

What Are the Concerns of Using a Ride-Sharing Service?: An Investigation of Uber

Emergent Research Forum Paper

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Abstract

This study investigates why people do or do not use a ride-sharing service (RSS). We investigate users' perceptions on three main concerns (security, safety, and surcharge justification), and their relationship to the actual usage of a RSS. We also propose two internal mechanisms (reference systems and policy changes) influencing the main factors of RSS use. We used Uber as a target RSS and gathered preliminary survey data. Our results reveal that safety is a significant factor for RSS use, and policy changes can reduce the effect of surcharge justification on RSS use. These preliminary findings support our arguments on the concerns of RSS use. This research in progress will be theoretically and empirically extended in the near future.

Keywords

Sharing Economy, Ride-sharing Service (RSS), Theory of Planned Behavior

Introduction

“Sharing economy” is a term to describe economic and social activities involving online transactions (Hamari et al., 2016) in which individuals can rent assets owned by someone else. Considering that asset as a vehicle, we look towards a specific sharing economy, called “ride-sharing services” (RSSs). RSSs connect passengers to drivers via mobile applications (Said, 2015). According to Rayle et al. (2016), RSSs are increasingly replacing other transportation modes. However, there is little literature on why some individuals do not adopt these services and their perceived beliefs on the barriers. In this study, we chose Uber as the example as it is available in over 66 countries and 507 cities worldwide (Uber, 2016).

Many people require a mode of transportation for daily life, but have increasing transportation-related concerns, such as pollution, traffic, and parking. Both in industry and academia, RSSs has been identified as a solution to transportation problems (Hartwig et al., 2006). Gidófalvi et al. (2008) identified that ineffective scheduling, safety problems, social discomfort in sharing private spaces, and/or an imbalance of costs and benefits among parties can be hindrances. Our research focuses on why and how specific factors affect individual use. Theoretically, we can understand how the individuals' perceptions affect RSS usage, and extend this research to other types of sharing economy mobile solutions. From a practical viewpoint, an investigation into these factors can help overcome the barriers to use and promote RSSs.

Theoretical Base

To understand RSS use, we look towards human behavior theories, including the theory of planned behavior (TPB) (Ajzen, 1991). Behavioral beliefs lead to favorable or unfavorable attitudes towards a behavior, normative beliefs give rise to subjective norms, and control beliefs results in perceived behavioral control that is presumed to directly affect actual behavior (Ajzen, 1991). Our study investigates a person's belief on RSS risks and how the beliefs can shape his/her actual use of a RSS. As TPB links beliefs and behavior, it is deemed useful to theorize our model for the use behavior of RSSs.

TPB has been used to explain some public transportation usage and behaviors. Heath and Gifford (2002) investigated the problems associated with cars that would lead students to use public transportation. Ozanne and Mollenkopf (1999) examined the factors that influence consumer carpooling intentions. Rayle et al. (2016) proposed several factors, including accessibility, cost, comfort/safety, parking options, time, and designated driver requirements, on why people may not use other transportation modes. Since the focus of this study is on the barriers to RSS use rather than a comparison of travel options, we focused only on the relevant factors for a sharing service, such as safety and security, and costs was considered as service price changes in surcharge justification. Safety and security involve ride concerns, such as unknown drivers and their ability to track locations. Reference systems, such as self-regulatory user-rating mechanisms, provide information on the application, driver reviews, and ride cancellations, which can provide insight into users' beliefs (Bolton et al., 2000). In addition, pricing policies has raised questions about fairness and transparency (Chen, 2015). Our research will study how these perceptions affect RSS use.

Hypothesis Development

Figure 1 shows our research model.

