainability potential of access-based PSS as well as the users increased demand for these products and their need to act sustainably. The findings in this study showed that although users did express environmental concerns, these concerns did not trump the need for convenience and/or financial impact. Therefore, sustainability is an important factor for users but rather in the sense of finding a win-win situation with financials and convenience. It should therefore be considered as a conditional need which, if applied in the right context, could enable user adoption. On its own, sustainability should not be considered as an enabler for user adoption.

It is evident that there are interdependencies between all needs and perceived risks. The prior knowledge of the individual further affects their needs as it determines to what extent the user believe different offers to fulfil their needs. It should further be acknowledged that although something entails a relative advantage, it does not necessarily mean that it is equivalent to adoption.

6.2 PRACTICAL IMPLICATIONS

It is important to highlight that a benefit or advantage in an access-based PSS offer does not automatically equal to user adoption, and it is therefore suggested for companies to first focus on removing barriers of user adoption and second to leverage on enablers. The most significant barrier to remove is the unawareness to TCO, which might be overcome to some extent by offering flexible financing solutions or marketing efforts to educate users. As the dealerships have a great impact over what offer the users adopt, it is also suggested to companies that are access-based PSS providers within the automotive industry to prioritise their relationships to the dealerships. To leverage enablers, firms are suggested to focus on the in-car experience in order to make commuting more pleasant as it, for the use-phase, was the major pain point. For examples by including or offering discounts on audiobook subscriptions, take away breakfast services or facilitate for job meetings in the car. Another enabler to enhance are add-on services for vacation, such as changing winter tyres or offering users to rent a car while abroad to a favourable price. Further add-on services that allow the family to grow with the access-based PSS offer are also suggested to consider.

The needs identified in this study is applicable for any development of access-based PSSs in the automotive industry on Market X, where the market cannot be revealed due to confidentiality issues. Still, automotive companies can use the findings as a guide when Servitizing their offers in an access-based manner by focusing on removing barrier and primary those related to financial aspects. Consideration of

contextual factors such as geographical location and size of country as well as what legislations there are that affect the car usership is also applicable for the whole automotive industry. It is also important to consider that every individual have different perceptions about reality, which also means that a company's perception about reality might differ from the one of the users. Thus, it is further suggested for firms to develop processes for systematically testing the company's assumptions about the users.

6.3 FUTURE RESEARCH

This study shed light on many tangents which would be interesting to pursue, however the limitations of this study in terms scope and time did not allow it. Thus, they are suggested for future research. Financial aspects were identified to play a major role in terms of user adoption. Thus, it would be interesting to dig deeper into tangible and intangible factors and how they impact the user's willingness-to-pay in relation to TCO. Furthermore, the new coined concept Total Cost of Usership, or TCU for short, is suggested for future research to further develop where it is important to understand what different factors that impact TCU. There is not only a financial impact but also a cost for the environment in terms of sustainability, and a cost for the user when they have to pay in terms of convenience.

As the findings contradicted the importance of status, customisation of the product, and the extent of which users have an altruistic need to be sustainable, it would be interesting to further explore this. This may include investigating how status differs in B2B and B2C segments and how different social networks impacts the car usage, the importance of customisation, and truly understand how important sustainability is to users and what sacrifices people are willing to make for the environment.

Another topic suggested for future research is feedback-loops as they were identified as valuable to be able to fully understand user needs. Thus, it would be interesting how to utilise and build feedback-loops and how this relationship between the provider and user can be maintained and promoted to enhance the offer development process and user experience. Furthermore, it would be interesting to investigate what the dealerships role is in the future when the offer characteristics and levels of commitment are changing. By adopting a supply chain approach and investigating what role they play in task redistribution becomes more evident.

Moreover, the study has focused on what parts of the offer aligns with the users and what changes promotes user adoption. It would be interesting to investigate whether a change in perception or prior knowledge of users could make them adopt something that their current use pattern and behaviour otherwise express they would not. This would most likely tap into the field of marketing and communication.

Lastly, it would be interesting to examine who actually is the decision maker and investigate at which specific point in time is a decision being made; who are the critical parties involved, what exactly is required as basis to make a purchase decision, and how can this be impacted. In a shared household, one person may be paying whereas another one may be using the product, and similarly for B2B contexts where the employee is the user and the employer finances the acquisition. The relationship between these two parties and how they influence each other could shed even more light on understanding what makes people adopt an access-based PSS.

