Acceptance of Ride-sharing in India: Empirical Evidence from the UTAUT Model

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Abstract

Since the inception of the term "sharing economy," it remains in a contested realm but contributes to the incarnation of neoliberalism, especially in the developed nations. In the Indian economic scenario, this domain is still in its nascent phase, and this paper targets to investigate the adoption of ride-sharing services in India by applying the unified theory of acceptance and use of technology (UTAUT) model developed by Venkatesh et al. 2003. Adopting a survey-based research design; this quantitative research investigates the behavioral intention of the Indian customers towards ride-sharing services. A total of 287 respondents from northern India participated in the research, and Structural equation modeling (SEM) validates the conceptual framework. The study highlights the significant positive relationship between the "performance expectancy", "effort expectancy", "social influence", "facilitating conditions" and "behavioral intentions", with the "social influence" as the most influential determinant amongst all other variables.

Keywords: Sharing Economy, Ride-Sharing, UTAUT, Technology Adoption, Behavioral Intention.

JEL Classification: M00, M10, R40

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1. Introduction

The phenomenon of sharing is not contemporary; it is deep-rooted in our evolution; however, the concept of 'sharing economy' or 'collaborative consumption' or 'platform economy' is conceived from the development of the digital era (Belk, 2014). The characteristics of sharing economy are no ownership, provisional access, and reallocation of physical goods or less tangible assets for instance time, money, or area (Kathan et al., 2016). An area of present and future interest, the construct of sharing economy is researched thoroughly. In the current commercial business scenario, sharing economy is no longer a niche area (Botsman and Rogers, 2010) instead it has developed into a different body of knowledge addressing social interaction and technologically enabled transaction(Davlembayeva et al., 2019). The sharing economy has extended over various domains and sectors such as ridesharing (Uber, Lyft), crowdfunding (Kickstarter, Indiegogo), House renting & couch surfing (Airbnb), Talent sharing (TaskRabbit, Liveperson), Agriculture (Landshare), Food sharing (Olio, Eat with), Entertainment (Napster), Equipment's and tools (Trringo, Myshed), Apparel (Tulerie), etc. Technological advancements and changes in the consumption patterns (from owning to accessing) have driven the sharing economy into a fast development stage and have become a substantial revenue generator. It is evident from the estimations (PwC, 2015) that the global sharing business would reach $335 billion by 2025.

Ganapati and Reddick (2018), highlighted the following features of the digital-based collaborative or sharing economy, i.e. Internet platforms which facilitate the peer to peer exchange and another one as creating value through sharing instead of owning. The core concept of sharing economy lies in the optimum and efficient utilization of under-used assets by the integration of both parties (peer to peer) at common digitally-enabled platforms. The sharing economy saw a boom after the economic recession of 2008. Due to higher unemployment rates and lower purchasing power consumers started moving towards finding new ways of earning money (Goudin, 2016), which leads to the evolution of Sharing economy. This economic downfall gave birth to popular sharing-based platforms like Uber, Taskrabbit, and Airbnb (Šiuškaitė et al., 2019). After gaining huge success in the developed western nations, it is now evolving concept in India with extreme potential (Panda et al., 2015) and is in the nascent stage. The phenomenon of sharing economy is studied in various contexts with various conceptualizations for example “collaborative consumption" (Botsman and Rogers, 2010; Felson and Spaeth, 1978; Möhlmann, 2015) “access-based economy”(Bardhi and Eckhardt, 2012), “gig economy” (Friedman, 2014), “co-production”(Humphreys and Grayson, 2008) “peer to peer economy” (Cohen and Sundararajan, 2015)“co-creation” (Prahalad and Ramaswamy, 2004) “consumer participation” (Fitzsimmons, 1985). The concept of sharing economy initially evolved in India with the entering of Uber in 2013(Kaushal, 2018) and Airbnb in 2016. Apart from these multinational platforms few indigenous sharing economic platforms such as Ola (transportation), Oyo rooms (accommodation), Trringo (Agricultural tools), etc. also proved their potential in the Indian and Asian markets. It is apparent from the fact that the returns of Ola increased by 44.6% in the financial year 2018 and Oyo's room value at $5 billion (Economic Times, 2019). Despite the vast potential of the sharing economy business models in India, very few studies (Davidson et al., 2018; Panda et al., 2015) were conducted from the