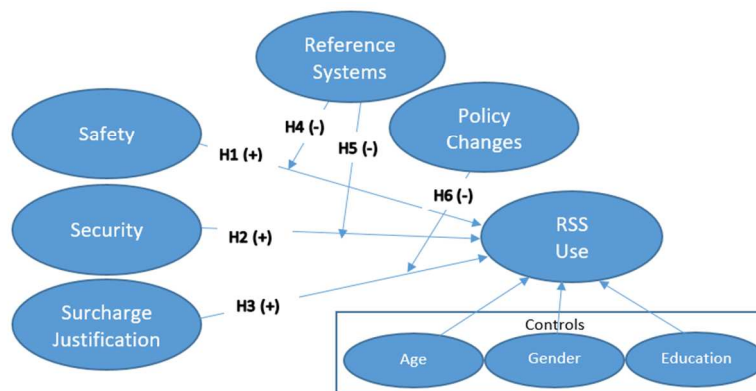


Figure 1: Research Model

We define safety as the user's concern to the well-being of passengers. Delbosch and Currie (2012) calls for further research of safety concerns related to transportation and notes that previous research finds that people who do not feel safe on public transportation are less likely to use it. In line with this concern, we propose our first hypothesis as follows: *H1: The more people feel safe with a RSS, the more likely they will use the RSS.*

We define security as the user's concern to when the driver can track your location due to the inherent nature of the service. Bayuk (2013) provides a range of threat metrics and suggests how applications differ in their security risks. If the customer does not perceive a security risk, then he/she would probably be more likely to accept a ride. So, our second hypothesis is: *H2: The more people feel secure with a RSS, the more likely they will use the RSS.*

Surcharge is an extra fee during certain peak times or for any potential vehicle cleanups. Ba and Pavlou (2002) describe a similar concept of price premiums as the "monetary amount above the average price received by multiple sellers for a certain matching product." This is an extra charge for the same service, which can decrease customer satisfaction. If a customer believes the surcharge is justified for the same service or ride distance, then they are more likely to accept ride sharing, leading to our third hypothesis as follows: *H3: The better people feel justified with surcharges of a RSS, the more likely they will use the RSS.*

Reference systems are the available tools or "systems" that an individual can access to make decisions. Mirsadikov et al., (2016) notes that ride information, such as a driver's license, can mitigate vulnerabilities. Since the driver is unknown to customers until the actual summoning of the vehicle, there is a short time frame to assess the credentials. If a high level of trust is not established before a ride, then the perceived level of safety is low. Thus, we hypothesize that the variations in the reference systems can

act as a moderating variable for the perception of safety, as follows: *H4: The better perception on reference systems of a RSS will reduce the effect of safety on RSS use.*

Similarly, we use Mirsadikov et al.'s (2016) description to explain the effect of reference systems between security risks and RSS use. If an individual has sufficient information to assess their security and accepts the ride, then there is a perceived high level of security. Thus, we hypothesize that the perception of reference systems can be a moderating variable for the relationship between security risks and RSS use.

H5: The better perception on reference systems of a RSS will reduce the effect of security on RSS use.

Policy changes are the changes to regulations that a company has a legal obligation to fulfill to customers and drivers. According to Mirsadikov et al., (2016), policy is a form of formal control and describes the expectation of companies to “define responsibilities, recognize investments, establish accountability, and promote conflict resolution as well as other relational parameters”. If a customer is not aware or is unsatisfied with new changes to the policy, then it may negatively affect their willingness to use the RSS.

H6: The better perception on policy changes of a RSS will reduce the effect of surcharge justification on RSS use.

Methodology

Survey Design and Data Collection

We conducted a voluntary offline pilot survey within 1 month in Fall 2016 using students from a public university in Boston. Students were not given any incentives, and has various use level of Uber. We received 95 responses, of which 3 were removed due to extensive missing data points. Our target population was for people who have access to the Uber application, since Uber is one of the largest RSSs, and there is a greater chance that people has used or heard of Uber. Our survey focuses on the concerns of RSS use, and not the quality or usage of an application. Every company has different policies and surcharge rates, and may lead to bias. We consider this as a limitation, which is discussed further.

Operationalization of Key Constructs

We used safety fears from Meyer et al. (2012), and feelings of personal safety from Delbosc and Currie (2012). We used Bayuk's (2013) measurements of security, including vulnerability, accessibility, accountability, and confidentiality. For surcharge justification, we adapted measurements of price premiums and buyer behaviors from Ba and Pavlou (2002). For policy changes and reference systems, we adapted measurements of opportunity and incentive control from Mirsadikov et al. (2016), which involves trust of contracts and legal enforcement and trust of reputation and switching costs, respectively. Lastly, we used Agarwal and Prasad's (1998) measurements for RSS use.