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8 APPENDIX

Appendix A: Expert Interview – Interview Guide

Appendix B: User Interview (Live & Email) – Preparation & Initial questions

Appendix C: User Interview (Live) – Interview Guide

Appendix D: User Interview (Email) – Interview Guide

APPENDIX A: EXPERT INTERVIEW – INTERVIEW GUIDE

Below are the questions asked to the different industry experts. Not all questions were asked every expert, but it was adapted dependent on their main field of knowledge.

CbV=Care by Volvo

Interviewee:

- **Tell us about yourself**
- Position:
- Background
 - Career
 - Academic
- Automotive experience
- Nationality
- Age

Automotive industry general:

How have the **automotive industry developed over time?**

- Overall?
- Offer wise?
- Why?

Trends are they generally **global or local?**

- Any main change agent/who is the main influencer?
- What has led to these changes?

How distinct are the differences between b2b and b2c?

Market X/leasing general:

What do you know about Market X?

Leasing and subscription models in other industries, what comes in mind?

Sustainability (general)

How does **users value environmental aspects** of their purchases?

How much is the industry working with becoming greener vs greenwashing?/Do you consider greenwashing common? (PSS)

Are customers more attracted to green offers than “regular”?

Attitude towards cars

How would you **describe users’ relationship to the (Volvo) car** (status symbol? community? extended part of self? comp. to e.g. USA)

Stagnant/changing? Development over time? What are the changes?

What **alternatives are there to owning** a car?

Are the alternatives **established** in the market?

What is the **general perception towards leasing/renting a car?**

How have the automotive **offers developed over time?**

What parts have changed the most?

Changing fast?

How is the **demographic distribution of owning/leasing a car?** Education? Income?
Geographic location? (preferably non politically correct)

Does PSS/cars serve any higher purpose?

Does everyone in Mrkt X who would want to access a car in one way or another have one?

Change in customer behaviour (both general and in AM)

Have you noticed any milestones/things that made customers shift their behaviour in traditional purchasing stuff?

Has any particular person/action/event lead to this?

See any overall changing trends?/What does customer changing needs mean to you?

Does these changing needs come with any new risks for the customer?

New upcoming needs?

- Risks?

Do customers need to change their behavior ("sacrifice" anything) **in order to adopt a PSS like CbV or Sunfleet?** How does leasing/accessing a car change a customers habits?

Relationship with customer: (PSS)

How do customers get informed about offers in general? Most efficient way?

What would you do to inform customers about offers etc?

Do you see **that there are a customer segment of "lower income" that "suddenly" have the possibility to lease/rent a car they wouldn't afford to buy?** "Reaching outside of their segment" In which segment is a typically leased car?

CbV specific

Have you noticed that the **launch have been more successful in some market than others** (CbV 1.0)? Why?

How does CbV fit into the sharing economy? How do you define the sharing economy?

What is the **motivating factor for subscribing to CbV instead of the traditional ways?**

How does the customers benefit on this? Why?

Do you try to ensure that **additional value** is added/new outputs when changing behaviour?

Is cbv a way of doing the same thing in a new way or a new thing done in the same way?

Do you try to **incorporate new things in existing offers?** "give away for free to create need"? Why? (to start diffusion? Could be related to trialability)

Requirement for availability of goods?

What are done to absorb risks?

Needs

Is a lot built on estimations/suggestions to customers before they ask for it? (unawareness of needs)

How does the **process look like when you "decide" that a customer need something?**

What are the **needs based on?**

Development of **PSS/Product based on customer needs?**

Higher rate of development/innovation in leasing?

Do you see any **co-creation efforts** with customers?

If so, how?

Rate of innovation cycles, required by customers?

Customer journey - **Please can you walk us through it?** (own/lease and B2B/B2C)

Acquire a car (buy/lease)

Do the customers want to **try many models?**

Or prefer being **recommended?**

A lot of test drives back and forth?

How typically **maintain** a car

Change of tyres? Frequency of legislated maintenance and cost of this?

Insurances?

What do you consider being the **biggest risks or uncertainties when owning a car and when leasing a car?**

Do people in general repair their vehicles themselves? Are there long waiting queues at repair shops etc?