Indian consumer's perspective. India with a population of 1.353 billion(The World Bank, 2019a) of which one in two belongs to the age group of under twenty-five years (Jack, 2018) has a 566 million Internet user base(ICUBE, 2018). The concept of ride-sharing is also not new however during World War II these arrangements were made by the US government in workplaces to save the rubber (Chan and Shaheen, 2012). However, the current ride-sharing revolution is motivated by the development of GPS, smartphones, electronic payments, etc. Over the few last decades, India has seen massive growth in the population rate and since 1980's it has almost doubled and during the same time, gross domestic product (GDP) grew by more than five times and subsequently transport demand has increased by eight times since 1980 (BCG, 2018).

The ride-sharing platforms act as a mediator between the owners and users without owning any vehicles and facilitate the transactions through digital applications with non-professional drivers (Ngo, 2015). Uber cabs, lyft, Ola cabs are well-known ride-sharing service providers of the industry with Uber as a market leader which is currently active in 80 countries (UBER Estimator, 2020). The ride-sharing market size of India is estimated to be $36.9 billion in 2020 and is expected to grow up to $54 billion by 2023 with a compound annual growth rate of 13.5 percent with 207 million numbers of users (Statista, 2019). The ride-sharing industry of India is unique as more than 90% of the market is controlled by two major players i.e. Ola and Uber (Business Standard, 2018). Uber entered the Indian market in 2013 whereas Ola started its operations in the year 2010 with a first-mover advantage. Both Ola and Uber has a presence in Tier 1 cities and metro cities but as far as Tier 2 cities are concerned Uber has covered only 43% of the 68 tier 2 cities whereas Ola has 71% presence in Tier 2 cities and Uber has the least presence in Tier 3 cities as it has covered only 5 cities whereas Ola has penetrated 155 cities in this segment (Frost and Sullivan, 2019).

This unique demographic attribute with a huge Internet user base indicates the growth potential of the Indian market and it may evolve as an upcoming hub for the sharing economy platform businesses. Thus, there is a need to delve deeper into the possibility of shared economy business models, especially in India. Understanding the same, this research aims to examine the adoption of ride-sharing services in India. Researchers have found various factors such as accessibility, need, security, trust, etc. that customers consider before accepting any technological reform (Lai, 2017). To address the research objective, the study targets to find answers to two questions. First, the determinants of acceptance of ride-sharing platforms by the Indian consumers. Second, what strategies adopted by the firms can drive the customer trails and adoption of the ride-sharing economy platforms and eventually adds to the sharing economy literature by high-lightening the drivers of customer acceptance for digital sharing platforms. The study comprised of the literature review and hypothesis development in Section 2 followed by the methodology section and results respectively. The last section of the study comprised of implications, limitations, and suggestions for future research.

2. Literature Review

2.1 "The new culture with old history: Sharing Economy Perspective

Sharing economy is a community based economic and a digital innovative business model (Heinrichs, 2013; Kumar et al., 2018) constitutes a systematic way of sharing, exchanging, and

