THE RISE OF RESIDENTIAL CARSHARING IN FINLAND: A CASE STUDY OF DRIVERS AND CONSTRAINTS

Jyväskylä University
School of Business and Economics

Master's Thesis

2020

Author: Joonas Raaska
Subject: Corporate Environmental Management
Supervisor: Marjo Siltaoja

JYVÄSKYLÄN YLIOPISTO
UNIVERSITY OF JYVÄSKYLÄ

ABSTRACT

Author	
Joonas Raaska	
Title	
The rise of residential carsharing in Finland: a case study of drivers and constraints	
Subject	Type of work
Corporate Environmental Management	Master's thesis
Date	Number of pages
05/2020	58
Abstract	

Carsharing is a growing phenomenon both in Finland and elsewhere in the world. Previous research concerning the subject has established that local governments often enable carsharing by providing privileged access to parking because of the expected benefits associated with it. For example, these benefits include reduced distances travelled by car among individuals participating in carsharing schemes as well as reduced demand for parking infrastructure. While there is an extensive body of literature concerning the governance and benefits of carsharing on a larger scope, little attention has been paid to recently proliferated arrangements in which shared cars have been brought to parking lots of residential buildings.

This thesis aimed at investigating this phenomenon in Finland and the reasons behind its expansion. A qualitative case study approach was used to investigate the contemporary phenomenon and seven semi-structured interviews were conducted to collect the empirical data. Four of the interviewees represented carsharing operators, two service procurers, and one a municipality. Thematic analysis was used to recognize patterns and themes from the data.

The findings indicate that residential real estate developers and investors are largely responsible for the acquisition of shared vehicles in the context of residential carsharing. Municipalities seem to have enabled the expansion by providing developers with the opportunity to build fewer parking spaces for new buildings if a dedicated shared vehicle is provided for the residents. This study also reveals that service procurers are expecting that offering a shared vehicle to residents increases the attractiveness of housing.

Key words	
carsharing, corporate environmental management, sharing economy	
Place of storage	
Jyväskylä University Library	

TIIVISTELMÄ

Tekijä	
Joonas Raaska	
Työn nimi	
Asumisen yhteyteen liitettävien yhteiskäyttöautojen suosion kasvu Suomessa: tapaustutkimus ajureista ja rajoitteista	
Oppiaine	**Työn laji**
Yritysten ympäristöjohtaminen	Pro Gradu -tutkielma
Päivämäärä	**Sivumäärä**
05/2020	58

Tiivistelmä

Yhteiskäyttöautoilu on kasvava ilmiö sekä Suomessa että muualla maailmalla. Aihetta koskeva aikaisempi tutkimus on osoittanut, että paikallishallinnot tyypillisesti mahdollistavat yhteiskäyttöautoilun tarjoamalla jaetuille ajoneuvoille etuoikeuden pysäköintiin. Syyt mahdollistamisen taustalla liittyvät yhteiskäyttöautoilun hyötyihin, kuten vähentyneisiin ajosuoritteisiin yhteiskäyttöautoilijoiden keskuudessa sekä parkkitilan kysynnän laskemiseen. Vaikka yhteiskäyttöautoilua on tutkittu laajalti säännöstelyn ja hyötyjen näkökulmasta, vain vähän kiinnostusta on osoitettu hiljattain yleistyneitä järjestelyitä kohtaan, joissa yhteiskäyttöautoja on tuotu asumisen yhteyteen.

Tämän tutkielman tavoitteena oli tarkastella näitä järjestelyjä ja niiden yleistymisen syitä Suomessa. Ilmiön uutuuden vuoksi tutkielmassa hyödynnettiin kvalitatiivista tapaustutkimusta. Tutkielman empiirinen aineisto koostui seitsemästä puolistrukturoidusta haastattelusta. Haastateltavista neljä edusti yhteiskäyttöautoja tarjoavia yrityksiä, kaksi palvelunhankkijoita, ja yksi kuntaa. Aineistosta tunnistettiin keskeisiä aihepiirejä teema-analyysia hyödyntäen.

Tutkielman tulokset osoittavat, että asumisen yhteyteen liitettävien yhteiskäyttöautojen hankinnasta vastaavat yleensä asuinkiinteistösijoittajat ja -kehittäjät. Kunnat näyttävät mahdollistaneen järjestelyjen laajentumisen tarjoamalla mahdollisuuden rakentaa vähemmän autopaikkoja uusien rakennusten yhteyteen, jos asuinkiinteistön yhteyteen liitetään yhteiskäyttöauto. Tämä tutkielma osoittaa myös, että palvelunhankkijat odottavat yhteiskäyttöauton hankinnan lisäävän asuinkohteen kiinnostavuutta.

Asiasanat	
jakamistalous, yhteiskäyttöautoilu, ympäristöjohtaminen	
Säilytyspaikka	
Jyväskylän yliopiston kirjasto	

CONTENTS

6

LIST OF TABLES AND FIGURES

1 INTRODUCTION

The rapid global urbanization is creating increasingly pressing challenges on urban transportation systems (Cohen & Kietzmann, 2014). As production and labor force concentrates in urban areas, the demand for transportation need increases (Madlener & Sunak, 2011). At the same time, the rate of motorized individual transport is rising in many countries (Madlener & Sunak, 2011). This leads to increased emissions and energy consumption (Madlener & Sunak, 2011). Also, growing levels of traffic congestion decrease the attractiveness of cities and worsen the well-being of citizens (United Nations Conference on Housing and Sustainable Urban Development, 2017). Lastly, concentration of economic activity results in scarcity of land (Madlener & Sunak, 2011).

Shared mobility seems to offer a partial solution to these challenges. With shared mobility, private sector tries to address the inefficiencies of existing public and private mobility market by introducing series of different mobility solutions such as bikesharing, ridesharing, and carsharing (Cohen & Kietzmann, 2014). The focus of this thesis is on the last one of these, namely carsharing. Carsharing decreases the rate of private car ownership and hence makes public space available for other purposes (Lagadic, Verloes, & Louvet, 2019). Furthermore, people that participate in carsharing schemes tend to use more environmentally sustainable modes of transportation (Loose, 2010) and drive less when compared to time prior joining a carsharing scheme (Chen & Kockelman, 2016).

Overall, a large number of studies have concentrated on sustainability benefits and governance of carsharing. These subjects are closely connected as shown in this thesis. Many types of carsharing require the support of local authorities and expected sustainability benefits are often the reason why municipalities want to enable the expansion of carsharing. However, quite little is known about carsharing arrangements that have been made in order to bring shared vehicles to parking lots of residential buildings. While studies show that local authorities enable carsharing mostly by providing privileged access to parking, research has yet to delve deeper in the role of municipalities and the reasons behind the expansion in the context of residential carsharing arrangements.

This study set out to fulfil the identified research gap by investigating the reasons behind the proliferation of residential carsharing schemes. To achieve the goal, it is also necessary to understand the existing arrangements. Hence, the secondary purpose of this thesis is to gain a coherent picture of the residential carsharing scene in Finland. In particular, this phenomenon is interesting because the popularity of these arrangements seem to have expanded recently in Finland (Takala, 2018). It is also evident that the number of service operators has increased in recent years as shown in chapter 3.2 and hence it could be argued that the time is right for studying the phenomenon. Also, studying the phenomenon provides interesting insight on the dynamic between different actors that has

been neglected thus far. The research question that this thesis aimed to answer is as follows:

- Why have arrangements to bring corporate-owned shared cars to residential buildings increased recently in Finland?

This study uses a qualitative case study to investigate the contemporary phenomenon. The empirical research data consists of seven semi-structured interviews that were carried out either by phone or in person. Four interviewees represented carsharing operators, two represented service procurers, and finally one interview was carried out with a city planning architect. Interview questions that were asked from service providers and service procurers considered the existing arrangements for residential carsharing, reasons for expansion of residential carsharing, and the possible support by municipalities. Finally, the interview with the city planning architect concentrated on zoning and lowered minimum parking requirements.

The first section of this thesis will examine the emergence of sharing economy, its criticism, reasons for participation, and carsharing in sharing economy. The second section will further discuss carsharing and particularly its benefits, types, governance, as well as its history and development in Finland. The third section concerns the methodology used for the research and it is followed by the research findings. Finally, in the last section I will provide an answer to the research question, discuss the research findings in light of earlier research, propose implications for key actors, and conclude by discussing the limitations of the research and by suggesting subjects for future research.

It is necessary to clarify that throughout this paper I will refer to "residential carsharing". This term is used to refer to arrangements in which corporate-owned shared vehicles have been brought to the parking lots of residential buildings. Thus, in the context of this thesis the term does not include peer-to-peer (P2P) carsharing.

2 SHARING ECONOMY

According to Belk (2013), sharing makes enjoying the benefits or splitting the costs of possessing something possible. Thus, it is an alternative to ownership, which is paramount to exchange activities in marketplace and giving gifts (Belk, 2007). Sharing tends to be excluded to occur within the nuclear family, and even in families less and less are being shared today (Belk, 2007). However, Belk's view has been contested by the proliferation of varying sharing initiatives that have emerged during the last decade. In this chapter I will discuss the emergence of the phenomenon and its definition. Moreover, criticism and reasons for individuals to participate in sharing initiatives will be discussed. Lastly, the section will end by evaluating why carsharing should be considered as a part of sharing economy.

2.1   The emergence of sharing economy

Sharing economy entered public discourse in around 2011-2012 after the publication of Botsman and Roger's book that concerned collaborative consumption (Martin, 2016) and the subject has been gaining popularity since then (Cheng, 2016). While Botsman and Rogers used the term collaborative consumption, it has been largely replaced with sharing economy later on (Martin, 2016).

In their book Botsman and Rogers (2010) argued that western consumers had reached a situation where purchasing additional products would not improve happiness, but instead, ownership could turn into a burden. Furthermore, they illustrated how hyperconsumerism had created a plethora of social and environmental issues. Collaborative consumption was presented as a solution that could address these issues by creating an alternative model to the conventional take-make-waste economic system. Sharing products that are environmentally harmful to produce and immensely underutilized were presented as prime examples for sharing economy initiatives (Botsman & Rogers, 2010). The authors saw that the attitude towards owning things was changing and that the trend was closely related to digitalization and the process of turning products into services. Instead of wanting stuff people wanted to have the experience or the needs they fulfilled and thus, access would often be valued over ownership (Botsman & Rogers, 2010).

Botsman and Rogers (2010) argued that there are four principles that are common to all examples of collaborative consumption. These are critical mass, idling capacity, belief in the commons, and trust between strangers. Critical mass refers to the level of momentum needed to make a system self-sustaining. Botsman and Rogers (2010) exemplify this by discussing bike sharing system. If cities have started their bike sharing systems with too few bikes, the service has

not proved to be successful. However, in instances where enough docking stations and bikes have been brought to play since the beginning, the popularity of bike sharing systems have exceeded expectations. Critical mass is also important from the perspective of social proof (Botsman & Rogers, 2010). For example, seeing people ride shared bikes makes it easier for others to cross the psychological barrier that usually exists when one adopts new behaviour (Botsman & Rogers, 2010). Idling capacity refers to unused potential of physical products and non-tangible assets like space, skills, and time (Botsman & Rogers, 2010). Botsman and Rogers (2010) point out that while every other household owns a power drill, they are only used from six to thirteen minutes during the life cycle. Modern technology has made it possible for us to avert this trend by utilizing the idling capacity (Botsman & Rogers, 2010). Belief in the commons refers to the possibly unintentional creation of value for others when people join or use some form of collaborative consumption (Botsman & Rogers, 2010). For example, joining a bike sharing scheme makes the system work better for everyone and co-creation of knowledge to platforms like Wikipedia provides value for each user (Botsman & Rogers, 2010). Trust between strangers is needed in many forms of collaborative consumption. In P2P platforms, there are usually no centralized control mechanisms meaning that the individuals using the platforms must rely on each other to act responsibly (Botsman & Rogers, 2010). For example, in ride-sharing systems people must trust that the person who is either providing or taking the ride is reliable (Botsman & Rogers, 2010). Companies that provide these platforms are only meant to act as curators or ambassadors (Botsman & Rogers, 2010).

2.2   Defining sharing economy

Originally, Botsman and Rogers (2010) organized many different initiatives under one concept. They distributed collaborative consumption into three systems: product service systems, redistribution markets, and collaborative lifestyles. Later on, the definition of sharing economy has been widely discussed in the literature (Acquier, Daudigeos, & Pinkse, 2017; Belk, 2013; Vaskelainen, 2018). Acquier et al. (2017) note that the only thing that researchers seem to agree on is the difficulty to frame sharing economy. Thus, it is nearly impossible to say anything conclusive concerning the pathway of whole sharing economy (Vaskelainen, 2018).

Instead of creating another definition, Acquier et al. (2017) came up with an organizing framework that aimed to make sense of different perspectives of sharing economy. They found that sharing economy is essentially an umbrella construct that accounts for multiple differing phenomena that all rest on three foundational principles, namely access economy, platform economy, and community-based economy. In their perspective, initiatives that rely on 2 or 3 foundational principles are more likely to be considered as sharing economy initiatives.

Access economy encompasses using underutilized assets in order to optimize their use (Acquier et al., 2017). This often translates to people accessing assets instead of owning them (Acquier et al., 2017). The expected promises include more inclusive access and environmental savings through resource optimization while the downsides include careless use of shared assets that leads to companies bearing the costs of control mechanisms and monitoring systems (Acquier et al., 2017).

Platform economy includes initiatives where decentralized P2P exchanges are intermediated through digital platforms (Acquier et al., 2017). In their definition, platform economy includes mostly platforms that are used for both monetary and non-monetary transactions. Platform economy's promises are closely related to prevailing market logic and post-bureaucratic systems (Acquier et al., 2017). It presents opportunities for new ways of market development (Acquier et al., 2017).

Community-based economy refers to initiatives that are coordinated "through non-contractual, non-hierarchical, or non-monetized forms of interaction" (p. 125, Acquier et al., 2017). In practice, participating in community-based economy might mean taking part in a community project, promoting values, or creation of social connections. Decentralized and post-bureaucratic organizations are ideal to community-based perspective (Acquier et al., 2017). However, unlike platform economy, community-based economy rejects profit-driven platforms because they nullify the environmental and social promises incorporated to sharing economy initiatives (Acquier et al., 2017).

