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Adopting Corporate Car Sharing As A Mobility Service

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Executive Summary

Companies are faced with an increasing pressure to lower emissions and costs produced by their fleets. Corporate car sharing solutions, reducing transportation emissions and fleet costs, have a large market potential. Studies show that consumers having access to use corporate car sharing services avoid purchasing or even sell their private vehicles.

In the case study, a corporate vehicle sharing platform was tested in a company with shared electric vehicles (EVs). As the result of the case study, the company vehicles reached higher utilization rates than average vehicles. Offering company employees access to car sharging service and collaborative vehicles reduced the need for car allowance vehicles, constituting savings and reducing mobility related emissions.

1 Introduction

On average, vehicles are utilized approximately 5% of the time (Bates and Lieabling, 2012). There is a need for solutions that can increase utilization rates to reduce congestion and emissions. One potential way to address are car sharing models that can drive utilization rates due to a wider user group through modes of shared usage. Currently, car sharing models have focused on public services providers or peer-to-peer car sharing. This research paper aims to address the potential of car sharing in the context of a closed user group - inside a corporation. This poses an interesting basis for research as current studies in sharing models in closed groups have been limited

The consumption models enabling access to products and services through sharing are showing great potential, and becoming more intriguing for consumers (DeLuca and Di Pace, 2015; Prieto, Baltas and Stan 2017).The overall number of vehicles can be reduced by providing new services that bridge the gaps between private and shared transportation by offering companies a possibility to provide employees alternatives for private vehicles as well as corporate car allowance.

As car sharing services are reshaping the urban service ecosystem (Dowling, Maalsen and Kent, 2018), also corporate car sharing solutions, reducing transportation emissions and fleet costs, have a large growth potential. Currently the corporate car share segment is an untapped market.

1.1 Car sharing services

Retelling the basic principles of sharing economy, also car sharing is beneficial for both the service providers and the consumers using shared vehicles (Bert et al., 2016). Shared car services reduce CO2 emissions from

transportation significantly. With comprehensive sharing services, the need to own vehicles decreases. Consumers exploiting mobility sharing services drive fewer kilometres, thus the amount of CO2 emissions per each consumer declines (Nijland and Meerkerk, 2017). Car sharing solutions have been implemented and studied especially in large city centers, where the increased amount of vehicles have a strict impact on the air quality, and shared vehicles are seen also as a effective solution for mobility challenges such as parking and traffic jams.

Car sharing solutions ease the mobility locally, and raise the utilization rate of vehicles. The focus from private car ownership is expected to shift to shared vehicles (American Public Transportation Association, 2016). For the individual consumers, sharing solutions are presented as an addition to public transportations, enabling flexibility and on-demand usage and decreased maintenance costs compared to owning a vehicle (Uesugi, Mukia and Watanabe, 2007). Consumers are drawn to sharing services due to the flexibility and convenience, decreased costs and positive environmental impacts (Schaefers, 2013). Sharing has been seen as a complementary solution for the consumers who do not own a car, are not the main drivers in the household and for younger generations (Millard-Ballm, 2005; Prieto, Baltas and Stan, 2017). However, the disturbances caused by increased population and vehicles in cities, car sharing has become a considerable option also for the consumers who have previously owned a car.

Car sharing can be seen as a way of collaborative consumption, where sharing is a peer-to-peer activity and privately owned vehicles are shared for occasional use (Hamari, Sjöklint and Ukkonen, 2015; Prieto, Baltas and Stan, 2017). Consumers become members of the car sharing organization, a community of car sharers (Dowling, Maalsen and Kent, 2018). Peer-to-peer sharing is often seen as more approacaple option for consumers with doubts about the safety, responsibility and fuctionality (Hampshire and Gaites, 2011). Insurance is usually covered by the peer-to-peer service operator (Shaheen, 2012). Another form of car sharing, car clubs for occasional renting are also becoming more popular in large cities as in these floating car-sharging services the vehicles can be parked in a location chosen by the driver (Firnkorn and Müller, 2011).

Car sharing services, like other sharing solutions, are often cloud-based systems. Smartphone applications for car sharing enhance the service experience and help in making the access to shared vehicles effortless (Shaheen et al., 2016).

1.2 Corporate vehicles

Corporate car sharing is an effective alternative to reduce the number of company cars and car allowance cars, however, a larger demand for corporate car sharing companies has not been widely addressed. Car sharing solution offers companies a chance to not only to reduce emissions from their fleets, but cut the costs of company vehicles.

End-users, employees, benefit from shared resources as they provide flexibility in their daily travels. A previous study showed that 40% of the consumers adopting a corporate car sharing service avoided purchasing or sold their private vehicle while using the sharing service (Shaheen and Stocker, 2015). Corporate vehicles ease the mobility for employees and are expected to raise the utilization rate of the vehicles. In this study, corporate car sharing services are assimilated with peer-to-peer sharing services due to the similarities in responsibility ownership, communication the user and car owner, and the journeys being circular rather than from directed from location A to location B, i.e. the vehicle is always parked and can be picked up at the same location.

2 Corporate electric vehicle sharing platform

2.1 Corporate car sharing concept

The service model presented in this case study is focused to electric vehicle sharing service in corporate use studied in Helsinki, Finland. The case study included 3 company-owned EVs that were in full-time use for

43 employees. The case study period lasted 6 months, including a separate test period when the vehicles were enabled for both work-related and private trips. Employees were able to authenticate, reserve and start their vehicle usage on a single service platform, including opening and locking the vehicle doors and creating damage notifications.

The aim of the case study was to test the vehicle sharing platform in order to measure the utilization rate and other potential benefits. During the case study, charging of the shared vehicles was enabled with a company account via charging service integrated in the sharing service.

