Understanding User Requirements and Expectations for Car/Ride Sharing Smartwatch Apps

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Car/ride sharing concepts are getting more and more popular, mainly due to the more economical and environment-friendly nature. Most of the popular car/ride service providers offer specialized mobile apps so that users can access their services anywhere anytime. Recently, few of these providers have also launched smartwatch apps for a quick and flexible access. Due to the new medium and the given constrains of smartwatches (e.g., small size, dependency on mobile, etc.), user studies are needed to be done in order to properly find out user requirements and expectations. In this work, we conducted three surveys (to find out user requirements and expectations) and a two-months long study with two users (to get user experience feedback over a long period of time). The feedbacks of these surveys and the user study can help researchers and designers in making design and development decisions for future versions of this kind of apps.

Sharing economy. Car/ride sharing. Smartwatch apps. Survey. User experience study.

1. INTRODUCTION AND BACKGROUND

Sharing economy (also sometimes called *collaborative consumption* or *collaborative economy* [Botsman and Rogers, 2011; Spaeth and Felson, 1978]) is nowadays known as a peer-to-peer mechanism for sharing goods and services, mostly coordinated through community-based online services (Hamari et al. 2016). This emerging business model provides the customers with their required needs while requiring less personal and environmental costs (Gansky 2010), as it makes a shift in behaviour from ownership to rental. Although, the sharing economy concept has a deep root in human society; however, recent advancements in Internet and mobile technologies made it possible to utilize sharing economy concept more efficiently and intuitively at a larger scale (Hamati et al. 2016).

Car/ride sharing is a part of current sharing economy practices, where the vehicle is either owned by a separate organization while sharing between a number of users at different timings or the owner of a private car shares it for a particular trip (Millard-Ball et al. 2005). According to a report by Vine et al. (2014), the registered car/ride vehicles have been increased from 0.35 million in 2006 to 4.94 million in 2014 while the registered members have also been increased from 11.5 million in 2006 to 92.20 million in 2014. This is mainly due to the reason that car/ride sharing provides the users with greater flexibility than the public transportation or the per-day rental cars as well as it is more economical and environment friendly (Vine et al. 2014).

Few of the well-known car/ride sharing platforms providers are: DriveNow[1], available in Europe and North America, supports renting of state of the art vehicles from BMW and Mini fleet; Hailo[2], available in many main cities across the world, supports getting taxis or licensed cars; Liftshare[3], UK largest car-sharing network, supports individuals with similar journeys so they can travel together; Lyft[4], operates currently only in US, supports car-sharing with normal people; Uber[5], works in more than 212

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[1] https://drive-now.com/

[2] https://www.hailoapp.com/

[3] https://liftshare.com/

[4] https://www.lyft.com/

[5] https://www.uber.com/

cities across 45 countries, connects passengers to professional drivers having vehicles for hiring; and Zipcar[6], a monthly subscription car rental service available in many European countries and North America, that allows users to reserve a car for hourly rates. All of these car/rider sharing platform providers also have their own mobile applications (mobile apps) so that users can access their services at any time remotely.

Recent advancements in smartwatches are making them more popular day by day (Rawassizadeh et al. 2014) for many reasons, like hands-free use, getting real-time notifications, constant connection to owner, working easily while mobile, etc. Many companies have already started providing smartwatch apps with a partial functionality set in order to complement their mobile apps. However, constraints (Rawassizadeh et al., 2014; The Economist, 2015) like small screen size, weak computing power, etc. emphasize on developing smartwatch apps very carefully. Due to constraints (Rawassizadeh et al. 2014) and relatively new mediums, user studies have to be done in order to evaluate whether these smartwatch apps fulfil user requirements and provide a better user experience.

In this work, we performed three surveys with active users of car/ride sharing platforms and apps in order to get feedback regarding their requirements and expectations for the corresponding car/ride sharing smartwatch apps. We also conducted a two-months long user study with two users of Uber's car/ride sharing smartwatch app, in order to understand user experience over this period of time. The feedbacks from these surveys and the conducted user study will help researchers and designers in understanding properly the user expectations and experiences so that they can better design and develop future versions of these car/ride sharing smartwatch apps accordingly.