renting (Lessig, 2008) underutilized resources (Botsman, 2013; Dillahunt and Malone, 2015)with temporary access (Frenken et al., 2015) mediated by the market without transferring of ownership (Bardhi and Eckhardt, 2012) for the sake of economic or non-economic values (Botsman, 2013). The business models and phenomenon of the sharing economy are not restricted to P2P (peer to peer) transactions but also covers B2B (business to business) transactions (Netter et al., 2019) covering a wide range of sectors such as ride-sharing, home-sharing, food, apparel, crowdfunding, skills, tools and equipment's, etc. researchers have been testing new developments and have made several theoretical models from psychological and management perceptive to understand the adoption of new technology. Sharing economy concept is not just a technical reform but a new culture embodied in our evolution. Evolutionary psychology as a discipline has contributed a lot to how the evolution of the human race has affected its thinking, emotional, attitude, social, and cultural processes (Nicholson, 1998). Subsequently, sharing habits of an individual also evolved with time and in today's modern era it saw a substantial change. The sharing habits of an individual can be traced millions of years ago when ancestors of human beings in the Stone Age grouped in the tribes of twenty-five to hundreds of people to hunt wild animals and gather plants (Lombard, 2005; Price, 1975; Woodburn, 1982). Humans are social and collegial by nature and this behavior is not learned from the external environment but by the age of three or more children start to stick to the norms established by the culture and society (Tomasello, 2009). But at the same time social and cooperative nature of an individual is suppressed by its selfish and anti-social side, as nowadays children grow up in hyper-individualistic societies (Botsman and Rogers, 2010). Völker and Flap (2007), proposed a theory stating the inverse relationship between sharing and ownership: that is people indulge themselves into sharing practices when they cannot afford the ownership of that product or service. Scarcity of resources is considered as a basic determinant for the growth of social networking and interactions within the communities and societies (Marsh, 2010). Agyeman et al. (2013), found that the practice and culture of sharing in the wealthy communities decline due to rise in the mass manufacturing of the goods and services, which in turns leads to higher individual consumption and ownership rates and cultural shift towards self-sufficiency also contributed in the decline of the sharing practices. For the last two decades, it has been seen that with the advent of digital technologies, the mindset and trend about sharing and collaborative consumption has gained momentum again and is believed to have a huge potential in developing countries (Retamal and Dominish, 2017). Sharing goods and services with our family members, acquaintances, and trusted ones is an old practice but with the development of digital platforms and web 2.0 scope of sharing has been widened across strangers (Ert and Hebrew, 2015; Mair and Reischauer, 2017). At the same time with the growth of ride-sharing platforms, researchers and practitioners started to examine more carefully the acceptance of ride-sharing services. But despite its practical implications and importance very few empirical studies so far have been conducted to understand the acceptance of these services (Parente et al., 2018) especially in developing countries (Yuana et al., 2019). In the same context, Wang et al. (2020), applied the technology acceptance model (TAM) to investigate the consumer intention towards the acceptance of ride-sharing services and found perceived usefulness and perceived risk positively associated to accept these services whereas the association with the ease of use is found insignificant. Akbari et al. (2020), validates the use of the TAM and TPB (theory of planned behavior) model to predict the consumer intention to

accept these services. Apart from them, some studies also investigated the consumer acceptance behavior towards these services through the lenses of diffusion of innovation theory (Min et al., 2019) and extended technology acceptance models (Giang et al., 2017; Jamšek and Culiberg, 2020; Suhud et al., 2019; Wang et al., 2020). Most of these studies are conducted in well-established markets or developed economies but as far as developing economies are concerned very few studies (Goel and Haldar, 2020; Rahman and Zafar, 2020) are conducted so far. The current study aims to bridge the gap by providing consumer insights and empirical shreds of evidence regarding the acceptance of ride-sharing services among Indian consumers where the ride-sharing market is still in its nascent stage.

2.2 The UTAUT Model:

Some of the most accepted and tested models are: "Technology Acceptance Model", "Model of Personal Computer Utilization", "Task technology fit theory (TTF)", "Theory of Reasoned Action", "Unified Theory of Acceptance and Use of Technology (UTAUT)" (Dwivedi et al., 2019; Straub, 2009). These models have undergone sea change based on the reforms and technological revolution. Each of these models has been used in literature at different spheres, however, the most suitable for the current study is the UTAUT model as this amalgamates the eight most accepted theories: "theory of reasoned action"(Ajzen and Fishbein, 1977), "the motivational model", "Technology acceptance model(TAM)" (Davis, 1985), model combination of technology acceptance model and the theory of planned behavior (Taylor and Todd, 1995), "the theory of planned behavior (TPB)" (Ajzen, 1991), "innovation diffusion theory" (Rogers, 2003), "social cognitive and model of PC utilization"(Thompson et al., 1991). UTAUT Model was initially given by (Venkatesh et al., 2003) and includes four predictors i.e. performance-expectancy(PE), effort expectancy(EE), social influence(SI), and facilitating conditions(FC) and behavioral-intention(BI) as an outcome of these key constructs as shown in Figure 1. The rationale behind using this model lies in the fact that it summarized the eight most important technology acceptance theories and models. The UTAUT model is widely accepted and is more efficient than any previous technology acceptance model as it has 70 percent explanatory potential (Ye et al., 2020).