2.3   Criticism and issues concerning sharing economy

Vaskelainen and Tura (2018) illustrate how discussion concerning sharing economy has become increasingly critical. This chapter will briefly discuss some of these critical discourses.

Martin (2016) argues that while sharing economy had its roots in criticism of hyper-consumption, it has been reframed by regime actors as an opportunity for economic growth. If this co-option by corporate actors continues further, Martin (2016) expects that sharing economy is very unlikely to foster a transition towards sustainability. Morozov (2013) claims that sharing economy is "neoliberalism on steroids". He justifies this by pointing out that sharing economy initiatives are linked to part-time employment, non-existent healthcare and insurance for employees, disregarding unions, and turning people into "self-employed entrepreneurs who must think like brands". It seems that Morozov also aims his critique implicitly towards larger entities acting in the sharing economy industry.

Frenken and Schor (2017) evaluated sharing economy platforms from the perspective of triple bottom line of sustainability. They argue that while the economic benefits of sharing economy are obvious, the major proportion of revenue seems to spread to people who are already wealthy. The argument is justified by

notion that most of the transactions that occur in the sphere of sharing economy were in home sharing at the time. Home sharing is further criticized for possibly rising the rents and affecting the attractiveness of neighborhoods where home sharing is common. Furthermore, Frenken and Schor (2017) warn that sharing platforms tend to create monopolies and thus high margins can be charged. From the perspective of environmental benefits, Frenken and Schor (2017) argue that there is still lack of evidence that would show the connection between taking part in sharing economy and reducing carbon footprint. The only exception is carsharing, which has significant reduction to CO_2 emissions (Frenken & Schor, 2017). Lastly, Frenken and Schor (2017) point out that social effects of sharing economy are difficult to evaluate.

According to Vaskelainen and Tura (2018), the problems with defining sharing economy have led to situations where different actors are accused of problems that do not concern them. Their study indicates that most of the issues that are connected to sharing economy relate to P2P economy. Also, they found that almost none of the problems concerned product-service economy, such as business-to-customer (B2C) carsharing. This seems to hold true for the assessed criticism.

However, it should be noted that financial savings are one of the outcomes that individuals participating in sharing economy are expecting (Botsman & Rogers, 2010). This could produce the so-called rebound effect in which people use the saved money to activities that are environmentally harmful. This aspect has been identified in the context of carsharing, but its significance is difficult to evaluate (Chen & Kockelman, 2016).

2.4   Reasons for consumers to participate in sharing economy

Botsman and Rogers (2010) saw that the reasons why people were participating in sharing initiatives were rooted in environmentalism, cost consciousness, shrinking social networks, and renewed belief that communities matter. Also, Belk (2013) argues that trends like climate change, increasing prices for fuel and raw materials, and pollution have been stimulants for collaborative and sharing consumption ventures. He also mentions that numerous companies operating in the sharing economy industry benefited from the economic collapse of 2008.

A study by Bardhi and Eckhardt (2012) questions the assumed motives behind sharing activities presented by Botsman and Rogers. They examined the relationship between the consumer and the accessed object which was a shared car in their research. They found that carsharing is largely motivated by self-interest and utilitarianism. Individuals that use shared cars seem to resist attachment to the vehicle beyond its use value (Bardhi & Eckhardt, 2012). Also, Bardhi and Eckhardt found that people participating in carsharing schemes are not interested in anticonsumerism. Rather, they are motivated by fewer obligations compared to burden of ownership. Furthermore, in market-mediated, incognito,

short-term use, and self-service access consumption users tend to behave opportunistically towards the company and other users (Bardhi & Eckhardt, 2012). This behaviour is contrary to that which has been recorded in more social and non-profit initiatives such as toy-sharing (Bardhi & Eckhardt, 2012). The researchers found that model of sharing and the associated generalized reciprocity does not apply, when the context is anonymous, and market mediated. Rather, consumers choose the market-mediated access in order to avoid cocreation and social obligations (Bardhi & Eckhardt, 2012). However, it should be noted that B2C carsharing is merely a single embodiment of sharing economy and thus generalizations to other forms of sharing economy should not be made.

Botsman and Rogers (2010) emphasize that even though people found sharing economy initiatives attractive because of self-interested reasons (e.g. saved money, time and value) it would not make difference as long as it changed consumption patterns into direction that would require fewer products, consume less materials, produce less waste, and add social capital. Furthermore, they propose that people who took their first steps towards sharing economy based on self-interested reasons could become more open-minded towards collaborative solutions in the process.

2.5 Carsharing in sharing economy

Carsharing has been presented both as a prime example of sharing economy (Botsman & Rogers, 2010) and as a form of faux sharing (Belk, 2013). Belk (2013) saw that commercial ventures took the sharing vocabulary to describe activities that were essentially about renting cars for short periods of time and thus stated that carsharing is not in fact sharing but "pseudo-sharing". Similarly, Bardhi and Eckhardt (2012) argued that market-mediated anonymous carsharing is commodity exchange without the transfer of ownership, and thus it differs from sharing. They justified their argument by illustrating how people that access shared cars are not interested in political consumerism or collaboration, but rather want to use shared cars in order to rid themselves from the burden of ownership.

Vaskelainen (2018) mentions that regulation concerning sharing economy has already influenced which actors end up winners or losers in the marketplace. As mentioned before, access is one of the key features of sharing economy and in access there are no material cues that can be used to make distinction between two services (Vaskelainen, 2018). Vaskelainen (2018) argues that this could give rise to opportunistic behavior as any car rental service could be categorized as carsharing if the operator should find it helpful.

When applying the organizing framework by Acquier et al. (2018) that was presented in chapter 2.2, it is evident that B2C carsharing only includes one foundational core, namely access. P2P carsharing would then be more likely to be included in sharing economy because it also includes the platform core. Be

that as it may, carsharing does present an alternative model by offering individuals possibility to access cars instead of owning them. Carsharing has undisputable effect on car ownership (Shaheen & Cohen, 2013) and more sustainable mobility amongst individuals that have joined carsharing schemes (Chen & Kockelman, 2016). Hence, carsharing should be considered as a prime example of sharing economy that seems to meet the expectations and promises by steering consumption to more a sustainable direction. The next section will discuss carsharing and its benefits, history, governance, and models in closer detail.

3   CARSHARING

Le Vine, Zolfaghari, and Polak (2014) mention that carsharing terminology has never been standardized and as a result it creates continuous confusion among the users and professionals working within the industry.

According to the definition by Cohen and Shaheen (2013), carsharing enables individuals to gain access to a fleet of cars by joining an organization that maintains them and by that they get the benefits of privately owned vehicle without needing to pay the fees associated with ownership and without responsibilities that come from owning a car. The service provider usually takes care of the maintenance, parking, and gasoline (Cohen & Shaheen, 2013). However, Lagadic et al. (2019) warn that even the most generic definitions can be difficult to make as the number of different services with changing value propositions exist in the market. For example, it is evident that the definition by Cohen and Shaheen excludes carsharing that occurs between peers. Le Vine et al. (2014) seem to agree that there is no one definition that would entail the whole phenomenon. Nonetheless, they connect following characteristics to carsharing:

- Usually the end user has to qualify by verifying his or her identity and driving license before gaining the access to a shared car for the first time, but after that the access does not require interaction with the staff.
- Keyless access is common but does not apply to every instance.
- The vehicle is most often driven by the end user.
- In addition to possible sign-up fee or monthly payment, the use of the vehicle is often billed based on minutes or hours.
- Usage can be spontaneous or in some cases reservations have to be made in advance.
- Unlike in traditional car rental services, the vehicles are distributed to different areas.
- Cleaning and servicing does not occur every time after the use of car.
- People using carsharing services can sometimes be encouraged to carry out small tasks (e.g. refill the tank) in exchange for small increase to use time of vehicle.

While it is arguably difficult to frame carsharing under one comprehensive definition, it is easier to differentiate between its varying models. These will be discussed further in the following chapter.

3.1 Varying models of carsharing

Carsharing models can be divided into two main categories based on service type, intended audience, and use purpose, namely station-based and free-floating carsharing (Machado, Hue, Berssaneti, & Quintanilha, 2018). Station-based carsharing can be further divided into roundtrip and one-way systems (Machado et al., 2018). In station-based roundtrip model users pick up the car from a specific parking spot and return it to the same place, while in one-way model users can drop it to another designated parking spot (Machado et al., 2018).

Station-based roundtrip carsharing is the most widespread commercially, and most research conducted on carsharing relates to this type (Le Vine et al., 2014). In station-based carsharing users usually pay per hour (Machado et al., 2018) and they must determine the pick-up time as well as the duration of the trip beforehand (Le Vine et al., 2014). Vehicles are often owned or leased by a professional carsharing operator (Le Vine et al., 2014).

In free-floating model, the cars can be picked up and left to anywhere in determined area of operation (Machado et al., 2018). In free-floating carsharing users can usually leave the operating zone temporarily, but they still must return the car to the designated area once they end their trip (Machado et al., 2018). Free-floating carsharing vehicles can be usually accessed by using a smartphone (Machado et al., 2018). The use of free-floating vehicles is oftentimes spontaneous as cars are reserved just few minutes before starting the trip (Le Vine et al., 2014). According to Machado et al. (2018), the free-floating mode is expanding due to advanced technology and public policies that are aimed to ease on-street parking of carsharing cars.

In station-based one-way model users can pick up the car from one station and return it to another (Le Vine et al., 2014). Station-based one-way model is usually paid by minute and thus also the trips are often shorter compared to station-based roundtrip mode (Machado et al., 2018). While many of the carsharing operators consider one-way carsharing as an evolution of round-trip mode, it is faced with issues concerning unequal travel demand between parking stations, thus leading to additional costs for the operators (Machado et al., 2018). However, Le Vine et al. (2014) point out that the management of station-based one-way model is still less demanding compared to free-floating system.

In P2P carsharing users can gain temporary access to privately owned cars and the rental is intermediated by a P2P carsharing company (Machado et al., 2018). The company usually provides the car owner with a bespoke insurance and collects certain share of the transaction while the rest of it goes to the individual who is renting the car (Le Vine et al., 2014). The locations for picking up the car and dropping it off are usually agreed between the renter and the car owner (Machado et al., 2018), but most often the cars are picked up from and returned to the same place (Le Vine et al., 2014). The shared vehicles in P2P are usually older compared to the ones that are used in B2C models, but at the same

time, the cars are preowned, underutilized, and no additional vehicles are required (Machado et al., 2018). There is also more diversity in vehicle types, as cars are owned by private individuals and not carsharing operators (Le Vine et al, 2014). In a sense, P2P is closer to sharing economy than B2C models because it requires collaboration between peers (Machado et al., 2018). Also, in P2P, the prices for users are generally lower, because the intermediating P2P company has much lower operating costs compared to B2C operators (Machado et al., 2018). Finally, unlike in B2C, P2P vehicles can be found in rural areas in addition to urban areas because supply is dependent only on car owners who can offer their cars free of cost (Munzel et al., 2017).

In cooperative carsharing, members split the associated payments that come from the ownership of the car and manage the sharing of the vehicle by themselves (Cohen & Kietzmann, 2014). Munzel et al. (2017) found that in Germany cooperatives are often found in smaller towns, while commercial B2C operators can be found in bigger cities.

Lagadic et al. (2019) estimate that B2C carsharing has been generally unprofitable business for the service operators thus far. They elaborate their view by pointing out that only one carsharing service operator has publicly announced and furthermore demonstrated that their business is in fact profitable. As Cohen and Kietzmann (2014) clearly illustrate, B2C carsharing is highly capital-intensive business because carsharing service operators have to invest in shared vehicles, web-based interfaces and operating systems, technology to unlock the cars, etc. It seems evident that stable business model is yet to be found (Lagadic et al., 2019).

3.2 Brief history of carsharing and its development in Finland

While carsharing is not particularly new innovation, it has changed immensely over the course of time. According to Shaheen and Cohen (2007), the first carsharing experience in Europe dates back to 1948. Carsharing cooperatives were then mainly motivated by financial factors: people who could not afford a personal car shared one instead (Shaheen & Cohen, 2007). Series of shared-car experiments took place in Europe and UK during 1970s and 1980s (Shaheen & Cohen, 2007). Later on, all of them have been brought to a halt (Shaheen & Cohen, 2007). The first professional carsharing organizations were established in the latter part of 1980s in Germany and Switzerland (Vaskelainen, 2018).

Botsman and Rogers (2010) asked how difficult it would have been to organize carsharing for few hundred users in the 1940s. Arguably, web-based technologies have made these arrangements more subtle. Carsharing has changed substantially due to advancements in ICT that have enabled automated customer interfaces, geolocation, and monitoring fuel and battery levels in real-time (Lagadic et al., 2019). Access, booking, and flexible services that have been enabled by ICT has in turn improved the value proposition of carsharing services (Lagadic et al., 2019).

In Finland, the first carsharing company City Car Club (CCC) started operating in 2001 (Voltti, 2010). By the time Voltti (2010) carried out his research concerning the potential for carsharing in Finland, CCC was still the only company in the industry. CCC was followed by 24Rent in 2011 and EkoRent in 2014 (Kahilaniemi, Stenman, & Sacs, 2015). Today, there are six carsharing operators in Finland that provide shared cars to residential areas to the researcher's knowledge. These are Hertz Car Sharing, Omago, Heimo Finland Oy, CCC, 24 Rental Network, and ALD Sharing (Takala, 2018). Additionally, there are a couple of companies that provide carsharing, but they have not specified their fields of operation in their websites. Blox Car is the only established P2P carsharing operator for the time being. It is evident that the number of service providers has increased over the last few years in Finland.

While I have been working on this thesis, two carsharing services, namely DriveNow and EkoRent, have terminated their operation in Finland because of issues with profitability (Heima, 2019; Räisänen, 2020). Also, the owner of CCC mentions that their business has been unprofitable for a long time (Räisänen, 2020). This indicates that carsharing is unstable business in Finland for the time being. Nonetheless, it seems that there is potential for carsharing in Finland. In 2018, Liikennevirasto conducted an extensive research covering whole Finland with the aim to understand the potential of carsharing from the perspectives of end users. The results indicate that Finnish people would be willing to use shared cars for trips that differ from everyday mobility needs as well as for longer holiday or weekend excursions. Also, if carsharing wants to be seen as a viable option to private car ownership, the service should be finetuned to match the similar attributes related to it, such as freedom and convenience. Furthermore, the results of the survey suggest that carsharing should provide something new compared to the existing situation, for example financial savings, practicality, or new experiences.