2. SURVEYS

2.1 Survey 1: Smartwatch Apps Usage

The purpose of the first survey was to understand the usage of different smartwatch apps by their users. This survey was consisted of 10 questions targeting the usage of these apps. The survey was spread using various forums (e.g., UberForum) and various social media sites (e.g., Facebook, Twitter, etc.). We received in total 13 responses from 4 users of DriveNow app, 5 users of Uber app, and 4 users of Lyft app. Amongst these 13 participants, 5 were using their smartwatch app less than one month while the remaining 8 had an experience of using their smartwatch app between 1 to 6 months.

Further, 4 of the participants claimed that they use daily their car/ride sharing smartwatch apps, while the remaining said that they use their apps occasionally. It was interesting to see that 6 participants agreed that their used smartwatch apps offer all what they require from them while the remaining 7 felt that their used smartwatch apps can be better for their requirements. When they were asked about their preferable version between the mobile app and the smartwatch app, one user voted for the mobile app, 3 voted for the smartwatch app, while the remaining 9 voted for both.

Overall, the feedback of this survey indicates that users of current car/ride sharing smartwatch apps are quite happy with their underlying apps. An important finding was that most of the users prefer using both apps (the mobile and the smartwatch) rather than relying on just one mode. However, this may be due to the reason that currently these smartwatch apps have many limitations, e.g., sharing the location, contacting the drivers, or changing the car type preference. That is why users still rely on mobile apps in addition to smartwatch apps to utilize these facilities. Overall, most of the participants were happy to recommend using smartwatch apps to other users.

2.2 Survey 2: User Requirements Finding

The aim of the second survey was to find out the user requirements and the user expectations from the car/ride sharing smartwatch apps. This survey was consisted of 10 questions focusing on possible functionalities and features as well as limitations in these apps. Again, this survey was spread using various car/ride sharing forums and social media sites. This time, a total 20 users of these apps participated in our survey.

When participants were asked about the most important quality features they are looking for, 9 participants replied for easy to use and understandable app (e.g., simple structure and language), 7 participants voted for the independency of smartwatch apps from the corresponding mobile apps, while 4 participants voted for the speed of the app (e.g., loading data and details, etc.). In one question we asked about the required functionalities, where the participants had the option to write more than one required functionality. In this case, four of the required functionalities were demanded by many participants (as shown in Table 1).

When asked about the reason of using the smartwatch app compared to the corresponding mobile app, 10 participants answered that due to hassle-free car/ride sharing facility, 8 participants answered that it is easier than the smartphone app, 7 participants answered that it is a quicker way of calling a car/ride, while two participants answered

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the good design as a reason to use the smartwatch app. When asked about when it is better to use the smartwatch app compared to the mobile app, 7 participants answered every time, 7 other participants answered when they do not have smart phone in their hand, while 5 participants answered when they are working and busy in order to save the time. Pointing towards some unnecessary features in the current smartwatch app, most of the participants' (i.e., 13) answer was towards the selection option of cars. In the case of the main limitation in their used smartwatch apps, 6 participants mentioned about the fast drain of battery due to these apps while 5 participants mentioned the slow loading. However, the most wanted features the participants were looking for were the payment and the direct contact of the driver from their smartwatch apps. It is interesting to know that most of the participants (i.e., 13) preferred the UI of smartwatch app compared to the corresponding mobile app (i.e., 6), mainly due to the simplicity of these smartwatch apps.

Table 1: *Participants' answers regarding the desired functionalities in car/ride sharing smartwatch apps.*

Options	Votes
Live tracking of requested car/ride	15
Large selection of available cars models	2
Easy payment method	11
Options to save favorite destination/pickup location	11
Notification on car arrival	6
Information about the car and the driver	11

Overall, feedback of this survey shows that the speed of these smartwatch apps effects the overall performance and influences on users in making the decision to use them or the corresponding mobile apps. Other important features that users look for are the live tracking of requested cars, displaying the information about the car and the driver, the payment option, and saving the destinations. Furthermore, they prefer to use it when they are busy or they do not want to look for their mobile phones. Another important finding was that users are not interested in selecting from a large range of cars and colour schemes; however, they would like to have a small selection according to their previous used preference. This is because mostly they use smartwatch app when they are in hurry and such features take more time, as most of the users look for a hassle-free car/ride booking experience. Finally, many of participants voted for independency of smartwatch app from the mobile app so that they can use it without the requirement of having the mobile with them.

