

Examining the Adoption Intentions of Women in Kochi regarding Uber Services

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Abstract— Uber taxi services is emerging as a preferred mode of transport in India. Even though Uber produces benefits such as reduced traffic congestion, less air pollution, less expensive mode of transportation, etc. adoption intentions are yet to progress substantially. Many disadvantages related to privacy, safety, and payment risk, etc. prevent individuals, especially women, from adopting this option totally. This study had identified reviews shared by 186 women customers of Uber service users in Kochi and conducted an analysis to understand their perceptions about benefits and concerns about the service. The analysis revealed that the most important variables that influence the adoption intentions of Uber service users are perceived ease of use, perceived safety, perceived price advantage, and perceived usefulness.

Keywords—Uber, Safety, Ease of Use, Adoption Intentions, Price Advantage.

I. INTRODUCTION

Uber, the most trending taxi service, has become a sensation among the women population in Kochi, especially the teenagers. Uber is playing a vital role in the lives of women who don't own a driving license to drive or who don't own a vehicle. Uber has become a necessity in the women's life whose husbands are busy with their work or girls going to school or college or even grandmothers who can't travel alone or drive anymore. Women in Kochi focus on the factors of safety, ease of use, price advantage, and also usefulness to adopt the Uber service as their mode of transportation.

II. LITERATURE REVIEW

People everywhere in the country, especially in metro cities, as explained in [15], have started facing the problem, which made delays or so to their daily traveling time due to heavy traffic, with the huge number of vehicles on the road. Making them share cars is one of the actions to diminish this problem of travelers. Using the Uber application, (ride-sharing) commuters traveling alone can choose to travel with others. The Uber app is very useful for those who are using the

public transport system to go to work every day as they can request Uber cars going to the same location and ready to share the ride. Uber helps to get rid of the additional trip time of passengers and also improve the conditions of atmosphere by decreasing traffic jam and air pollution on roads. Uber car passengers can thus be said to be time-sharing and fare-sharing as both are shared with companion travelers. Security issues with woman travelers in mind are also explained in the context.

In an era of increased demand for alternative transport means, as a consequence of environmental awareness and economic crisis, carpooling started to form viable solutions for the daily commute as quoted by [14]. Though, challenges related to safety concerns, flexibility, or ride partner matching still need to be faced. The objective of this paper is to focus on the transportation of children who ride with their friends' parents to and from school and other activities in Greece and develop policy guidelines that will safeguard their safety. The methodology includes the review and assessment of the safety implications of carpooling, both for children and driver responsibility, evaluation of the perceived safety levels through the existing statistics worldwide and literature review. Results showed that parents keen to relax expectations on safety measures when carpooling. Although they use the safety seat when driving their own children, they do not require that their children use a safety seat when traveling with friends. They would sit a child in the front seat, or have two children sharing a seat and/or seatbelt, and one in another's lap.

The most innovative discovery which has made traveling suitable and effective to a layman is the carpooling services. In carpooling services, commuters can reach their respective destination by sharing the vehicle and the fare. This helps in reducing cost of fuels, charge for tolls, and also the pressure of driving the vehicle when more number of people travel together in one vehicle. [2] It is also an environment-friendly technology and helps in protecting our mother nature, reducing traffic jams, and release of other toxic gases into the

atmosphere. Space can also be saved in the Parking areas. Using carpooling system during high pollution days and high fuel prices, is a smart decision. Passengers can travel with other compatible people and plan out their ride using the Uber app after agreeing to its terms and conditions. While making new contacts, people can share costs and also not get tensed about reaching late.

Casual carpooling currently takes place in scenarios where there is a High Occupancy Vehicle lane, riders and passengers seam together to attain access to that lane. [7] says that service is presented that will allow casual carpooling to take place in areas without HOV lanes by providing an organizational system that records real carpooling performance so that incentives other than access to an HOV lane can be made accessible. This tools also addresses some of the current insufficiencies related with casual carpooling such as the "free rider" problem, personal security and the disincentive to exploit the number of travelers sharing a ride. The conclusion was that with remarks on funding improved carpool programs with a hypothetical evaluation of a program providing monetary encouragements for carpooling to the substitute construction of new HOV lanes.

Carpooling exists in many forms such as internal to a specific household group, external and common riders having a match on origin and destination [18][19][20][21] The service provider manages form of carpooling, which works through a software application that helps in identifying riders with similar origins and destinations is also popular. This transportation allows pick up and drop off multiple riders traveling in the same direction. A prominent service provider in this category is Uber pool. Previous studies have identified significant differences in the attitude of solo travelers and carpoolers [22][23].