3.3   Evaluating the benefits of carsharing

In this chapter, I will discuss the various benefits that are associated with carsharing. The subject has been widely studied and there is a broad scientific consensus that carsharing has positive societal and environmental benefits. However, it also gives rise to rebound effect when individuals participating in carsharing schemes have more money to spend. The weight of this aspect is difficult to evaluate and thus estimations on its relevance tend to vary widely (Chen & Kockelman, 2016).

Societal benefits

Carsharing has a number of societal benefits (Shaheen & Martin, 2013). Individuals participating in carsharing schemes enable them to access vehicles on short-term without having to bear the costs that come from owning a personal vehicle

(Shaheen & Martin, 2013). Thus, carsharing can contribute to a more sustainable transportation system by enabling access to vehicles for low-income households (Duncan, 2011). Martin and Shaheen (2010) show that while vehicle kilometers traveled increase with previously carless households, the increase is not significant compared to environmental benefits of car owners' changed mobility behavior and the decrease in the number of personally owned cars.

Smaller and newer cars

On average, smaller and newer cars are used in carsharing compared to private vehicles which leads to decreased need for fuel for every driven kilometre and accordingly decreased CO_2 emissions (Loose, 2010). Newer vehicles tend to have improved engine technology resulting in fewer emitted pollutants (Loose, 2010).

Effects on car ownership

According to Cohen and Kietzmann (2014), every carsharing business model aims to reduce the number of personal vehicles that are owned privately. The effect of carsharing on car ownership has been studied extensively and the findings show that each carsharing vehicle replaces certain number of personal vehicles (Ramirez, Tonkinwise, & Nawangpalupi, 2012; Shaheen & Cohen 2013; Namazu & Dowlatabadi, 2018). Engel-Yan and Passmore (2013) mention that while it is clear that carsharing does lead to fewer privately owned cars, the results tend to vary based on location and level of the provided carsharing, methodology of the research, and whether the researchers include forgone purchases of private vehicles as replaced vehicles. The number of replaced cars varies between 4 to 10 in Europe, 9 to 13 in North America, and 7 to 10 in Australia (Shaheen & Cohen, 2013). Namazu and Dowlatabadi (2018) compared the impact between free-floating and roundtrip carsharing to car ownership and found that while both systems lead to fewer privately owned cars, roundtrip is more often used to substitute personal vehicle while free-floating system is often used as a supplementary mobility option. Engel-Yan and Passmore (2013) carried out the first research that concentrated on the potential to reduce the level of car ownership and parking demand in the scale of individual developments and found that providing a dedicated shared vehicle leads to fewer private cars and lowered parking demand. When the number of private vehicles decreases as a result of carsharing, the need for parking infrastructure and land reduces (Loose, 2010) and this could lead to cost savings in development (Duncan, 2011).

Changes in car use

Joining a carsharing organization tends to lead to fewer kilometres travelled per year with personal car on average (Martin & Shaheen, 2010). Loose (2010) points out that acquiring a personal car is costly and can create a barrier for the owner to use other modes of transportation because people tend to think that "the car is

paid anyway". According to his view, cost structure in which users pay per driven kilometre in addition to smaller monthly fee leads to fewer unnecessary kilometres. Thus, carsharing cars are used remarkably more efficiently compared to personal cars (Loose, 2010). Cities benefit from fewer kilometres travelled with personal vehicles for it leads to less congestion (Engel-Yan & Passmore, 2013). Chen and Kockelman (2016) emphasize that while carsharing increases the use rate of underutilized vehicles, the most important driver that affects the environmental benefits come from the end users' need to plan the trips and the knowledge of costs associated with the trip.

Use of different modes for traveling

Customers of carsharing schemes use more environmentally sustainable modes of transportation compared to time before joining the carsharing (Loose, 2010). Loose (2010) sees this learning curve as a result of increased cost awareness and learning about other modes of transport. Shaheen and Martin (2011) found that members of carsharing organizations increased their travel by walking, cycling, and carpooling after joining a carsharing scheme.

Impact on CO2 emissions

The research that has been conducted so far demonstrates that carsharing leads to overall net decreases in GHG emissions amongst individuals that have joined carsharing schemes (Martin & Shaheen, 2011; Chen & Kockelman, 2016). Le Vine et al. (2014) emphasize that very few consumer products have negative GHG emissions.

A study conducted by Martin and Shaheen (2011) shows that while carsharing reduces overall GHG emissions in North America, not all participants of carsharing schemes reduce their GHG emissions. Rather, the households that did not own a car before joining carsharing scheme increase their GHG emissions by gaining access to cars. However, the increase is quite small compared to decreased emissions resulting from car-holding households converging into low-mileage lifestyle that carsharing appears to enable (Martin & Shaheen, 2011). Carbon dioxide emissions can be calculated with "observed impact" or "full impact" (Shaheen & Cohen, 2013). Observed impact refers to actual emission change while full impact additionally includes avoided emissions (e.g. due to decision not to purchase a car) (Shaheen & Cohen, 2013). In North America, the full impact was estimated to be as high as 56 % of carbon dioxide emissions reduction from mobility (Shaheen & Cohen, 2013). Also, gasoline consumption across carsharing members decreased by around 34 %. (Shaheen & Cohen, 2013).

Chen and Kockelman (2016) calculated the life cycle impact of carsharing based on estimates from earlier studies. They found that average carsharing individual is predicted to reduce their GHG emissions and energy use related to transportation by 51 % after joining a carsharing organization. While the biggest impact comes from fewer trips and shorter distances with a car, a significant

share of GHG and energy savings come from decreased demand for parking infrastructure. The authors point out that this aspect has been neglected from earlier studies that have concentrated mostly on vehicle operations. In their study, the researchers compared conventional sedans with combustion engines to average passenger car used in U.S. Thus, they note that the use of hybrid or electric vehicles could further improve the energy and GHG emission savings.

Finally, Loose (2010) points out that energy and materials that would be required to manufacture new vehicles are "saved" because of decreased intention to purchase cars. On average, one fifth of emissions and climate damage of the whole life span occurs during the production of the vehicle (Loose, 2010).

This chapter has shown that carsharing has numerous benefits and that it contributes to the sustainable development. Hence, municipalities arguably have good reasons for supporting the development of carsharing industry. This is crucial because many forms of carsharing are dependent on the support of local authorities as will be shown in the following chapter.

3.4   Governance of carsharing

Firnkorn and Müller (2011) emphasize that all variations of carsharing systems are dependent on the public policy support that is associated with land use. They mention that mere license to operate is not enough. Also, privileged access to on-street parking is a prerequisite for successful business in many forms of carsharing (Le Vine et al., 2014). Thus, developing carsharing services has brought new kinds of relationships between carsharing operators, public decision makers, and public transit companies (Lagadic et al., 2019).

Since carsharing operators have to rely extensively on local governments, they are faced with a number of issues that have to be considered when planning the carsharing service (Le Vine et al., 2014). Le Vine et al. (2014) mention that local governments

- tend to be fragmented while covering small geographical area,
- can change the direction of policies after elections,
- are pressured to meet different goals which might contradict each other, such as revenue generation and emission reduction,
- are not obligated to support carsharing,
- tend to make changes at a slower pace, and
- usually possess a monopoly over on-street parking space.

Cohen and Shaheen (2016) argue that it is paramount that urban planners understand the potential impacts of shared mobility. According to their view, this will help urban planners and policy makers to increase positive effects associated

with shared mobility as well as minimize the unwanted negative effects. Cohen and Kietzmann (2014) found that increasing cooperation between cities and shared mobility operators tends to lead to increasingly sustainable business models.

Dowling and Kent (2015) analyzed carsharing policies in Sydney and found that cities are exchanging parking space with carsharing organizations through engagement and negations to foster their own sustainability objectives. For example, carsharing organizations may be required to report on usage patterns, participate in initiatives that aim to reduce car ownership, or to carry out yearly surveys on their users on travel attitudes (Dowling & Kent, 2015). According to their research, the studied policies reflect the hybrid nature of carsharing companies as they carry out for-profit business to benefit both private and public actors. Private becomes public as policies force certain obligations on carsharing companies (Dowling & Kent, 2015). However, Dowling and Kent mention that there are some cases in Sydney where carsharing has been organized without involvement of the government. In these cases, carsharing organizations have negotiated directly with residents and owners' corporations to provide parking space for a shared car in residential buildings.

Le Vine et al. (2014) propose that industry level bodies can act as mediators between carsharing companies and local governments. Terms-of-access are better handled on industry level because the interplay between local governments and carsharing companies can lead to inefficiency (Le Vine et al., 2014). Uncertainty results in fewer investments and in some cases incorrectly allocated funds from carsharing companies (Le Vine et al., 2014). Le Vine et al. (2014) note that competing should be left to quality of service.

Cohen and Shaheen (2016) represent three policy frameworks with differing levels of governmental support towards shared mobility. These are shared mobility as a social and environmental benefit, shared mobility as a business, and shared mobility as a business.

In shared mobility as a social and environmental benefit -framework the operators get maximum governmental support as public agencies and governments recognize the role of shared mobility in mitigating public costs associated with private car use and by that contributing to public good (Cohen & Shaheen, 2016). Thus, they allocate public resources to support shared mobility operators. In this framework mobility operators should provide data concerning social and environmental impacts to make sure that actions have led to wanted outcomes and public actors should continue supporting businesses (Cohen & Shaheen, 2016).

In shared mobility as a sustainable business -framework local governments and public agencies recognize that shared mobility has positive social or environmental effects, but at the same time, it is revenue-generating business (Cohen & Shaheen, 2016). As such, operators get moderate governmental support, but they are expected to sustain the larger share of operational costs by themselves (Cohen & Shaheen, 2016).

Finally, in shared mobility as a business -framework local governments consider shared mobility as any other business, and thus they should be able to sustain all the operational costs by themselves (Cohen & Shaheen, 2016). Shared mobility operators get minimal governmental support (Cohen & Shaheen, 2016).

Ways for local governments to support carsharing operators have been widely discussed in the literature (see for example Cohen & Shaheen, 2016; Lagadic et al., 2019; Vanhee, 2009; Dowling & Kent, 2015). These will be presented in Table 1.

Privileged access to parking	Shared cars need to have privileged access to parking (Lagadic et al., 2019) Lagadic et al. (2019) give an example from Copenhagen where the city council decided to change their policies by providing affordable access to roundtrip carsharing and not free-floating because research had not showed the connection between free-floating systems and reduced car ownership and congestions. As a result, the free-floating carsharing operator terminated their operation in Copenhagen while the station-based carsharing operator continues to provide the service (Lagadic et al., 2019).
Cooperation with public transportation operators	Toiskallio, Kunnas, Talja, and Kuukka-Ruotsalainen (2013) mention that carsharing operators could cooperate closely with public transportation operators. In practice, this could include marketing, communication, joint travel cards or sales promotions (Toiskallio et al., 2013).
Integrating carsharing in policy plans	Cities can include carsharing in their policy planning by committing to developing carsharing in the territory and by creating goals for carsharing services (Vanhee, 2009). For example, city of Bremen aimed to have 20 000 carsharing residents by 2020 and to obtain this goal they have come up with several measures, such as developing a network for picking up or dropping off the vehicles, integrating carsharing service

	to public transportation, including carsharing to new developments and areas with parking pressure, encouraging residents to use the carsharing services etc. (Vanhee, 2009). Vanhee (2009) emphasizes that the more cities decide to support carsharing organizations, the more potential there is to create a functional carsharing system.
Promoting carsharing services	Lack of awareness concerning carsharing services was identified as a significant obstacle in a survey that was carried out in Finland (Liikennevirasto, 2018). Local actors can promote carsharing to citizens and try to encourage people to use it (Lagadic et al., 2019). According to Lagadic et al. (2019), visibility should go beyond mere communication. For example, they propose that the parking spots that have been reserved for carsharing cars should be made recognizable so people driving their private cars see that these spots would have otherwise been free to use. In the context of negative impacts, it is crucial that the transition to carsharing comes from people who own cars and not from the ones that do not (Liikennevirasto, 2018). This objective can be fostered by emphasizing the easiness of carsharing and high prices that are related to car ownership while informing about carsharing services (Liikennevirasto, 2018).
Providing financial support	Public actors can provide financial support in form of tax cuts and subsidies to help carsharing companies to launch their operations in areas where it would otherwise be financially non-profitable (Lagadic et al., 2019). In the case of EV carsharing this support can be building the needed infrastructure for recharging the vehicles (Lagadic et al., 2019). Vanhee (2009) proposes that cities could guarantee a minimum level of turnover that the city pays if the use of vehicles is

	on insufficient level. He continues that cities' employees could also start using the vehicles for their own use. This could help recover some of the financial losses that might arise from the minimum level for guaranteed turnover (Vanhee, 2009).
Obligations to residential developers	Carsharing policies can impose obligations to residential developers as well (Dowling & Kent, 2015). Most often policies concentrate on existing parking spaces, but local authorities have started to include carsharing to new developments as well (Dowling & Kent, 2015). In their example, a housing unit may be imposed to construct a parking space for shared car for every 50 dwellings.
Incentive zoning	Cities can encourage the inclusion of carsharing in new developments by implementing policies that aim to ease zoning regulations and parking minimums (Cohen & Shaheen, 2016). Parking reductions are particularly useful in areas where construction of parking infrastructure or housing is expensive (Cohen & Shaheen, 2016). With this strategy, housing prices could be lowered when per-unit costs are reduced (Cohen & Shaheen, 2016).

Table 1: How local governments can support carsharing

3.5 Carsharing and struggle over space

According to Cervero (2009), offering real estate developers the possibility to replace certain number of parking spaces in exchange for a shared car increases the demand for shared cars, reduces costs associated with construction of the site, increases demand for transit, and lowers the demand for driving. At the same time, he mentions that no one loses their access to a car. Indeed, in many European and American cities developers can build fewer parking spots if carsharing is offered (Lagadic et al., 2019).