Model Analysis

We used SmartPLS 2.0 and the bootstrapping algorithm to analysis our measurement and structural models.

Measurement Model Analysis

All our measurements are developed as reflective. To improve the validity of measurement model, we removed some items for our final structural model analysis. We used three convergent validity tests: the reliability of the items, the average variance extracted (AVE) by a construct, and the composite reliability of the constructs (Hair et al., 1998). All our constructs have scores higher than 0.8 and have acceptable composite reliability (Nunally, 1978). Their Cronbach's alpha score are higher than 0.7 (Hair et al., 1998) as shown in Table 1, which also confirms the convergent validity. The results showed that all constructs' square root of AVE was higher than their correlations with other constructs (Chin, 1998), so, the discriminant validity is also verified.

	# of Items	Reliability	AVE	Composite Reliability	Cronbach's Alpha
Policy	2 items	0.859 - 0.903	0.715	0.874	0.715

Reference	1 items	n.a.	1.000	1.000	1.000
Safe	4 items	0.823 - 0.936	0.913	0.939	0.913
Security	4 items	0.729 - 0.909	0.859	0.902	0.859
Surcharge	4 items	0.743 - 0.862	0.847	0.895	0.847
RSS Use	4 items	0.790 - 0.876	0.855	0.903	0.855

Table 1. Results of convergent validity tests

Structural Model Analysis

Figure 2 shows our structural model analysis results (n=92).

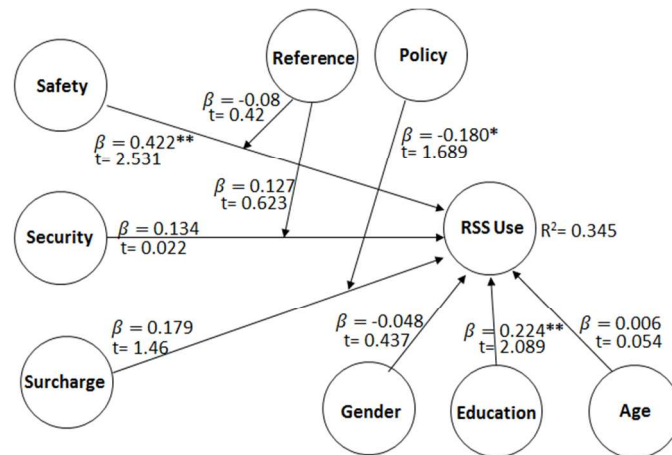


Figure 2. Final model results (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$)

Our model explains 34.5% of the variance in RSS use. Safety is a significant predictor of RSS use (at the 0.05 significance level), which supports H1. The moderation effect of policy changes is also significant (at the 0.10 level), which provides evidence that clear policies can reduce users' concern of surcharge justification (H6). Interestingly, education is a significant control variable. Since this is a preliminary study, using a large sample size with better measurement model may show improved results.

Discussion and Future Direction

Our results of this preliminary research show that the moderating effect of policy changes on surcharge justification is significant. This means that if surcharge concerns exist among Uber users, then the moderating effect of policy changes is helpful to reduce their concerns. The moderating effects of reference systems on the safety and security constructs are not significant, but as we expected, reference systems appeared to help mitigate users' security concerns. The result also confirmed the effect of education level as a significant control variable on actual use of the ride sharing service.

As a research in progress, we recognize that our preliminary results can be improved. For future research, we can strengthen our theory base, improve our measurement model, sample size, and include non-student riders. In addition, different RSSs provide different reference systems and policies, which may affect customers' satisfaction, trust, and other factors. Uber is one of the popular RSSs, but future research can include the study of all major ride sharing services. Considering practical implications, ride-sharing companies can consider how to mitigate the risks and negative safety perceptions for customers. Additional moderating and mediating effects, such as experience, can be further investigated. Further research into the role of one's socio-economic status, cultural background, the environment, and other transportation means (trains, taxis, etc.) could be beneficial.

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