The case study was performed at the city center area of Helsinki, where multiple car-club services are accessible (e.g. DriveNow, EkoRent) as well as some peer-to-peer sharing solutions (e.g. BloxCar). Some employeers attending the case study group had been using the car sharing services previously, whereas most of the attendants had no previous experience of vehicle sharing services.

2.2 Results

The results of the case study show clear benefits of utilizing the vehicle sharing platform.The management system of the sharing service platform shows utilization rates based on reservations of the vehicles (Figure 1).

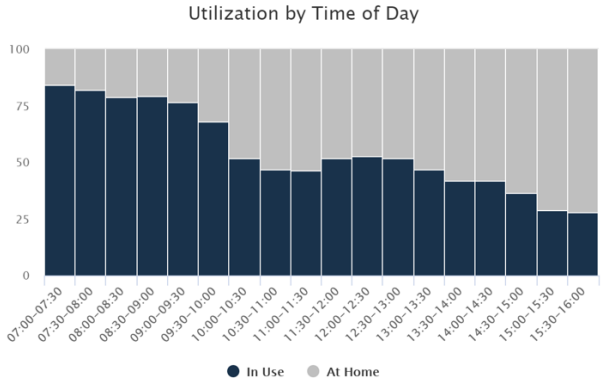

Figure 1: Monthly average utilization rates a shared electric vehicle by time of day

The reservation rates are not fully comparable to the veritable usage of vehicles, as the vehicles can be reserved but parked. The average utilization rate based on driving data was 6,3 %. The average private vehicle utilization rate being 5% (Bates and Lieabling, 2012), the result was somewhat higher. The usage data shows that the utilization rate reached 25% on the most active days. During the most popular office hours, from 07:00 to 16:00, the average reservation rate was rather high, justifying the demand for shared company cars.

Enabling private trips for employees was also tested during the case study period. This increased the utilization rate significantly (Figure 2). The highest daily utilization rate reached during the case study period was 65%.

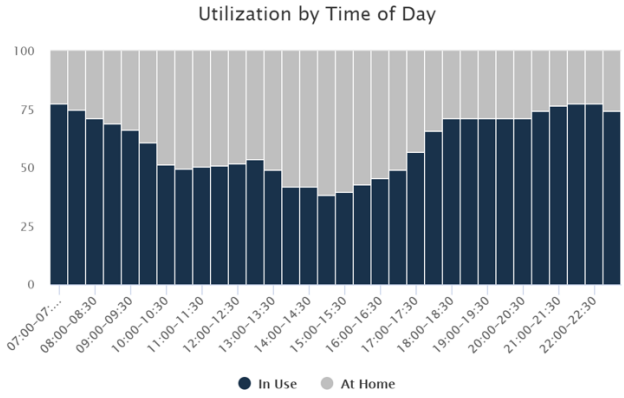

Figure 2: Monthly average utilization rates of a shared vehicle, private usage allowed

27 employees were using the service during the case study. As the figure of the average utilization by time indicates, the usage of a shared vehicle is widely distributed throughout the working day. By monitoring the statistics of the utilization and status of the vehicles, companies can justify the procurement of vehicles based on the real demand.

Relevant studies of an average amount of allowance vehicles in a similar company have not been made, nevertheless the economical savings compared to employees using allowance cars is significant.

3 Discussion

Higher utilization rates of corporate vehicles increase the cost-efficiency of company fleet, as well as help to decrease the amount of emissions. In the test environment, the cars were battery EVs, as the lifetime emissions of EVs compared to internal combustion engine cars powered with gasoline are on average 51 percent lower (World Economic Forum, 2018).

The amount of electric cars is expected to rise above 100 million vehicles by 2030 (International Energy Agency, 2018). Companies are required to decrease emissions from fleets[3], thus EVs are expected to be widely assimilated as company vehicles as well. The operational costs of EVs as corporate vehicles were significantly lower during the case study, due to lower costs of charging compared to fueling. The demand for maintenance services is also more infrequent. Multiple studies show that the operational costs of EVs are significantly lower, and can balance the higher acquisition price (Palmer, Tate, Wadud and Nellthorp, 2018).

The car sharing platform can be adapted to various different cases and customers. For instance companies, cities and municipalities can make significant savings by offering shared vehicles for both their employees, and even for all citizens. Several cities are already doing this; for instance Finnish city of Lappeenranta is sharing the vehicles used formerly only by municipal workers to all citizens to increase the utilization rate of the vehicles. These practical use cases are important in testing whether the sharing services are functional and in demand also in smaller cities. With combining the sharing service to access to public transportation, consumers have a seamless user experience to mobility services. Different payment schemes, discounts and service packages can all be implemented in the service platform.

Prieto, Baltas and Stan have studied the drivers of car sharing and compared the users of peer-to-peer sharing services and car club solutions. According to their study, the younger generations living in city centers with higher level education and frequent need for a car are the most potential car sharing service users (Prieto, Baltas and Stan, 2017). Consumers with lower safety concerns, especially single males, were also seen as more plausible to start using peer-to-peer sharing service (Prieto, Baltas and Stan, 2017). The corporate car sharing case study being performed in an environment where the car owner is the company where service users work probably decreased the safety concerns that might have occurred in a case of open sharing service. The service users also had multiple communication ways and were familiar with other service users. Thus, in a company environment the typical hindrances of using car sharing services are removed and the utilisation can seem less risky.

The service platform tested in the case study will be developed into including sharing consumers own private vehicles to a common pool of users, thus blurring the lines of shared and private car ownership. The service is designed to be highly scalable to other environments and stakeholders. Multiple studies show that smartphone applications are the main way for consumers to engage with sharing services (Shaheen et al. 2016), thus the consumer touchpoints should be at the core of developing mass market car sharing solutions.

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