However, residential carsharing may not be merely motivated by financial savings. Housing may seem more attractive to potential buyers or residents because of carsharing services (Engel-Yan & Passmore, 2013). Lagadic et al. (2019)

mention that resident-only carsharing is an emerging trend that is motivated by not only eased parking requirements, but also more attractive housing. Carsharing can even be considered as a luxury in areas where developers are not forced to build any parking spaces for the residents (Lagadic et al., 2019). In some cases, developers have subsidized carsharing for the first few years to ensure that it is still operating when people move in (Engel-Yan & Passmore, 2013).

An extensive survey conducted by Liikennevirasto (2018) shows that the biggest demand potential for carsharing in Finland is in shared cars that are provided in housing cooperatives. The main reason for this is in the proximity of the car to the user: people who do not own private cars could supplement their otherwise carless life with service that is provided right next to housing (Liikennevirasto, 2018). Furthermore, using the vehicle can be cheaper compared to using open access carsharing services if the developer subsidizes the costs of carsharing service with the savings that have been achieved through building fewer parking spots (Liikennevirasto, 2018).

However, there are some issues that might rise with residential carsharing. If the use rate of shared cars would prove too low for the service provider, the carsharing operator could eventually relocate the shared car (Engel-Yan & Passmore, 2013). Also, the condominium board could determine to sell the parking space that has been reserved for the shared vehicle (Engel-Yan & Passmore, 2013). Thus, the development would not conform to parking requirements if the contract between the housing cooperative and carsharing service provider would end (Engel-Yan & Passmore, 2013). Furthermore, this could lead to shortages in parking spaces (Engel-Yan & Passmore, 2013).

Engel-Yan and Passmore (2013) also mention that the interests between developer and carsharing operators might contradict. From carsharing operators' perspective, the optimal location for the vehicle is highly visible, publicly accessible, densely populated, an area with low car ownership rate and parking pressure, and good for pedestrian infrastructure (Engel-Yan & Passmore, 2013). Developers' interests include gaining cost savings through lowered parking requirements and making the building more interesting for possible buyers (Engel-Yan & Passmore, 2013). Also, if the reduction to parking spaces is too small, developers may not find it interesting enough (Engel-Yan & Passmore, 2013).

Engel-Yan and Passmore (2013) emphasize that marketing of carsharing services to the residents and people living nearby plays a paramount role in the success of carsharing within a residential area. Litman (2019) suggests that residential developers or building operators could offer subsidized memberships for residents.

As noted, parking requirements play a key role in residential carsharing. Litman (2009) shows how excessive parking requirements tend to cast many issues on society. Housing affordability tends to decrease as a result of higher development costs, especially with lower-priced housing (Litman, 2019). Secondly, residents who do not necessarily own personal cars could end up paying for

parking facilities (Litman, 2019). Parking standards increase the number of personally owned cars, and therefore lead to issues such as increased traffic, accidents, and pollution (Litman, 2019). Excessive parking requirements also discourage infill development and increase sprawl, leading to more impervious surface coverage and per capita vehicle travel (Litman, 2019).

In Finland, numerous cities have established their own calculation formula to determine the number of needed parking spots per constructed building (Kaikkonen, 2012). When the entity that is responsible for the city plan makes the parking requirements, they are also responsible for determining how many apartments can fit into a building (Kaikkonen, 2012). This leads to too large apartment size and thus, zoning is not in accordance with building of energy efficient housing (Kaikkonen, 2012). Also, the apartment buildings that are built to city centrals and to locations with good public transit connections are too low because of zoning practices (Kaikkonen, 2012).

3.6 Summary of critique and identified research gap

Sharing economy initiatives have been criticized for creating unregulated markets and insecure work. These attributes have been linked especially into P2P sharing economy platforms and local governments are struggling to contaminate the negative effects that are associated with them. Interestingly, in the context of B2C carsharing it seems that the success of business is often dependent on the support of local authorities. Furthermore, local governments seem to foster their own sustainability agendas by enabling and steering the development of shared mobility. Hence, in this context the relationship between local government and business is in fact quite different compared to some of the sharing economy activities that take place between peers. It could be argued that this perspective of sharing economy is often neglected in the critique.

Governance of carsharing has been discussed extensively in the research literature and it is evident that privileged access to parking is often the prerequisite for successful business in B2C carsharing. While numerous studies have either concentrated on carsharing in city or national levels, the existing research has largely neglected carsharing that is integrated to residential buildings. Understanding the role of local governments and overall reasons behind the existing arrangements to bring dedicated shared vehicles to residential buildings is inadequate. While some of the studies mentioned in previous chapter have touched on this subject (see for example Engel-Yan and Passmore, 2013 and Lagadic et al, 2019), none have specified in it thus far. Hence, the following empirical part of this thesis sheds light on the identified research gap by providing an overview of the existing arrangements to bring shared cars to the proximity of residential buildings as well as investigating the reasons behind the expansion of these arrangements in Finland.

4 DATA AND METHODOLOGY

This section explains how the research was carried out. At first, the chosen research design will be discussed and justified. Next, I will describe the process of collecting the interview data. Finally, a detailed description of the analysis is provided.

4.1 Research design

Hair, Wolfinbarger, Money, Samouel, and Page (2015) argue that qualitative research approach is often the preferred option when the there is little information concerning the research problem. It is also suitable when the researcher wants to understand a phenomenon thoroughly (Lichtman, 2014). Qualitative research is not designed to test theory, but instead, it is often used to create theories from the data (Lichtman, 2014). However, Lichtman mentions that these theories tend to be quite weak. While residential carsharing schemes are not particularly new, there has been fairly little research that has concentrated in them so far, especially in Finland. Thus, this thesis aims to add to existing knowledge rather than testing its validity. The research design used for this thesis is exploratory research. Exploratory research is used when the researcher does not know too much about the subject of the study and the aim is to discover new ideas, patterns, or relationships (Hair et al., 2015).

The research method used for this thesis is case study. According to Hair et al. (2010), case studies are used to understand some event or phenomenon thoroughly by examining a real-life case. This helps researcher to study how different variables interact between each other in real-life context. Furthermore, Yin (2014) mentions that case studies concentrate on contemporary events. He also mentions that case studies often rely on multiple data sources, they benefit from earlier theoretical propositions, and variables of interest are often high while the number of cases is small. The use of case study is justified by contemporary nature of studied phenomenon and the focus on answering the question "why" the arrangements have occurred in the way they have. Furthermore, the case study approach was adopted to gain detailed understanding of the studied phenomenon. One major disadvantage of case study is the inability to produce generalizable results (Yin, 2014). However, the number of companies participating in this research is relatively high when considered that there are only a handful of companies that provide shared cars to residential areas in Finland. Hence, the representability of this research is quite good.

4.2   Data collection

All in all, seven semi-structured personal interviews were carried out to gather the data for this research. The interviewees were chosen based on their assumed knowledge on carsharing schemes in residential areas. The interviews were carried out during January, February, and March of 2020. Four interviewees represented organizations that provide shared cars, two interviewees represented organizations that had acquired a carsharing service, and finally one interviewee worked as a city planning architect. All interviews were carried out in Finnish language. The following list includes the interviewees' positions and it follows the order in which the interviews were carried out:

- Concept designer in residential development company
- Project manager in a company that provides shared cars
- CEO of a company that provides shared cars
- CEO of a company that provides shared cars
- Sales and marketing coordinator in a company that provides shared cars
- City planning architect
- Managing director of a housing investment company

Semi-structured interviews tend to have a certain framework and direction, but the researcher is free to ask follow-up questions and gather further information about issues that may not have been anticipated (Hair et al, 2015). The framework used in this thesis was based on certain themes that stayed the same throughout the interviews with carsharing service providers and service buyers. These themes were related to existing carsharing arrangements and their details, expectations, and reasons for possible expansion of carsharing arrangements, and the role of municipalities as supporters of carsharing schemes. However, the interview with city planning architect had different structure and its goal was to understand how and why cities enable residential carsharing. Semi-structured interviews were chosen because there is little information concerning the subject of the study and thus it was important to be able to ask follow-up questions from the interviewees. The questions asked in the interviews were modified after the first interviews and some new questions were added after preliminary analysis of the collected data.

The preparation for the interviews followed the instructions and hints provided by Ruusuvuori, Nikander, & Hyvärinen (2010), who wrote about best practices of conducting interviews with specialists. Ruusuvuori et al. (2010) emphasize that the researcher should prepare for the interviews by finding background information about the organization and the position of the interviewee. Also, it is important to understand the position that the interviewee has to the phenomenon that is being studied (Ruusuvuori et al., 2010). Furthermore, the researcher should try to understand the studied phenomenon beforehand because it makes asking follow-up questions easier and it can lead to a better atmosphere between

the interviewer and the interviewee (Ruusuvuori et al., 2010). While I was able to find information about the interviewees and their companies, it proved difficult to understand the phenomenon as the information was quite scarce. However, the quality of interviews improved during the project as I became more informed on the subject.

When conducting a specialist interview the point of interest is most often the information that the subject of the interview has on a specific case and not the person himself (Ruusuvuori et al., 2010). Thus, I mapped out the personnel who would most likely know most about the phenomenon. However, every company did not have this information available. Two messages were sent through contact forms in websites and I had one answer that lead to an interview. Rest of the potential interviewees were contacted with email and later on by phone if the person did not answer. Interviewees were informed beforehand about the aim of the thesis via email. Additionally, the message contained a plead to record the interviews and information about the anonymization and termination of the voice records when they had been transcribed. Ruusuvuori et al. (2010) mention that the practice of anonymization has become a standard procedure in qualitative research. However, if the studied field has only few actors it might be nearly impossible to anonymize interviewees' backgrounds without losing crucial information (Ruusuvuori et al., 2010). Since there are only a handful of companies that provide shared cars to residential buildings, I decided to provide little information concerning the details of the companies that each interviewee represents. All in all, nine people were contacted and two declined from the interview.

Interviewees were asked to take part in the interview face-to-face in case they worked in Capital Region urban area. In the end, five interviews were carried out via phone and two interviews face-to-face. All interviews were recorded and transcribed. After the data collection I moved onto data analysis.

4.3   Data analysis

The objective of analysing the collected qualitative data is to recognize, examine, compare, and make sense of emerging patterns and themes (Hair et al., 2015). The process is iterative as follow-up questions and connections between subjects come up during analysis which leads to additional data collection and thus more thorough analysis of the subject (Hair et al., 2015). Analysing the data takes place simultaneously with data collection and researcher may organize the final structure of the report little by little during the process (Creswell, 2014).

According to Tuomi and Sarajärvi (2018), qualitative analysis is often considered as either inductive or deductive analysis. Inductive logic of reasoning refers to making conclusions about the particular based on the general. Vice versa, deductive logic of reasoning refers to making conclusions about general based on the particular. However, Tuomi and Sarajärvi (2018) mention that this dichot-

omy is insufficient because it neglects the third logic of reasoning that is abduction. In abductive reasoning the researcher comes to the likeliest conclusion based on incomplete set of observations (Mantere & Ketokivi, 2013). Mantere and Ketokivi (2013) argue that new hypotheses and thus scientific discoveries are made by using abductive reasoning. In this thesis, I have used abductive reasoning to analyse the data. I recognize that the research setup and asked interview questions do not appear from nothingness. Rather, each step I have chosen during the process of working for this thesis has steered the research into certain direction. Thus, while I have not applied any theoretical frameworks when analysing the collected interview data, I am well aware that the background knowledge on the subject has affected the outcomes of the analysis.

Ruusuvuori et al. (2010) mention that interviews have two basic goals when studying a societal phenomenon. Firstly, the researcher should try to generate an accurate description of the process that is being studied. Secondly, the researcher aims to analyze the interpretations and meanings that interviewees give to these processes. Ruusuvuori et al. (2010) warn that while the interviewees may specialize in certain processes, they might remember things wrongly, embellish certain things, or even distort events. They continue that the researcher does not have to take everything that is said for granted. Throughout the analysis of the collected data, I have tried to pay attention to this aspect, as I am well aware that it is in the interest of interviewees representing different companies to give specific impressions on the course of events and the reasons that have led to them. Ruusuvuori et al. (2010) also remind that when interviewees comment the activities of other actors it is always second-hand information and thus should be handled with caution. Guessing on the motives behind the decisions that have been made by other actors is particularly uncertain (Ruusuvuori et al., 2010). Since most of the data consists of discussion concerning the arrangements that have been established between organizations that offer shared vehicles and the entities that have acquired the service, there are numerous comments that have been made about the other party. I have paid attention to this aspect when analyzing the data and interpreting the findings.

Data analysis in this thesis follows the model developed by Creswell (2014) as presented in Figure 1. Even though the model appears to be linear, Creswell emphasizes that many of the steps are closely interrelated and they might not follow the presented sequence. The model has been modified to fit the purpose of this thesis.