How typically **terminate** car use

How often does people generally change cars? (se om vi behöver ändra ett beteende eller inte) (PSS)

Why do people generally change car/sell their car?

Describe the **second hand market** of cars

What are the **biggest risks/struggles** when acquiring a used car?

APPENDIX B: USER INTERVIEW (LIVE & EMAIL) – PREPARATION & INITIAL QUESTIONS

The following questions were sent to each user prior to their interview via email.

SOME INITIAL QUESTIONS PRIOR TO THE INTERVIEW:

Personal details:

- Age?
- Education?
- Work?
- Where in [Market X] are you from?
- Where in [Market X] do you currently live?
- Do you live alone or with somebody? (Partner/Friend/Flatmate/Children?)
- Do you share your economy/have a joint economy with this person?
- Do you rent or own the place you live in?

Car specific:

- How long have you had your driving license?
- How many cars have you had since then? (Owned/company car/leased/car pooled..?)
- Do you know what the [Market X annual automotive fair in the capital] is? Have you been there?

TOPICS TO BE COVERED DURING THE INTERVIEW:

To think about for the interview:

- Try think of situations linked to your car situation, both current and previous, where you felt frustrated and/or unsatisfied?
- What do you use a car for?
- General thoughts of owning vs leasing a car?

APPENDIX C: USER INTERVIEW (LIVE) – INTERVIEW GUIDE

Below is the interview guide used during the live interviews. The interview guide was only visible to the researchers. This template was adapted based on the interviewees' answers to the initial email on their prior experiences (see Appendix B). All questions were not asked to every interviewee as they sometimes answered the questions without having to be asked about it.

FRUSTRATION

Did you manage to think about any car related situation where you felt frustrated?

How did you manage to fix that situation?

CAR USAGE

What do you use your car for? Why?

- **how much approximately do you drive per year?**

OWN/LEASE?

Tell us more about your cars. Have you owned or leased them, or both? How come you choose respectively?

- **Ever looked into leasing schemes?**
- **Given them (leasing) an honest chance?**

IMPORTANT FACTORS

When you acquired your current cars, what was the most important/determining factors?

- **Do you have any expectations on the car manufacturer (PSS provider)? What?**

ACQUISITION

How did you make the actual acquisition?

- **Dealer?**
- **What worked well during the acquisition, and did you perceive any struggles?**
- **did you feel like you got more than you needed?**

DO SOMETHING DIFFERENTLY

Would you do anything differently if you would do it today? 'why/why not?'

PERCEPTION

- **General perception about/what comes to mind when you think about/what are the negative aspects according to you of**
 - **Owning**
 - **Leasing**

EXPECTATION

Additional features received that you use today that you didn't expect?

RISKS/UNCERTAINTIES

What do you see as the biggest risks/uncertainties while getting and having a car?

- **Insurance?**

What uncertainties do you see?

DEFINITION NICE CAR

What's your def of a nice car?

CUSTOMISATION

Is customisation important for you?

IMPORTANCE OF CAR PURCHASE

Have you saved long-term in order to be able to purchase a car? Is the car purchase in itself an important thing for you?

APPENDIX D: USER INTERVIEW (EMAIL) – INTERVIEW GUIDE

The following questions and explanations were sent to the interviewees who responded via email. This template was adapted based on the interviewees answers to the initial email on their prior experiences (see Appendix B).

Why did you choose buying/accessing the cars?

Did you consider leasing? If so, why didn't you?

What have been the reasons for changing cars?

Please consider everything that is connected to or revolves around your car, that is everything from you starting to think about buying/leasing the car, gathering information, talking to a dealer, driving, paying bills, other contracts etc etc etc and the emotions this have stirred up. Therefore, you can see that instead of writing "car" we have writed "car offer" below.

Can you give any examples of happenings that have caused you frustration with your car offer?

What do you use your car for?

How much do you drive each year approximately?

What do you think is great about your current car offer?

Anything you are missing in your current car offer?

General perception of owning a car?

General perception of leasing leasing a car?

What's your definition of "a nice car"?

DEPARTMENT OF TECHNOLOGY MANAGEMENT AND ECONOMIC
DIVISION OF ENTREPRENEURSHIP AND STRATEGY
CHALMERS UNIVERSITY OF TECHNOLOGY

Gothenburg, Sweden
www.chalmers.se



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