Many cognitive beliefs [24] significantly differentiate intentions behind carpooling and self-driving. These factors can be related to cost, time-saving, convenience, concern for the environment, privacy, safety, and health. Many of these factors while contributing to the adoption; many are preventing individuals to consider this option. It is understood from prevailing literature that an individual's intention to adopt carpooling emanate from a trade-off between factors which are perceived as favorable and factors which are unfavorable. In the classic theory of reasons action, Ajzen(1977) postulates that intention to perform a particular behavior results from a favorable attitude and a subjective norm. Here, subjective norm refers to the feeling in an individual that the social circle related to him will accept his behavior. Thus in the case of carpooling adoption behavior, both favorable attitude and a peer acceptance are envisaged. The attitude developing factors are positive feeling towards travel cost and sustainability concepts.

Another significant study that helps in explaining carpooling adoption intentions pertains to technology acceptance model (TAM) coined by [25]. As explained in

TAM model an individual's intention to adopt a new technology or an innovative application is directly related to his perceptions about usefulness and ease of use. Thus, it is evident in a theoretical perspective that favorable benefit perceptions, peer acceptance and perception of easiness in adoption is required to inculcate carpooling intentions among individuals. [26] Have identified four categories of factors need to be perceived positive to adopt carpooling. These factors relate to (1) travel-related characteristics, (2) carpooling group characteristics, (3) environment at the workplace and (4) individual characteristics. Parking cost, ride time, and the extra time spent for traveling because of the carpool are considered as most significant travel-related characteristics. The number of carpool participants and the relationships among these participants' forms second set of factors and requirement of the vehicle at workplace and nature of work is the third set of factors that influences are carpooling adoptions. The fourth category of fetors is truly linked individual's social, demographic and personality such as income levels, age, gender, educational qualifications, individualism, social status [27][28][29]etc.

Studies have identified the effectiveness of government incentives, such as parking and fuel surcharges for single occupant vehicles and corresponding subsidies for carpoolers [16], influence on carpooling adoption. An attempt to reduce the cost of travel and travel convenience by way of togetherness perceived wide acceptance in carpooling adoption [15] [17]. Travel cost saving can be in the form of fuel charges, toll charges, parking fee, etc. [17]. Many factors discourage carpooling intentions. These include privacy threat and loss of personal space while on travel [19] extra in-vehicle time needed to pick up other carpool members and time spent for waiting co-travelers add to the inconvenience [20]. Walking time to reach the pickup point (Gensch 1981; [17]. The quality of the carpooling system and its technical excellence facilitate carpooling adoption [22]. In India security threats, especially to women have adversely affected carpooling intentions [23] Carpooling applications mostly work on the strength of information and communications technology (ICT). However, in reality, many instances of malfunctioning of such applications have noticed, and this has adversely resulted in lack trust among users [24].

Even though carpooling concept is being widely recognized in India and multiple service providers such as Uber Pool, Ola, Blabla Cars, Togo, quick rides, etc are developing the concept into a business model with the help of information technology, and social media applications, progress in this direction is yet to flourish. The extant literature that maps perceptions of Indians in this regard is limited and the topic need better exploration to propose policy measures to encourage carpooling practices for ensuring a better sustainable travel behavior that contributes to economic uplift of India.

III. METHODOLOGY

For the study, we conducted a survey among the women Uber users in Kochi by preparing a questionnaire and collected 186 responses through google form. A survey can be carried out through different means, such as interviewing people face-to-face or handing out questionnaires to fill out. Since it's not practical to observe or study from case studies I chose survey method by preparing questionnaire and forwarding to the women Uber users through what Sapp, Facebook, Instagram, LinkedIn and other online methods. From the literature reviews as well as by discussing with some of the women Uber customers in Kochi, it was found that the variable related to safety, usefulness, price advantage and ease of use are important in developing adoption intentions. Of this many of these variables are already been referred in previous studies also.

Dependent Variables: Adoption Intentions

Independent Variables: Perceived Usefulness, Perceived Ease of Use, Perceived Safety and Perceived Price Advantage.

The variables of ease of use and usefulness are typically explained in the theory of Technology Adoption Model.

Figure 1.

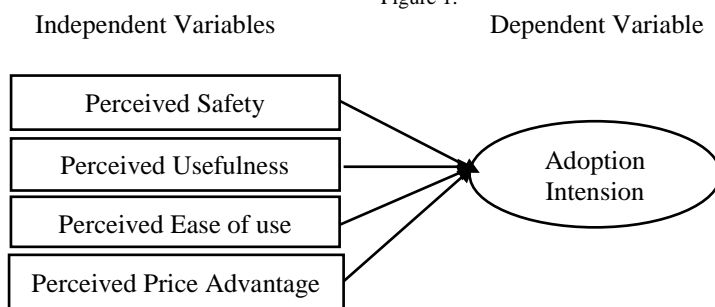


Fig.1. shows the research framework for the study consisting of independent variables and the dependent variable. To find which of the following independent variables are contributing the most to the dependent variable is the main purpose of this study. That is to find the relationship between these variables. The more they are related that variable is contributing more towards the dependent variable. The independent variables are taken as perceived usefulness, perceived safety, perceived price advantage and perceived ease of use. On the other side, the dependent variable is adoption intention.