Organizing and preparing data for analysis

⬇

Reading through all the data

⬇

Coding the data

⬇

Creating themes

⬇

Interrelating themes or description

⬇

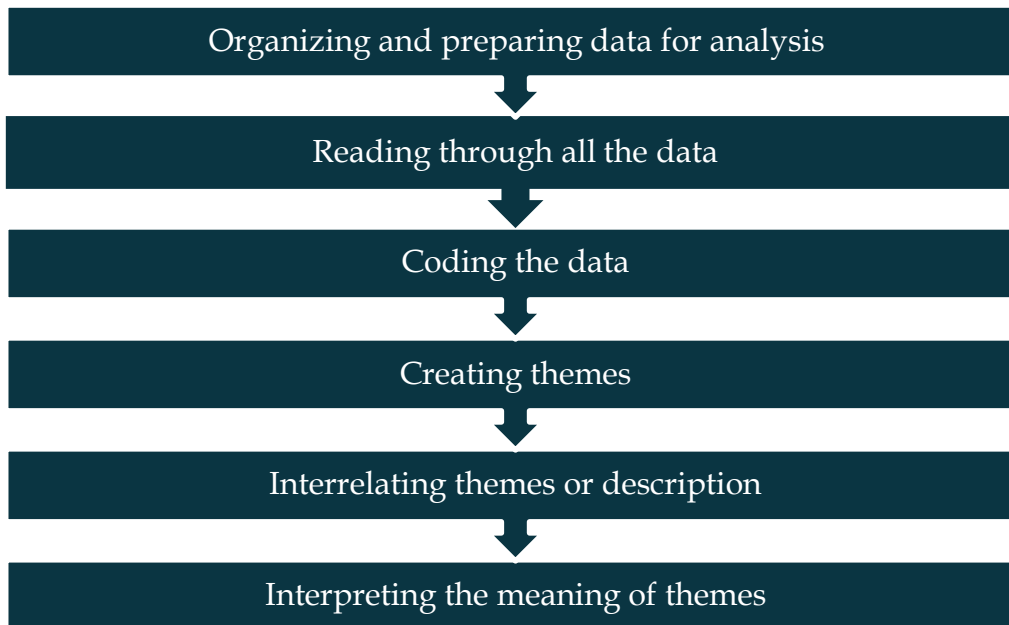| Interpreting the meaning of themes |
| :---: |

Figure 1: Process of data analysis

The first step of the process involves organizing and preparing data for analysis (Creswell, 2014). In practice, this means transcribing the collected voice records into word document and anonymizing the interviewees' information. All the voice records were transcribed one or two days after the interviews. I transcribed the interviewees sayings word by word including possible fillers. The same level of detail was used for each transcribed interview. After transcription, the voice records were deleted as promised.

During the second step of the process the collected data is read, and researcher aims to understand what general ideas the participants are trying to convey to the interviewer (Creswell, 2014). Eskola and Suoranta (2014) emphasize that the researcher should know the collected data thoroughly and thus the data should be read multiple times. Furthermore, they note that while the researcher might often come across with differing realizations while reading through the data, these should not be taken for a fact. Rather, they emphasize that these ideas are often nonsystematic and do not represent all of the data. Hence, the researcher should trust the process and proceed step by step with the analysis and avoid making conclusions based on intuition. Hair et al., (2015) take the opposite stance. They note that qualitative researchers start making conclusions during the data collection, and possibly after every interview. These conclusions are preliminary and can change later on as the researcher checks if there is evidence to back up the ideas (Hair et al., 2015). Interim analyses also lead to new questions that can be asked in future interviews (Hair et al., 2015). While working on this thesis, an intermediate analysis of the collected data was carried out after three interviews. This was done in order to gain deeper understanding of the subject and provoke possible new questions before the following interviews. This proved helpful: the last interviews provided information that had

been blurry in earlier ones as I was able to ask better follow-up questions. Also, the intermediate analysis led to a realization that more information was needed concerning the role of municipalities. However, I recognize certain issues with drawing initial conclusions from insufficient amount of data for some of the new questions proved irrelevant to certain interviewees. Also, I think that the intermediate analysis gave me a certain bias as I expected the following interviewees to support the views of earlier interviewees. Hence, I was maybe not able to react to new alternative viewpoints with follow-up questions as well as I would have hoped.

The third step of the process is coding (Creswell, 2014). With coding, researchers aim to simplify and concentrate on certain parts of the collected data that is meaningful for the research (Hair et al., 2015). In practice, this means segmenting pieces of text or whole paragraphs into categories, and then labelling the category with a word or a phrase (Creswell, 2014). Eskola and Suoranta (2014) mention that it is normal that the codes change to a certain extent during the process. I noticed this when I started to code the data for my first codes were too general and they had to be revised and then renamed. For example, I first coded a part of text concerning incentive zoning as "motivation for residential carsharing". However, this particular code was too broad because nearly everything that had to do with the research question could have been categorized under it. Thus, the code was renamed as "lowered minimum parking requirements". Even though I aimed to recognize the codes that arise from the data, I understand that the information I had on the subject and the whole setup of research affected the outcome of the coding process. After coding all the collected data, I merged the codes and each comment that interviewee had made about that specific code into one document. Next, I took the code titles into a separate canvas and organized them into groups. Then I took these groups and organized them into three larger groups. At this point I had 47 codes and the related comments of every interviewee organized in one file. Some of the codes proved useless from the perspective of research question, but they were not deleted. After organizing the data, it was easier to start analysing and checking whether my initial ideas had data to back them up. I wrote the preliminary version of the part that characterises of the arrangements that have been established between organizations that provide shared cars and entities that have acquired them. Understanding what exists helped me to analyse further the reasons that had led to these specific arrangements.

The fourth step involves generating a small number of themes for analysis (Creswell, 2014). This occurs by finding and separating overarching subjects that are relevant to the research question (Eskola & Suoranta, 2014). These themes are often used as headings of the findings section and their existence should be supported by providing evidence and quotations (Creswell, 2014). While quantifying may not be the optimal approach to analysing qualitative data, it can be useful when the researcher is getting started (Eskola & Suoranta, 2014). While trying to recognize the themes I did pay attention to the number of mentions concerning

certain subjects. I found that the largest number of mentions concerning one specific code were mentions that related to lowered minimum parking requirements. I also found a small number of themes that explained the research question but when starting to analyse the interview data in detail it was apparent that there was not enough data to support them. In the end, two themes remained. Namely, these are (1) Key actors enabling residential carsharing and (2) Expected benefits of integrating carsharing to housing.

The fifth step involves representing the themes in qualitative narrative (Creswell, 2014). This might include ordering the events in chronological order, detailed discussion concerning themes (subthemes, quotations, specific illustrations etc.), and discussing relationships and connections between themes (Creswell, 2014). Also, visuals, graphs, tables can be used to clarify (Creswell, 2014). According to Hirsjärvi and Hurme (2008), making connections between different themes that have emerged from the data is perhaps the most important part of analysis. They emphasize that the analysis is insufficient and superficial without it. When writing the text, I tried to justify the existence of the theme. Esko and Suoranta (2014) emphasize that providing citations helps the reader to determine whether the analysis makes sense. On the other hand, they warn that findings section might be superficial if there are too many citations. I found that some of my assumptions were wrong when writing claims and noting that there was not enough data to support it. I wrote the first version of the whole findings section in Finnish because it made processing the information easier. Afterwards, the section was translated to English and during this the text was modified to a certain extent to make the section more coherent. The findings section was divided into two parts. The first one delves into the scrutinized phenomenon and describes its characteristics. The second section aims to provide an overview of reasons behind the expansion of residential carsharing arrangements in Finland. The findings chapter will be elaborated by providing citations from interviewees' comments.

The sixth and final step of analysis is making interpretation in qualitative research of findings and results (Creswell, 2014). Essentially, this step tries to answer the question of learned lessons (Creswell, 2014). It can confirm past information, diverge from it, or raise new questions (Creswell, 2014). According to Eskola and Suoranta (2014), analysis can be considered as a separate part from interpretation. They argue that interpretations can only be made from data that has been organized. Thus, first the researcher should analyze the data and then he can move forward to interpreting the results of analysis. In this thesis, I followed this idea to a certain extent. While I wrote down my ideas for interpretations concerning the finding while working on the analysis part, the actual interpretation took place after I had a clear understanding of the results. Discussion section thus concentrates of interpreting the meaning of results, comparing them to previous research, developing implications for different actors, discussing limitations of the study, and making suggestions concerning future research.

5   RESEARCH FINDINGS

The aim of this research was to understand why residential carsharing arrangements have proliferated in Finland. In this section, I will present the findings of this research. The findings have been divided into two parts and the key content will be explained briefly.

The first part describes the arrangements that have been made in order to bring shared cars into residential areas. This has been done in order to understand what exists, and thus it is the prerequisite for answering the actual research question that relates to reasons behind the proliferation. It is found that residential real estate investors and developers are often responsible for the acquisition of shared vehicles.

The second part aims to answer the research question. The analysis suggests that the main reason for increased demand for residential carsharing is increasingly common practice for municipalities to provide the possibility to build fewer parking spaces to new buildings if a dedicated carsharing service exists for the residents. The second reason behind the proliferation of residential carsharing is the expected increase to the attractiveness of housing. It is found that entities that rent apartments are likely to consider this aspect more significant. Similar increase in value may not be apparent when apartments are sold.

5.1   Residential carsharing in Finland

5.1.1 The rise of residential carsharing

As an initial assessment of the carsharing operators in Finland showed in chapter 3.2, an increased number of organizations that provide shared cars are offering vehicles to residential areas. For this thesis, four interviewees represented four different organizations that offer residential carsharing. The interviewee representing the organization that has been operating for the longest period of time mentions that shared cars were brought to residential areas in the first place because cities were not supporting the business by providing parking for the vehicles.

> We first started this because we wanted to make sure that our company would stay profitable and could grow. Our cars need parking spots. And a few years ago, cities did not consider shared cars by providing parking. Thus, we had to find and solve this problem by coming up with different partnerships, and one of these were housing cooperatives. (Interviewee 5)

Since then, cities' policies have changed, and now a larger number of cities provide support for carsharing operators. Interviewee 5 mentions that residential

carsharing is not their biggest business area. Rather, it is just one part among others.

Another interviewee mentions that residential carsharing has been important area from the very beginning.

> Yeah, carsharing that is connected to residential buildings. It has been the original idea and housing cooperatives are the most interesting group of customers for us. (Interviewee 4)

Similarly, for the third interviewee mentions that residential carsharing is essential area for growth alongside business-to-business (B2B) business. The fourth interviewee says that while they are piloting with residential carsharing, their most important business area is in B2B.

All interviewees representing organizations that provide shared cars feel that the popularity of residential carsharing will increase in the future. One of the key benefits that is connected to residential carsharing is the proximity of the vehicle to the end-user, as the following comment illustrates.

> One thing that is clearly visible is that if the car is too far away the user will not bother to pick it up. That is one of the practical things that is really visible. (Interviewee 4)

Based on the collected data most often residential shared cars are acquired by residential real estate developers and investors. Service procurers often acquire shared cars for multi-story residential buildings that have either rental or sold apartments. For this thesis, two people were interviewed who represented companies that have acquired residential shared cars. The first one has acquired shared cars for new buildings with sold apartments. The other one has acquired shared cars for both new and existing buildings that have rental apartments. The analysis shows that some of the carsharing operators are interested in creating partnerships with residential real estate developers and investors. This would mean that shared vehicles would be attached to all new or existing buildings.

The interview data of service procurers illustrates how the carsharing industry is quite turbulent for the time being. The interviewed developer mentions that it is hard to determine which entities actually provide shared cars for residential buildings and also estimates that the core business of the companies that provide shared cars concentrates on something else.

> They do not see this as their basic business. Nowadays there are many companies, I just checked one project, there was a housing cooperative in Tampere, and they had acquired a shared car. They had done a deal with Company X, which is not even a carsharing company. But yeah, even car hire agencies might do some deals. I think they are like private deals, so it is hard to find any information concerning them. (Interviewee 1)

The interviewee feels surprised because even car rental agencies seem to provide shared cars for housing cooperatives.

Interviewee representing a housing company mentions that a few years ago they were offered leased cars and not shared cars.

> This case is interesting. When we first started to investigate this service a couple of years ago, we could not find systems that would fit our needs. Car leasing companies would offer their vehicles, but the service part must be included as well meaning that someone has to make sure that the cars are refueled and there has to be an information system, and it has to be easy for the residents. (Interviewee 7)

The comment indicates that suitable services have just recently been established.

5.1.2 Characteristics of established arrangements

All residential carsharing vehicles operate on roundtrip basis meaning that they are picked up and returned to the same place. There is usually a designated parking spot for the vehicle. The vehicle is reserved and unlocked with a mobile application. In one example, the reservation starts when the user unplugs the cable from electric vehicle and ends when the cable is plugged in.

Residential carsharing can be divided into two systems based on user groups. Two interviewees represented companies that provide shared cars that anyone can use. Respectively, two interviewees represented companies with closed user group where the vehicle is often appointed to a specific housing cooperative or a small number of housing cooperatives.

The data indicates that in open systems the end users either pay only when they use the vehicles or alternatively, they have to pay some kind of monthly fee in addition. Areas with high population density and sufficient public transportation are preferred characteristics for locating a shared vehicle that is available for everyone. One interviewee mentions that central areas in cities are great. Suburbs are considered to be disadvantageous because in these areas most people own personal cars. Thus, the carsharing operator has to put a lot of effort into communication and it might take a long period of time before the vehicle becomes profitable for the company. One key issue with open system is that in some cases outsiders must be provided with door codes to garages. This might lead to spreading of the door code and possible vandalism. One of key benefits is that the demand is not bound to residents of a single building:

> We have been asked, and often are asked to provide a vehicle with a closed system. However, EkoRent terminated their operation just a few months ago and they provided cars for closed user groups. That is why it might not have been a very successful business strategy in the end. When we give access to everyone, we make it possible – if the housing cooperative

> does not have too much potential – then we can fix the situation by providing the vehicle to everyone. (Interviewee 5)

In closed system the service operator charges a monthly fee from housing cooperative or entity that acquires the vehicle to cover the costs from vehicle even if it is not used by anyone. Additionally, end users pay for the shared car usually per hour. One interviewee mentions that optimal location has sufficient public transport so that owning a private car is not required. It can be assumed that population density does not play key role, because with closed system the vehicle is only available to certain group of people. It is mentioned that one of the key benefits in closed system is that end users "know" each other and thus the vehicle is treated more carefully.

> There is the sense of community because the end users are acquainted on some level. They are connected to each other at least through the area of residence. Thus, the use of vehicle, they stay in better condition. It is sort of a mental thing when you think that "I do not want to wreck this car because Pekka in upstairs would not be happy". (Interviewee 4)

Overall, fixed fees are seen as problematic both in closed and open systems. There have been occasions where the fee has been appointed to the housing cooperative and then split to each resident. This practice has its problems, as it cannot be assumed that everyone in the building has a driver's license or wants to pay for the service. One interviewee emphasizes that housing cooperatives are not allowed to do business.

> This is certainly not the primary activity that should be carried out by the housing cooperative because the service cannot be provided to each resident. If you do not have a driver's license, if there are kids, and so on. Housing cooperative is not allowed to do business. Besides the compulsory tasks, but that [acquiring carsharing service] does not belong to these tasks. (Interviewee 5)

The interviewee representing the developer mentions that with new developments the decision for acquiring the service has to be made in advance. Thus, it is difficult to say who would be willing to use the service and thus it would be unfair to split the bill between all residents.