2.3 Survey 3: User Satisfaction towards Smartwatch Apps

In survey 3, we focused on finding out user acceptance and satisfaction towards their used car/ride sharing smartwatch apps. In this case, we selected four popular car/ride sharing platforms, i.e., Zipcar, DriveNow, Uber, and Lyft. This time we asked through a closed-ended questionnaire form consisted of 10 questions with Likert-scale (from 1 "Strongly Disagree" to 5 "Strongly Agree"). This time again we used the same strategy to spread the survey at different forums. We received feedback form 20 participants (2 for Zipcar, 5 for DriveNow, 8 for Uber, and 5 for Lyft). Figure 1 provides an average score of all the participants' feedback in this closed-ended questionnaire survey.
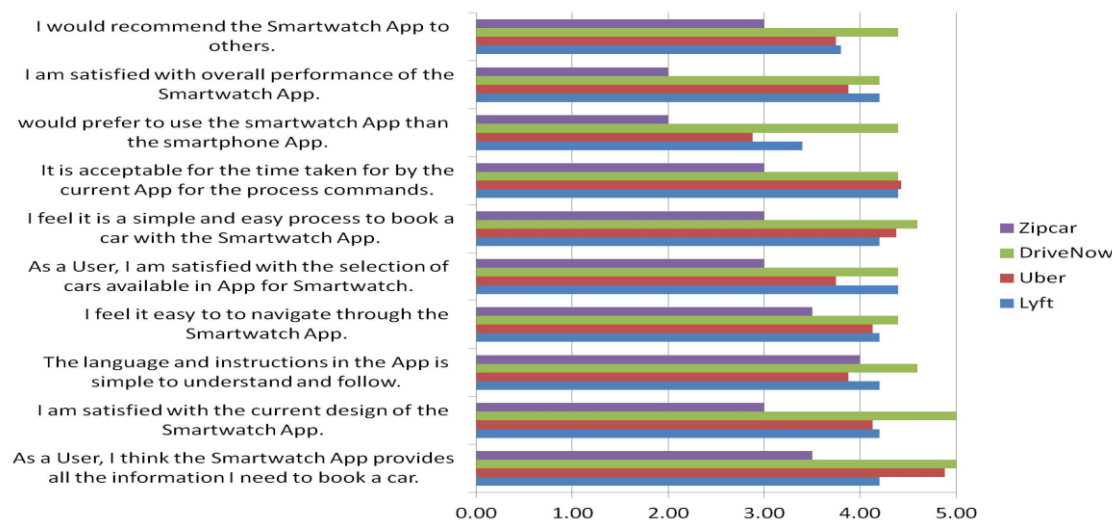
Figure 1: Average rating by four smartwatch apps' users in the closed-ended questions of Survey 3.

As we see in Figure 1, users of DriveNow smartwatch app were overall more satisfied compared to other apps. Users of Uber and Lyft were also in favour of their smartwatch apps. Users of Zipcar smartwatch app were not satisfied with it; however, we cannot generalize it as the sample size is just 2 in this case. Only in the case of DriveNow, participants favoured towards the smartwatch app compared to the corresponding mobile app. In all other cases, they preferred the corresponding mobile app compared to the smartwatch app if it is not necessary to use.

4. USER STUDY

We conducted a two-months long user study with two regular car/ride smartwatch app users. The aim of this user study was to get user experience feedback regarding the usage of a car/ride sharing smartwatch app over a period of time. Analysis of such feedback would help us understanding user experience of smartwatch-based app, which could be used by designers and researchers in designing and developing future smartwatch apps.

Both participants in our study were user of the Uber smartwatch app on Apple smartwatch. We asked both participants to note down feedback regarding their experience with each usage of the car/ride sharing smartwatch app. The primary task for both participants was to use the smartwatch app normally in order to call for a car or to book a ride. The feedback notes took into account the situation, the environment, the general behaviour of the app during each usage, and how much these participants preferred the smartwatch app compared to the corresponding mobile app. We

also asked the participants to record overall rating after each usage in order to see how it varies over the period of two months. Interestingly, both users used 5 times their car/ride sharing smartwatch app during this period in different timings.