Perceived safety: It is the state of being "safe", the condition of being endangered from unwanted or other non-natural conclusions. Control of dangerous fears to achieve a suitable level of risk can also be called as safety. User's level of comfort and awareness of risk, without attention of standards or safety history is known as perceived safety. Here, Safety of women traveling in Uber at late nights or even at day times is being considerate. Many of the women are still scared to travel alone in Uber because the drivers are men.

Perceived Usefulness: It is the level at which a person trusts that using a specific system or service would improve his/her lifestyle or standards of living. It can also be explained as the level to which an individual believes that undertaking a specific task will result in a positive gain. Here it means to an individual's perceptions of the expected help of using a particular Uber service.

Perceived ease of use: The extent to which a person have faith in using a specific system or service would be free from a difficult process. It explains the expected easiness of using Uber app especially for all old age groups and Uber service. Easiness of traveling picking up from the doorstep, are all considered under this.

Perceived Price Advantage: For the most of the products or services the consumers are not informed about the original cost of production for the products they buy, instead, they simply have an internal logic for how many such products or services they should buy. Customers expect low fares in Uber as compared to other taxi services. Discounts and off during some days attract more customers.

A. Research Design

Features of people or the phenomenon being considered are described by descriptive research. Questions about when/how/why the characteristics happened are not at all responded. Sometimes it explains the "what" question.

What caused a situation cannot be explained by the descriptive research. Descriptive research can be imaginary to have a low necessity for internal validity.

The description is used for rate of recurrence, averages and other statistical calculations. Frequently the best approach, previous to writing descriptive research, is to conduct a survey. Qualitative research often has the aim of description and scholars may follow-up with examinations of why the observations exist and what the consequences of the findings are. There are three ways a researcher can do a descriptive research project, and they are:

- The Survey, defined as a brief interview or conversation with an individual about or a specific topic.
- Case study referred to an in-depth study of an individual or group of individuals
- Observational, is a method of recording and viewing the participants

B. Data Collection Method

Primary Data: Primary data is the information that we collect exactly for the purpose of our research project. A benefit of primary data is that it is specifically custom-made to our research needs. A disadvantage is that it is very expensive to attain. Primary data were collected from the customers

through online survey along with a Self-Administered questionnaire.

Sample Design: To implement the design, sample frame, sampling unit, sampling size, and sampling procedure was determined as below:

Sample Frame: Women in Kochi were chosen as the sample frame for the study.

Sampling Unit: The study was concentrated on Women Uber users in Kochi.

Sample Size: The study randomly selected 186 women Uber users in Kochi. The sample size was less since the survey was conducted online.

Sampling Procedure: The study was conducted using Convenience sampling method because all possible samples were collected according to convenience. A total of 186 women Uber users were selected from Kochi with convenience. Out of these 186 responses, all the age groups were included. The sample size was less since the survey was conducted online and direct customer interaction was much less. For selecting the variables, around 10 women Uber users were interviewed with convenience sampling method.

C. Methods used for Analysis

Structural Equation Modeling is a multivariate analysis technique that includes particular types of a number of other analysis methods as special cases. Here we used Structural Equation Modeling Method for the Analysis of survey responses.

WarpPLS is a software with a Graphical User Interface for factor-based and variance-based structural equation modeling (SEM) using the partial least squares and factor-based methods. Using this tool analysis has been done to get the important variables of the study.

Analysis of relationship among variables was identified by structural equation modeling approach using WarpPLS 5.0 tool from the responses. The corresponding model adequately captured the data and examination was found to explain the adoption intentions of the women customer towards Uber.

On examination of the relative strength of variables in developing adoption intentions responded, it was found that safety and ease of use strongly contribute. The insignificant relationship noticed with regard to the price advantage and usefulness suggested that more awareness with regard to these variables should be created among women customers to increase adoption intention. It was suggested that in all campaigns for attracting women customers should give more emphasis on price advantage and other benefits along with safety and ease of use.