> We should make some kind of monthly contract for the car and then everyone would pay for it. It is not fair to come up with this kind of fee when our objective is to make living affordable. Hence, this kind of extra fee would not really fit. (Interviewee 1)

The interviewee emphasizes that they are not willing to pay too much for the service and on the other hand, the costs should not be left to pay by the residents. Thus, the interviewee would prefer business model with cost structure in which only the end user pays for using the vehicle.

Based on the collected data shared cars are often brought to new buildings. One of the benefits with new buildings is that carsharing operators get to plan how to communicate the existence of the vehicle to the residents right from the beginning.

> There is also this kind of communicational aspect. When a whole new building is being planned it is easier to communicate because we get to understand what kind of info posters you have, what kind of registers you collect, and how you communicate to your residents. (Interviewee 5)

On the other hand, these projects can require lots of effort from carsharing operators if attendance to different project meetings is required. Also, it is mentioned that these projects can take up to three years.

Shared cars have also been brought for residents of existing buildings. In these cases, the service is often procured by residential real estate developer or investor that offers rental apartments. One of the interviewees representing carsharing operators mentions that they have acquired some inquiries from areas with detached residences. Bringing shared cars to existing buildings is generally faster for the service operators compared to projects with new buildings. On the other hand, communicating about the existence of the shared vehicle is harder when the building is already there.

Two of the interviewed representatives of carsharing operators mention that customer acquisition in privately owned housing cooperatives is difficult. The main reason for this is that the acquisition typically requires advocating decisions from multiple individuals as the following comment shows.

> There is one key challenge with existing housing cooperatives. When some changes are about to be made it that will affect all the residents there will always be the question concerning legislation. What can be done with majority vote and what requires unanimous vote. (Interviewee 2)

Furthermore, the housing cooperative should have a spare parking space that can be appointed to the shared car. Nonetheless, existing privately owned housing cooperatives were deemed to have extensive potential even if the time would not yet be right for them.

However, it should be noted that the interviewees who consider existing housing cooperatives problematic also provide shared cars with closed systems with fixed monthly fees. Hence, carsharing operators that provide shared cars with open system and do not require fixed fees might be in different position.

>Oftentimes it is advised that the arrangements are approved in shareholders' meeting or if there is a group of housing cooperative actives then it might be that they have contacted us in the first place. When we are conducting these cases where shared cars are brought to housing cooperatives that are privately owned there is no flux of money involved. (Interviewee 5)

Also, it is mentioned that privately owned housing cooperatives are not supposed to be involved in any kinds of rental activities.

According to the data, rental housing companies have also acquired shared cars to buildings that have already been built. Similarly, the prerequisite for the arrangements seems to be a surplus of parking spaces.

5.2   What explains the expansion of residential carsharing in Finland?

The analysis of the collected data showed that arrangements in which residents of privately owned housing cooperatives have acquired shared vehicles for their use are marginal for the time being. Hence, this thesis did not delve into this subject further. In this chapter, service procurers refer to residential real estate developers and investors that provide rental or sold apartments.

Based on the collected data it can be concluded that when shared cars are brought to new buildings, municipalities have usually provided the possibility to lower minimum parking requirements if a shared car is provided for the residents. Hence, residential real estate developers gain financial savings when a certain number of parking spaces do not have to be built. This is the first key finding that explains the proliferation of residential carsharing schemes in Finland. The second key finding that explains the expansion of the arrangements in Finland is the expected increase to attractiveness of housing gained by residential real estate developers and investors when shared cars are offered to the residents. These subjects will be discussed next.

5.2.1 Key actors enabling residential carsharing

It has been evident from the very first interview that municipalities have an important role in the context of proliferation of residential carsharing. Lowered minimum parking requirements were brought up numerous times before any questions concerning possible support by local governments had been asked. While analysing the collected interview data, the importance and scope of this aspect amplified. I also decided to contact the urban planning architect to further understand the role of zoning in the context of residential carsharing. This theme is not surprising. While carrying out the background research on the subject it

soon became clear that cities often have an important role as enablers of carsharing schemes.

The following comments elaborate how lowered minimum parking requirements have increased the demand for residential carsharing:

> The sudden increase [of inquiries] can be explained by eased zoning regulations that have been applied in a couple of cities. In some cities these are pilots, while in others they are trying to create norms. (Interviewee 5)

> Y3: Cities, and of course municipalities, are making the decisions concerning lowered minimum parking requirements and by that they are supporting that these [residential shared] cars become more and more common. (Interviewee 4)

The interviewee representing the developer confirms the assumed importance of eased zoning regulations with the following comment.

> R: It is the possibility to build fewer parking spaces. That is essentially the reason why developers find these arrangements [acquiring residential shared car] interesting. (Interviewee 1)

While the above comment clearly illustrates the main motive behind recognized by the interviewed individual, the included generalization should be handled with caution. However, the data indicates that cases where shared cars have been brought to new buildings with sold apartments without the possibility to build fewer parking spaces are marginal.

Construction of parking lots can be expensive. For example, each individual parking space that is constructed to underground parking lot or parking tower may be immensely pricey. The importance of these acquired savings have been emphasized by both interviewees representing the carsharing operators and entities acquiring the service. The following comments illustrate how interviewees consider the acquired savings important:

> If we think we do not have to build two parking spaces or five parking spaces because there will be a shared car, and these parking spaces are in a multistory car park, then the savings can be in the hundreds of thousands. Building multistory car park parking can be really expensive. (Interviewee 4)

> Every time we start a site there is a specific number of parking spaces that we will need to build there. Then if we bring a shared car there, we will be able to reduce the number of parking spaces that we are required to build. So, one shared car replaces a certain number of parking spaces. And building parking spaces is bloody expensive. Thus, we save money with these arrangements [refers to acquiring a shared car]. (Interviewee 1)

Eased zoning regulations aim at creating incentives for entities that procure the carsharing service for residential areas. The number of replaced parking spaces may differ between city plans but based on the collected data one shared vehicle generally replaces 5 parking spaces. According to the interviewed urban planner, the aim has been in deciding how many replaced parking spaces would enough for the developer to get interested. Hence, the number of replaced parking spaces is not connected to estimations of how many private cars are actually replaced by one shared car.

Usually the housing cooperative is required to make a five- or ten-year contract to ensure that the shared car is available for the residents. When the term is over, they are no longer required to build the missing parking spaces even if the contract with the carsharing operator would terminate. City plans can also include qualitative criteria for the acquired shard car:

> We have demanded that the vehicle should be placed in an accessible parking space and it should be in the best possible spot. This means it should be located under the yard deck or the first floor of specific building in the block. (Interviewee 6)

The analysis further indicates that city plans can be tweaked to include more requirements if necessary. Furthermore, municipalities could also order that shared cars are required as illustrated by the following comment by the city planning architect.

> I think that if we really wanted to do this then city plans could be used to force these arrangements. Zoning is quite a flexible tool, but I would say that if we wanted to do it, then there would need to be a strong agenda behind it and a more detailed plan that would indicate how many shared cars are in fact wanted. At least we have not had that kind of city plans. Rather, we want that it is one option that might materialize. (Interviewee 6)

The analysis indicates that while the main tool for supporting the proliferation of residential carsharing occurs through zoning, some cities have also provided subsidized parking for carsharing operators. Thus, residential shared cars can be parked to certain paid on-street parking spaces and parking lots during the trip free of charge.

The interviewed urban planner mentions that in her site enabling carsharing is part of a project that aims to foster the chances for companies to create business from sustainability goals and clarify how to create prerequisites for companies that aim to solve issues that are related to carbon neutrality and sustainable transport. The residents of the area are expected to walk, cycle, and use

public transportation modes as much as possible. In this context, it is necessary that fewer people own personal cars.

However, the following comment illustrates how the city planning architect is in fact uncertain whether providing carsharing for residents leads to expected outcome.

> There should be research about this. Will the residents actually have fewer personal cars if they have the possibility to use a shared vehicle or is it just an extra commodity for them. (Interviewee 6)

The interviewee emphasizes that enabling carsharing within the area is essentially a pilot. If the demand for parking spaces should increase later on, it would be possible to build them afterwards.

Perhaps the most surprising finding is the potential effect of residential carsharing arrangements to pricing of rented and sold apartments. In Finland, it is a common practice to allocate some of the expenses of built parking spaces to the prices of apartments. According to the interviewed urban planner, developers have no obligation to sell parking spaces completely separately unless it has been ordered in the city plan. Thus, carless economies often end up paying for parking spaces.

As noted, incentive zoning tends to lead to significant savings when there is no need to build a certain number of parking spaces. The interviewed developer mentions that the cheaper it is for them to build, the cheaper it is to buy. Acquiring shared car is seen as a means for lowering the expenses of construction and through that enabling lowered prices of sold apartments. The interviewed urban planner seems to be slightly skeptical about the connection between lowered pricing, but recognizes that it is possible in certain scenarios:

> If it is some kind of student apartment or a site at Jätkäsaari with no parking spaces, then it could influence the construction expenses significantly and then it could affect the pricing of the apartment. Because it is sold as carless without the possibility to claim a parking space. It is an interesting perspective and I would hope that carlessness would affect the pricing of the apartment. (Interviewee 6)

However, attitudes towards city plans are not entirely positive. The interviewed developer mentions that it is confusing that the content of city plans seems to differ a lot.

> Each city has its own practice. It [whether the developer can reduce parking spaces] is always in the city plans and it can be quite obscure. Cities do not have any kind of alignment with these things. That is one of issues we have. If it was clear that every time you bring a shared car to a site, then you would get a certain reduction to the number of parking spaces. It would be easy. (Interviewee 1)

It is also considered as problematic that each housing cooperative has to make contract that might last up to ten years. The time frame is considered as lengthy, especially in an industry that is highly fluctuant. What if the quality of the acquired service is suboptimal compared to competitors after a couple of years?

The developer mentions that reduced parking requirements are beneficial because city plans tend to require construction of too many parking spaces. However, the situation is different when shared cars are brought to locations where owning a private car is considered as "compulsory".

> We have implemented the maximum number of parking spaces especially when talking about location that is essentially dependent on private vehicles. We cannot implement the bare minimum because it just does not work like that. It is an area where people use their own cars and that is it. (Interviewee 7)

The interviewee suggests that the minimum number of parking spaces would not be sufficient for the residents. In these situations, the developer will implement the maximum number of parking spaces even if it was possible to build fewer.

The lack of specifications in the city plans are surprising for both interviewed developers. Hence, the entity that procures the service could purchase any kind of car and call it a carsharing vehicle.

> There is no quality norm for a shared car. So, you can go and buy a 2000-euro rustbucket for the residents. No one will bother to use it, nor does it work properly. (Interviewee 7)

The questioning attitudes towards city plans are not limited to service procurers. Also, the interviewed carsharing operators recognize certain issues.

> I do not know how good motives these construction companies have because the financial saving they gain is extremely significant. Thus, they come to us with the idea of gaining these savings in their mind. We, on the other hand, want to provide a high-quality service for the residents and thus we have to restrain some of these inquiries. (Interviewee 5)

The comment above demonstrates how the carsharing operator has a reserved attitude towards inquiries that come from construction companies. The conflict seems to arise from differing objectives. The interviewee seems to feel that the developer or construction company sees these arrangements as a mere means of gaining financial savings while carsharing operator is more concerned about producing a high-quality service for the residents.

Lastly, the analysis showed that municipalities do not necessarily keep track of shared cars in sites where developer has gained savings through reduced

parking requirements and is entitled to make sure that the shared car is available for residents for predetermined time frame. One example is mentioned in which the service was supposed to be available to residents for five years but instead the carsharing operator had withdrawn the vehicle from the site after one year. One interviewee emphasizes that this situation is unfair for the residents who have been promised a shared car for numerous years. The interviewee continues that these kinds of misdemeanors can lead to stigmatizing of all operators in the carsharing industry.

5.2.2 Expected benefits of integrating carsharing to housing

The analysis of the data shows that the entities procuring the service consider offering shared car to residents as a means to differentiate their apartments in the market, add brand value, and as an extra service that adds to customer value. This theme has been evident since the first interview as well. However, the importance of this aspect has often been overshadowed by savings that are acquired when fewer parking spaces have to be built. Nonetheless, mentions about service procurers gaining competitive advantage is recurrent in the collected data.

Both interviewed service procurers mention that shared cars are used as a selling point when marketing apartments with availability to a shared car. However, there is a clear difference how beneficial acquiring a shared car is seen between sold and rented apartments. The interviewee representing the developer sees that no one would be willing to buy an apartment based on availability to a shared car.

> It is not like anyone would want to buy an apartment because there is a shared car available. It is not that relevant, and it is completely understandable. Why would anyone buy an apartment because of that? (Interviewee 1)

While the interviewee recognizes that availability to a shared car could be beneficial, it seems that with sold apartments it is usually not the primary reason for acquiring a shared car. There is one exception though. One interviewee mentions that shared cars have been acquired to sites even though no cost savings were gained.

> They procure this service and while marketing the building they mention that when you buy an apartment from here you get to use this car. And anyone can use it and using it is that cheap and so on. Not 100 % are cases with lowered minimum parking requirements, but for the most part it is. (Interviewee 4)

The interviewee representing the developer that sells apartments mentions that while providing a shared car may not be too important for people that are planning to buy an apartment, it still increases customer and brand value. Moreover, providing a shared car is seen as a nice addition.

However, when asked from the interviewee that represents a rental housing company the answer is quite different. The interviewee clearly emphasizes that the primary reason for acquiring the service is the expected competitive advantage.

> The reason that we have these arrangements is the attractiveness of our apartments. (Interviewee 7)

Hence, while no one is expected to buy an apartment based on shared car, the added value is considered to be more significant with rental apartments. Some residents are also expected to extend their stay because of availability to a shared car.