During this time, User-1 used 4 times the smartwatch app only and one time both apps (the smartwatch app and the corresponding mobile app), while User-2 used 3 times the smartwatch app only and 2 times both apps. In the feedback, the two most common reasons provided by the User-1 are either the phone was on charging or in the bag. However, in the last feedback, User-1 mentioned that it was due to the fast and the quick usage. The reason behind this could be that over time User-1 became more expert in using the smartwatch app. While User-2 provided the reason "fast and simple to use" from the beginning, as User-2 already had enough experience of using the smartwatch app. User-1 faced two times the picking location problem due to the GPS, while User-2 mostly had the problem of entering the destination or sharing it with the driver. User-1 preferable facilities in the smartwatch app were the fast-way of cab calling and the usage in the case of low phone battery. User-2 preferred the simple one-tap process as well as seeing how far away is the driver. User-1 preferred the smartwatch app four times compared to mobile app. In the fifth case, User-1 preferred the mobile app due to the availability of seeing the fare estimation. While User-2 preferred 3 times smartwatch app, one-time mobile app, and 1 time both apps.
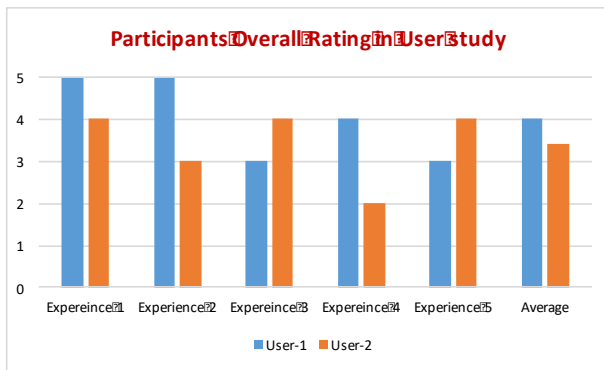
Figure 2: Both participants' overall rating for each experience in the user study.

Figure 2 provides a summary of both participants' overall rating for each usage. It is interesting to see that initially User-1 had high satisfactory experience in the first month with 2 rides; however, the satisfaction level became low in the second month. This is mainly due to the improper working of GPS as well as lacking the option of entering the destination. While User-2 overall satisfaction level was fluctuated in different times, from low to acceptable scale. The main reasons behind it were lacking the option of entering the destination, lacking the option of sharing with friend, and limitation on changing the car type. However, in spite of these shortcomings, both participants were willing to continue using the smartwatch app for such trips due to the advantages such as simplicity, easy to access, easy to use, etc.

4. CONCLUSION AND FUTURE WORK

Currently, most car/ride sharing service providers provide mobile apps so that users can access the service anywhere anytime. Due to the recent popularity of smartwatches, some of them have also launched corresponding smartwatch apps. The focus on this work was to understand user requirements and user experience with car/ride sharing smartwatch apps. We conducted three surveys and a two-months long user study to understand user requirements and experience.

Based on the analysis of the three conducted surveys and the user study, we found that users are looking for smartwatch apps with simple structures and language. Few of the important functionalities that users would like to have in forthcoming versions of these smartwatch apps are: providing the pickup/destination location, changing the booking, managing the payment, and contacting the driver directly from the smartwatch app. One of the main drawbacks that they see in the current apps is the slow loading time, as this issue let them move towards using the app on mobile phone rather than on smartwatch. We also found that many users would like to see the

smartwatch app independent of the corresponding mobile app, as they will not be forced to carry their mobile with them for each usage. These findings would help researchers and designers in making design and development decisions for future versions of this kind of apps.

In the future, we plan to perform a user study with more users on different platforms, in order to get better user experience feedbacks from different perspectives. Further, we would like to define a set of formal guidelines and recommendations for designing and building these smartwatch apps. Also, we like to explore users of these apps from developing countries, in order to see how cultural and social aspects influence their requirements and expectations.

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