Figure 2

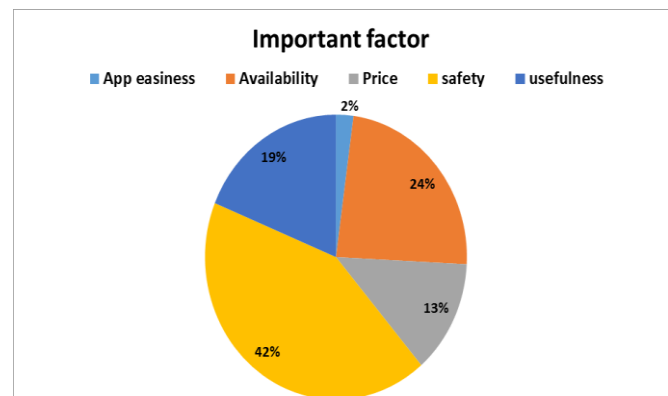
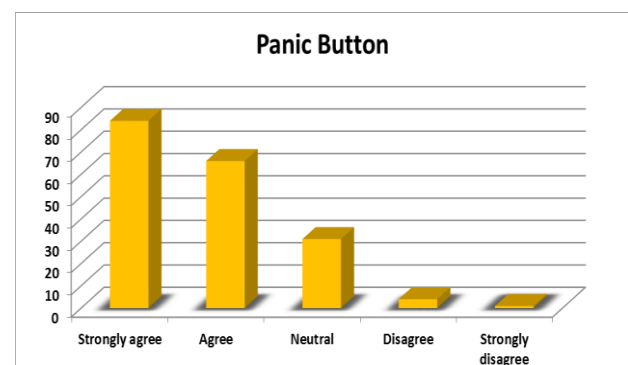


Fig.2. shows that most of the users are adopting Uber services just because of the high degree of safety provided by them. Women users prefer Uber more because they should feel the sense of safety. They should be informed about the application easiness, price advantages and also usefulness about the Uber services. More videos should be released expressing the app easiness, price discounts, offers etc. so that more customers will start using Uber services as their means of transportation. Especially women who are divorced or widow will be having a feeling of insecurity should feel the sense of high safety to adopt this service. The advantages should be made aware of the women who don't know driving or who doesn't own a driving license, etc.

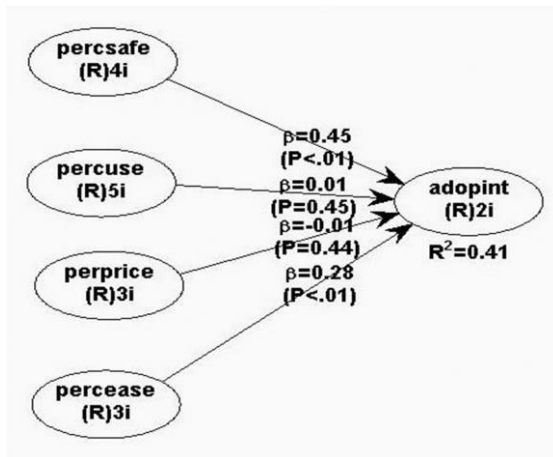
Figure 3.



This fig.3. says that users strongly agreeing with the suggestion of installing a panic button in Uber so that in case of emergency traveler can press the button which will directly alarm at the nearest police station. Very few who feel they are strong enough to deal with all these types of issues alone are strongly disagreeing with this suggestion of panic button in

Uber. Majority of the women users are strongly agreeing with the installation of a panic button may be because they had already faced a bad experience in their travel or scared to leave their girl children alone in an Uber car without such a safety measure.

Figure 4.



Relationship between variables

D. From the fig.4. We can conclude that:

- Model fit is assessed using APS, ARS, ABIF, etc., and all these values were acceptable. And thus the model and data are perfectly fit.
- Scales used to measure the constructs were emerged as reliable and valid as the conditions of discriminant validity, predictive validity, etc.
- The most important determinant of adoption intentions was found as Safety (0.45) followed by ease of use (0.28).
- The variables price and usefulness were not found significantly contributing adoption intentions.
- 41% of the variance in adoption intentions is explained by safety, usefulness, price, and ease of use.

Fig.4. shows the two variables Perceived Price advantage and Perceived Usefulness contributing very low to the adoption intention of women regarding Uber service. These variables were adopted from the literature reviews and made face to face interviews with around 10 women Uber users in Kochi still, among those four variables, two of them are showing insignificant. Maybe a question regarding the perceived usefulness and perceived price advantage interpreted negatively by the responders or adequate questions are lacking in numbers. A number of responses are also low that is only 186 was the sample size from overall Kochi district for the study.

IV. CONCLUSION

Uber is the most popular carpooling services provided by Kochi among Women. We conducted a study on adoption intentions of women in Kochi regarding Uber services. The svariables chosen were absolutely from the literature reviews and also face to face interview with around 10 women in Kochi using Uber services continuously or very frequently. The variables were perceived safety, perceived usefulness, perceived ease of use and perceived price advantage. A survey was conducted using a questionnaire made with questions based on these variables from 186 women Uber users in Kochi. From their responses, many conclusions were made. Perceived safety and perceived ease of use were the most contributing variables towards the variable adoption intentions. The other two variables that are perceived price advantage and perceived usefulness were the least contributing. The variables price advantage and usefulness are found insignificant, maybe because the questions based on these variables are low in number or maybe the responders interpreted in a wrong way while answering or even maybe they don't think these are not important factors.

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