Cases where shared cars have been brought to existing buildings with rental apartments seem suitable for carsharing operators. It seems clear that interviewee representing carsharing operator prefers these arrangements over the ones that involve eased zoning. The following comment illustrates this:

> Now we are starting similar arrangements with rental housing companies and with them there is no zoning hassle. Rather, it is purely used to increase customer value. (Interviewee 5)

However, these arrangements are not always solely about increasing customer value. There can also be some kind of revenue model in which the entity that procures the service gets commissions if the use rate of the shared vehicle is high enough. This practice can be helpful for the carsharing operator because then it is also in the interest of service procurer to foster the use of shared car.

5.2.3 Summarizing key findings

Figure 2 illustrates the key findings of this study. A brief explanation is provided below the figure.
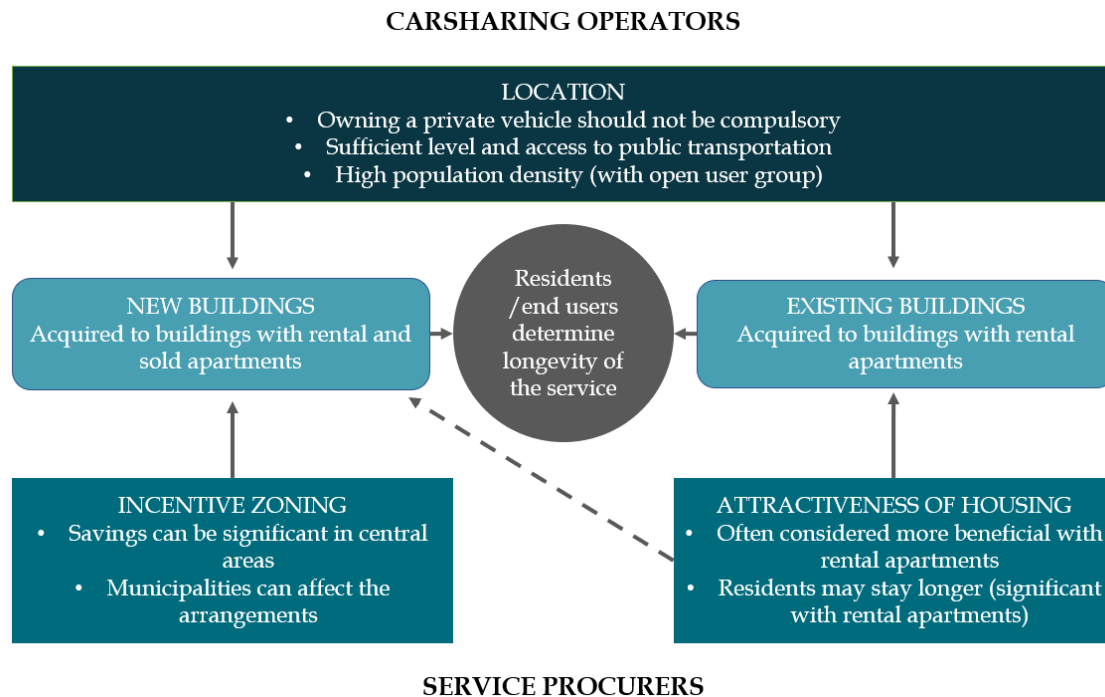
CARSHARING OPERATORS

Figure 2: Drivers and constraints behind the expansion of residential carsharing in Finland

It should be noted that Figure 2 does not include arrangements in which residents of privately owned housing cooperatives have acquired shared vehicles for their use, because based on the data these arrangements are marginal for the time being. Hence, service procurers refer to residential real estate developers and investors.

With new buildings the main reason for acquiring a shared car is often in gained savings, especially when apartments are sold. Thus, municipalities foster the proliferation of residential carsharing schemes. With existing buildings, the biggest reason for acquiring a shared vehicle is often in increasing attractiveness of the site as well as increased customer value. Thus, municipalities do not directly affect the development of these arrangements.

From the perspective of carsharing operator, the main concern relates to finding users for the shared vehicles. This means that even if it would be in the interest of residential real estate developer or investor to acquire a shared car, it may not always be beneficial for the carsharing operator if the location does not meet the criteria. It seems that in these situations service provider and service procurer may find an agreement where the service is subsidized for a certain period of time. However, it could be questioned whether these arrangements are expected to last in the long run if the location is considered disadvantageous in the first place. After all, the longevity of the carsharing service is determined by the end users.

6   DISCUSSION AND CONCLUSIONS

In this section, I will discuss the results of the analysis and connect them to what is known about the subject. I will also give implications to key actors, discuss the limitations of the study, and make suggestions for future research. The research question that this thesis was set out to answer is as follows:

- Why have arrangements to bring corporate-owned shared cars to residential buildings increased recently in Finland?

First of all, I start by providing an answer to the research question.

6.1   Answering to the research question

The primary objective of this thesis was to understand the reasons behind the proliferation of residential carsharing schemes in Finland. It was found that residential real estate investors and developers are most often responsible for the acquisition of the shared car. In other words, it seems that occasions in which residents of privately owned housing cooperatives acquire shared cars are marginal phenomena for the time being. Hence, residents have rarely a say in whether a shared car should or should not be acquired. With respect to the research question, it was found that the growth in residential carsharing can be explained by enabling measures taken by municipalities and expected competitive advantage gained by the entities that acquire the shared car.

The main enabling measure that is increasingly popular in many Finnish municipalities is the possibility to reduce minimum parking requirements for new developments if a dedicated shared car is acquired for the future residents. Building fewer parking spaces leads to cost savings and hence developers have found these arrangements attractive. Interestingly, for the developer to find the possibility to build fewer parking spaces intriguing, it seems that city plan has to impose building of excess parking spaces from the perspective of the developer. This indicates that the entities acquiring the service are either not aware or do not believe that availability to a shared car lowers the demand for parking spaces. Overall, based on the results of this thesis it can be stated that when arrangements to bring shared cars to new developments are made, most often municipalities have provided the possibility to lower minimum parking requirements. Thus, municipalities have a key role in increasing the demand for shared vehicles within the context of new buildings.

The second key finding of this study is that shared cars have been acquired especially for buildings with rental apartments based on the assumption that po-

tential residents will find the housing more attractive. Also, providing a dedicated shared vehicle is expected to motivate residents to extend their stay in the residence. In these cases, shared cars have also been acquired to existing buildings which means that municipalities are not part of the equation. These arrangements seem to be tempting for the carsharing operators as they are deemed easier and faster. Also, as rental housing companies believe that the service will be valuable for the residents, they can be assumed to be more helpful when making sure that the residents know about the existence of the designated vehicle.

However, with sold apartments the situation is different. It seems that offering availability to a shared vehicle does not add as much value in these cases. Thus, entities that sell the apartments are often mostly concerned with cost savings. This can create a conflict of interest between the two parties. It is evident that carsharing operators want to provide a high-quality service that residents utilize actively, and to achieve this, they often need to co-operate with the entity that has acquired the shared vehicle.

As noted, there is evidence suggesting that creating partnerships with different companies seem to be one means for carsharing operators to grow their fleet size. However, the analysis of the data indicates that these might not come easily. First of all, location is key success factor not only for open user group carsharing system, but also with closed user group. The companies that acquire the shared car might have buildings in locations that are suboptimal for the carsharing operator. Secondly, municipalities have adopted different practices to enabling inclusion of carsharing for new developments. It may be that the city plan does not include the possibility to lower the minimum parking requirements in a specific site or the number of replaced parking spaces is negligible. City plan may also impose that acquired carsharing service should be available to everyone and thus service providers with closed user group would be left out.

Finally, while the focus of this study has been in the reasons that have led to residential carsharing schemes which rarely include the perspectives of end users, it should be noted that the longevity of the carsharing service can only be guaranteed if end users adopt and utilize the shared vehicles.

6.2 Contributions and comparisons to existing research literature

This study contributes to the existing body of literature by shedding light on residential carsharing arrangements in Finland. Research on carsharing has often had a larger scope that entails the whole carsharing industry, carsharing in some geographical area (e.g. citywide or national level) or a specific business model (e.g. free-floating or station-based carsharing). Only few studies have concentrated on residential carsharing in particular. The focus of these studies has often been in finding out whether dedicated shared cars affect the mobility patterns of

residents. Hence, this thesis contributes to existing literature by providing a description of residential carsharing arrangements in Finland and estimation of the reasons behind the expansion of these arrangements. In this chapter, I will discuss how the findings of this thesis supplement existing research literature and how the findings compare to it.

First of all, the findings of this thesis contribute to sharing economy literature by providing interesting perspective to attitudes towards sharing versus owning. The research literature on sharing economy suggests that people taking part in sharing initiatives could do so partly because they consider ownership as a burden. Also, saved money seems to be one key motivation behind the participation. The findings of this research indicate that a dedicated shared vehicle is considered as more valuable when the apartments are rented, not sold. Hence, it could be speculated whether people who can afford to buy an apartment also prefer owning private vehicles instead of using a shared car. People who live in rental apartments could value the detachment from ownership and hence could be more open-minded towards sharing initiatives. However, it should be noted that this study did not concentrate on this aspect and further research is needed to investigate whether the connection actually exists.

The reviewed literature illustrates how municipalities often enable the existence of carsharing services by providing them privileged access to parking. As noted, the analyzed interview data showed that municipalities have a crucial role with residential carsharing as well, but the process differs from other types of carsharing. While it was found that privileged access to parking has been granted to residential carsharing vehicles for the duration of the trip, these measures are not seen as significant. Rather, they might support the adoption of shared cars. In residential carsharing, the enabling measure is offering lowered minimum parking requirements if a dedicated shared car is provided for the residents. This practice has led to proliferation of residential carsharing arrangements because the entities acquiring the shared car can achieve major financial savings. Engel-Yan and Passmore (2013) suggested that offering a reduction to parking requirements when a dedicated shared vehicle is available could lead to expansion of carsharing fleet. This thesis confirms that these zoning practices indeed have led to proliferation of residential carsharing arrangements in Finland.

The study by Dowling and Kent (2015) showed how the city trades parking space with carsharing organizations to foster their own sustainability agendas in Sydney, Australia. Also, Lagadic et al. (2019) illustrated that local authorities can decide to stop providing support for certain type of carsharing if its sustainability benefits are not evident. This could lead to termination of carsharing business. The reviewed literature as well as the findings of this thesis suggest that municipalities in Finland are likely motived with sustainability promises in the context of residential carsharing as well. Interestingly, while the Finnish municipalities have not made too many requirements for the service so far, it is evident that city plans can include specific requirements that could concern intended user groups of the dedicated carsharing service. This would exclude operators that

provide shared cars with either open access or for closed user groups. Hence, the carsharing operators in Finland are faced with a threat that municipalities might find certain business model more viable for their objectives.

Engel-Yan and Passmore (2013) illustrated how the interests of developers and carsharing operators might contradict. They propose that developers might be more concerned with cost savings and competitive advantage, while carsharing operators want to run a successful business and the premise for this is often a good location. This study confirms that in some cases there seems to be a contradiction between the interests of the two parties in the Finnish context as well. The findings of this study indicate that if the service procurer is merely interested in financial savings, it might be difficult to find common ground with the carsharing operator.

Finally, the reviewed literature implies that reduced construction costs due to building fewer parking spaces could lead to lower housing prices. This study suggests that this possibility exists in Finland as well. While it is an interesting finding, this study does not provide enough evidence to support this view. Nonetheless, it could be another argument for municipalities to support the proliferation of residential carsharing.

6.3   Implications for key actors

The findings of this thesis have certain implications for municipalities, carsharing operators, and service procurers which will be discussed in this chapter.

Local authorities

The findings suggest that the lack of requirements in city plans could lead to situations where residential real estate developers and investors abuse the opportunity by acquiring a vehicle that is not really intended for use. Also, there is a mention concerning an incident in which a shared vehicle has been brought to a new building and constructor has gained savings by building fewer parking spaces, but the carsharing operator withdrew the vehicle from the site after one year. In this case, the contract required that the shared vehicle should be available for five years. To ensure that these opportunities are not abused, cities could add criteria for the acquired carsharing service and investigate how it can be made sure that the acquired vehicles stay available throughout the designated time frame.

The findings of this study show how providing a possibility to decrease the minimum parking requirements may not always be an attractive option. If the entity that develops the site feels that parking requirements are already too low, they could be unlikely to use the opportunity to build fewer parking spaces. Hence, it could be investigated if other kinds of incentives could be used in these cases.

Finally, it seems that service procurers could feel uneasy about having to commit to a specific carsharing operator for up to ten years. Arguably, the car-sharing industry in Finland is highly fluctuant for the time being. Thus, providing an opportunity to withdraw from the contract if the level of service proves suboptimal could be considered given that another shared vehicle would replace the previous one.

Carsharing operators

The cooperation with local authorities seems to be an important means for ensuring that municipalities continue to support the expansion of carsharing. Carshar-ing operators should also recognize the possible threats that local authorities pose, for they have their own sustainability agendas and thus could realign their support in light of new information. However, as shown in the literature review, station-based carsharing has numerous benefits that could be emphasized when communicating with local authorities. Some of these include decreased conges-tions, GHG and energy savings amongst people participating in carsharing schemes, decreased demand for parking space in cities, and enabling access to vehicles for low-income households.

The findings of this study indicated that in certain cases service procurers may be merely interested in gaining financial savings by building fewer parking spaces. Thus, they may not be interested in the success of carsharing in the long run. Carsharing operators could consider the possibility to provide some kind of incentives for service procurers to make sure that it is also in the interest of ser-vice procurer to make sure that the shared vehicle stays available for the residents.

Service procurers

It would be good for service procurers to recognize that all locations may not be suitable for carsharing operators. Also, the continuity of the carsharing service depends on to use rate of the vehicle and thus it is crucial that service procurer is willing to cooperate with the carsharing operator to make sure that residents are aware of the shared vehicle.

The findings of this research indicate that the question concerning the costs of residential carsharing may be problematic. Having residents pay for the carsharing service is not only questionable from ethical perspective but requiring housing cooperatives to divide the costs between each household could be against the law.

6.4   Discussing the limitations of the study

In this chapter I will discuss the limitations that have affected the research objec-tives of this thesis. First of all, the number of interviewees was limited. On the

other hand, there are only a handful of carsharing operators in Finland and hence gaining insight from interviewees representing four different companies could be considered sufficient. Deeper understanding could have been gained through a larger number of interviewees of service procurers. However, it should be noted the studied phenomenon and research question was quite narrow. Each interviewee seemed to verify the reasons for the expansion of residential carsharing schemes in Finland. Hence, while deeper insight could have been gained, it seems unlikely that a larger number of interviews would have changed the outcomes of the study.

Another limitation that should be mentioned is the problem with different interests of each interviewee. It could be that inaccurate answers were given in order to justify specific actions and decisions that related to proliferation of carsharing schemes in order to give a polished impression to the researcher. Nonetheless, the triangulation of the research helped with this issue and the researched feels that a trustworthy picture of reasons behind the proliferation was formed.

Another limitation that is worth noting is the limited time to carry out some of the interviews due to time constraints of interviewees. This affected the depth of the interviews and through that the research findings. Also, as an interviewer I felt the pressure to go through questions faster than I had hoped in some situations. However, the finetuning of interview questions during the process helped in focusing on things that were most important from the perspective of the research objective. Overall, the researcher feels that each interview contributed to confirming the research findings.

Finally, the lack of background knowledge and earlier research on the subject created issues with first few interviews. Luckily, the first interviewees gave extensive answers to questions that were in retrospect slightly vague. With more reserved interviewees this could have affected the research findings more extensively. The intermediate analysis of the collected interview data helped with this issue and it is safe to say that the quality of collected data improved during the process.

Overall, while there are numerous limitations that affect the research objectives, the researcher feels that this thesis gives reliable answer to the research question and a coherent picture of residential carsharing arrangements in Finland.

6.5   Suggestions for future research

While this exploratory research sheds light to certain aspects concerning the proliferation of residential carsharing in Finland, it also gives rise to numerous follow-up questions which remain unanswered. Further research could be undertaken to investigate the actual effects of residential carsharing on change of travel behavior and car ownership. This is deemed important because municipalities tend to support the proliferation of carsharing services based on the assumed

sustainability benefits, as shown in the literature review. There have been occasions when interviewees have pondered whether shared car appointed to residents actually leads to fewer personal vehicles. Understanding the effects of residential carsharing in more detail in Finnish context could thus either speed up the processes for supporting actions by municipalities or redirect the measures to gain better results in terms of sustainability. Also, this data could give waypoint for figuring out how many parking spaces each shared car that is attached to a residential building replaces in reality. This information could be interesting for the municipalities, because building excess parking spaces can create significant GHG emissions, increase the pricing of housing, and especially in central areas – use up valuable urban space.

Secondly, the question how municipalities make sure that the anticipated outcomes in the context of residential carsharing are met is interesting. As shown in this thesis, carsharing has numerous benefits and it often requires the support of the local authority. It has been also stated that sustainability benefits of shared mobility are best met when both municipalities and shared mobility operators work together towards these goals. While this thesis showed how municipalities can affect the details of the service that should be acquired for a residential building, it does not delve deeper into this subject. Understanding the motives and methods behind the zoning practices that have boosted the demand for residential carsharing would provide interesting perspective to how the sustainability promises of carsharing are expected to be met.

REFERENCES

Acquier, A., Daudigeos, T. & Pinkse, J. (2017). Promises and paradoxes of the sharing economy: An organizing framework. *Technological Forecasting and Social Change,* p. 1.

Bardhi, F. & Eckhardt, G. M. (2012). Access-Based Consumption: The Case of Car Sharing. *Journal of Consumer Research, 39*(4), pp. 881-898. doi:10.1086/666376

Belk, R. (2007). Why Not Share Rather Than Own? *The Annals of the American Academy of Political and Social Science, 611*(1), pp. 126-140. doi:10.1177/0002716206298483

Belk, R. (2013). You are what you can access: Sharing and collaborative consumption online. *Journal of Business Research.* doi:10.1016/j.jbusres.2013.10.001

Botsman, R. & Rogers, R. (2011). *What's mine is yours: How collaborative consumption is changing the way we live* (Rev. and updated ed.). London: Collins.

Cervero, R. (2009). TOD and Carsharing: A Natural Marriage. *Access, Transport Research at the University of California.* 35(Fall).

Chen, T. & Kockelman, K. (2016). Carsharing's life-cycle impacts on energy use and greenhouse gas emissions. *Transportation Research Part D, 47*(C), pp. 276-284. doi:10.1016/j.trd.2016.05.012

Cheng, M. (2016). Sharing economy: A review and agenda for future research. *International Journal of Hospitality Management, 57*, pp. 60-70. doi:10.1016/j.ijhm.2016.06.003

Cohen, A. & Shaheen, S. (2016). Planning for shared mobility. *American Planning Organization.* 1-106.

Cohen, B. & Kietzmann, J. (2014). Ride On! Mobility Business Models for the Sharing Economy. *Organization & Environment, 27*(3), pp. 279-296. doi:10.1177/1086026614546199

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed., international student edition.). Los Angeles, Calif.: Sage.

Dowling, R. & Kent, J. (2015). Practice and public–private partnerships in sustainable transport governance: The case of car sharing in Sydney, Australia. *Transport Policy, 40*, pp. 58-64. doi:10.1016/j.tranpol.2015.02.007

Duncan, M. (2011). The cost saving potential of carsharing in a US context. *Transportation, 38*(2), pp. 363-382. doi:10.1007/s11116-010-9304-y

Engel-Yan, J. & Passmore, D. (2013). Carsharing and Car Ownership at the Building Scale: Examining the Potential for Flexible Parking Requirements. *Journal of the American Planning Association, 79*(1), pp. 82-91. doi:10.1080/01944363.2013.790588

Eskola, J. & Suoranta, J. (2014). *Johdatus laadulliseen tutkimukseen*. Tampere: Vastapaino.

Firnkorn, J. & Müller, M. (2012). Selling Mobility instead of Cars: New Business Strategies of Automakers and the Impact on Private Vehicle Holding. *Business Strategy and the Environment, 21(4)*, pp. 264-280. doi:10.1002/bse.738

Frenken, K. & Schor, J. (2017). Putting the sharing economy into perspective. *Environmental Innovation and Societal Transitions, 23*(C), pp. 3-10. doi:10.1016/j.eist.2017.01.003

Hair, J., Wolfinbarger, M., Money, A., Samouel, P. & Page, M. (2015). *The essentials of business research methods* (Third edition.). London: Routledge.

Heima, T. (2019, Sept 24). Sähköautojen yhteiskäyttöyritys lopettaa – vuokrattavat autot olleet taloyhtiöissä eri puolilla Suomea. *Yle Uutiset,* retrieved from https://yle.fi/uutiset/3-10985589

Hirsjärvi, S. & Hurme, H. (2008). *Tutkimushaastattelu: Teemahaastattelun teoria ja käytäntö*. Helsinki: Gaudeamus Helsinki University Press.

Kahilaniemi, S., Stenman, P., & Sacs, I. Yhteiskäyttöautojen toimintamalli Skanssissa. Retrieved from https://www.turku.fi/sites/default/files/atoms/files/yhteiskayttoautot_skanssissa.pdf

Kaikkonen, H. (2012). Autopaikoitus- ja pysäköintiratkaisut kunnissa. *Suomen Kuntaliitto*. Helsinki 2012. Retrieved from: https://shop.kuntaliitto.fi/product_details.php?p=2728

Lagadic, M., Verloes, A. & Louvet, N. (2019). Can carsharing services be profitable? A critical review of established and developing business models. *Transport Policy, 77*, pp. 68-78. doi:10.1016/j.tranpol.2019.02.006

Le Vine, S., Zolfaghari, A., & Polak, J. (2014). Carsharing: evolution, challenges and opportunities. *Center for Transport Studies, Imperial College London*. Retrieved from https://www.acea.be/uploads/publications/SAG_Report_-_Car_Sharing.pdf

Lichtman, M. (2014). *Qualitative research for the social sciences*. 55 City Road, London: SAGE Publications, Inc. doi: 10.4135/9781544307756

Liikennevirasto. (2018.) Yhteiskäyttöautojen potentiaali ja vaikutukset käyttäjänäkökulmasta. Loppuraportti. *Liikenneviraston tutkimuksia ja selvityksiä, 25/2018*. Helsinki 2018. Retrieved from https://julkaisut.vayla.fi/pdf8/lts_2018-25_yhteiskayttoautojen_web.pdf

Litman, T. (2019). Parking Requirement Impacts on Housing Affordability. *Victoria Transport at Policy Institute*. Retrieved from https://vtpi.org/parkhou.pdf

Loose, W. (2010). The State of European Car-Sharing. Momo study Final Report D 2.4, Work Package #2. European Commission Grant Agreement # IEE/07/696/S I2 .49 93 8 7

Machado, C., Hue, N., Berssaneti, F., & Quintanilha, J. (2018). An Overview of Shared Mobility. *Sustainability, 10*(12), p. 4342. doi:10.3390/su10124342

Madlener, R. & Sunak, Y. (2011). Impacts of urbanization on urban structures and energy demand: What can we learn for urban energy planning and urbanization management? *Sustainable Cities and Society, 1*(1), pp. 45-53. doi:10.1016/j.scs.2010.08.006

Mantere, S. & Ketokivi, M. (2013). Reasoning in Organization Science. *Academy of Management. The Academy of Management Review, 38*(1), pp. 70-89. doi:10.5465/amr.2011.0188

Martin, C. (2016). The sharing economy: A pathway to sustainability or a nightmarish form of neoliberal capitalism? *Ecological Economics, 121*, pp. 149-159. doi:10.1016/j.ecolecon.2015.11.027

Martin, E., & Shaheen, S. (2011). Greenhouse Gas Emission Impacts of Carsharing in North America. *IEEE Transactions on Intelligent Transportation Systems, 12*(4), pp. 1074-1086. doi:10.1109/TITS.2011.2158539

Morozov, E. (2013). *The 'sharing economy' undermines workers' rights*. Retrieved from https://evgenymorozov.tumblr.com/post/64038831400/the-sharing-economy-undermines-workers-rights

Munzel, K., Boon, W., Frenken, K. & Vaskelainen, T. (2018). Carsharing business models in Germany: Characteristics, success and future prospects. *Information Systems and e-Business Management, 16*(2), p. 271. doi:10.1007/s10257-017-0355-x

Namazu, M. & Dowlatabadi, H. (2018). Vehicle ownership reduction: A comparison of one-way and two-way carsharing systems. *Transport Policy, 64*, pp. 38-50. doi:10.1016/j.tranpol.2017.11.001

Räisänen, K. (2020, Feb 11). Drive Now lopettaa toimintansa, ja se kertoo, ettei autojen yhteiskäyttö ollutkaan niin helppoa kuin moni luuli. *Helsingin Sanomat,* retrieved from https://www.hs.fi/talous/art-2000006403271.html

Ramirez, M., Tonkinwise, C., & Nawangpalupi, C. (2012). Multiplier and transfer effects of carsharing in Australia. *SCORE! Sustainable Consumption Research Exchange ConferenceWorkshop 3*: Framework for Action for SCP. Milan.

Ruusuvuori, J., Nikander, P. & Hyvärinen, M. (2010). *Haastattelun analyysi*. Tampere: Vastapaino.

Shaheen, S. & Cohen, A. (2013). Carsharing and Personal Vehicle Services: Worldwide Market Developments and Emerging Trends. *International Journal of Sustainable Transportation, 7*(1), pp. 5-34. doi:10.1080/15568318.2012.660103

Shaheen, S. & Martin, E. (2011). The Impact of Carsharing on Public Transit and Non-Motorized Travel: An Exploration of North American Carsharing Survey Data. *Energies, 4*(11), pp. 2094-2114. doi:10.3390/en4112094

Shaheen, S. A. & Cohen, A. P. (2007). Growth in Worldwide Carsharing: An International Comparison. *Transportation Research Record: Journal of the Transportation Research Board, 1992*(1), pp. 81-89. doi:10.3141/1992-10

Takala, S. (2018, Mar 30). HS:n vertailussa kymmenen yhteiskäyttöautopalvelua: Halvimmillaan kahden tunnin kauppareissu laina-autolla maksaa 10 euroa. *Helsingin Sanomat,* retrieved from https://www.hs.fi/koti/art-2000005615971.html

Toiskallio, K., Kunnas, J., Talja, M., & Kuukka-Ruotsalainen, V. (2013). Autojen yhteiskäytön edistäminen Helsingin seudulla. *HSL:n julkaisuja* 18/2013. Retrieved from https://www.hsl.fi/sites/default/files/uploads/autojen_yhteiskayton_edistaminen_18_2013.pdf

Tuomi, J. & Sarajärvi, A. (2018). *Laadullinen tutkimus ja sisällönanalyysi* (Uudistettu laitos.). Helsinki: Kustannusosakeyhtiö Tammi.

58

United Nations Conference on Housing and Sustainable Urban Development. (2017). *Habitat III Policy Papers: Policy Paper 9 Urban Services and Technology*. Retrieved from http://habitat3.org/wp-content/uploads/Habitat%20III%20Policy%20Paper%209.pdf

Vanhee, J. (2009). Momo Car-Sharing: more options for energy efficient mobility through car-sharing. *Brussel: Intelligent Energy Europe*. Retrieved from https://ec.europa.eu/energy/intelligent/projects/sites/iee-projects/files/projects/documents/momo_car-sharing_car_sharing_guidelines_for_public_authorities_en_en.pdf

Vaskelainen, T. & Tura, N. (2018). *Exploring Problems Associated With the Sharing Economy*. Jyväskylän yliopisto, Business and Organization Ethics Network (BON).

Vaskelainen, T. (2018). *The emergence of the sharing economy industry: Insights from the German carsharing industry* (Doctoral dissertation). Retrieved from https://jyx.jyu.fi/bitstream/handle/123456789/58767/978-951-39-7495-4_vaitos2208_2018.pdf?sequence=7&isAllowed=y

Voltti, V. (2010). *Autojen yhteiskäytön potentiaali ja vaikutukset pääkaupunkiseudulla, Turussa ja Tampereella.* Liikenneviraston tutkimuksia ja selvityksiä. Retrieved from https://www.motiva.fi/files/4513/Autojen_yhteiskayton_potentiaali_ja_vaikutukset_paakaupunkiseudulla_Turussa_ja_Tampereella.pdf

Yin, R. K. (2014). *Case study research: Design and methods* (5th edition.). Los Angeles: SAGE.