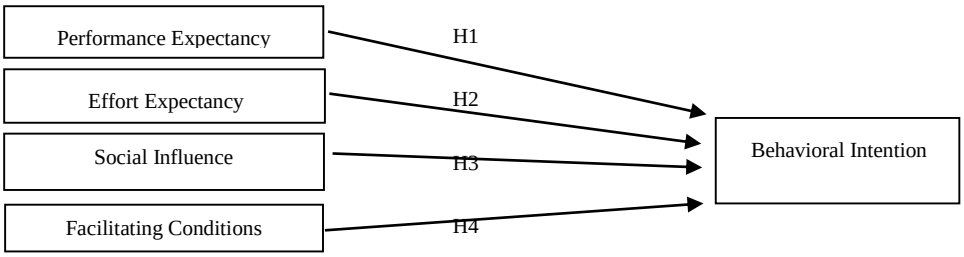

Figure 1. Conceptual model adopted from Venkatesh et al. 2003

2.2.1 Performance-Expectancy(PE)

Venkatesh et al., 2003, defines Performance-Expectancy, "as the level of degree to which an individual believes that a particular system or technology will enhance his/her performance". This construct is similar to "the relative advantage of Innovation diffusion theory(IDT)" and

"perceive the usefulness of Technology acceptance model(TAM)" (Barrane et al., 2018; Lee and Chang, 2011)The belief of the customers that the new technology is more useful and advantageous in their daily life has a positive impact regarding the adoption of technology (Roy et al., 2018; Saeidi et al., 2019). Consumers or the users of the technology adapt themselves according to the new innovative system when it is supposed to increase their efficiency and effectiveness of doing work or job (Lin and Chen, 2012). Min et al. (2019), explained the performance expectancy in case of Uber, where customer compares it with traditional taxi services for the time taken to order the cab. Customers evaluate the performance of any system by comparing its features with the previous technology. Performance expectancy is one of the main drivers affecting the behavioral intention to adopt the latest technology. This has been verified across many domains like online travel purchasing (Assaker et al., 2020), mobile innovation (Moya et al., 2019), digital wallets (Malik et al., 2019), telebanking (Aboobucker and Bao, 2018; Alalwan et al., 2016), education (Salloum and Shaalan, 2019), health (Kijsanayotin et al., 2009; Mbelwa et al., 2019), online video games (Ramírez-Correa et al., 2019), etc. So, we can hypothesize,

H1- PE is significantly associated with the BI to adopt ride-sharing services.

2.2.2 Effort-Expectancy(EE)

Venkatesh et al. 2003 define effort expectancy, "a degree of ease associated with the use of new technology or system". It measures the level of comfort while adopting the new system. This variable is closely associated with the construct "ease of use" in the TAM model(Davis, 1985). This construct is associated with the evaluation of efforts required for the usage of the latest technology. Previous studies have proved the relationship of effort expectancy with behavioral intention and found it as a strong predictor of behavioral intention for different contexts: mobile technology (Oh et al., 2009; Park et al., 2007; Shukla and Sharma, 2018), health care (Hossain et al., 2019; Keikhosrokiani et al., 2019), m-payments (Khatimah et al., 2019; Teo et al., 2015) higher education and e-learning (Revythi and Tselios, 2019; Soliman et al., 2019). It is proposed that if users find online ride-sharing platforms simple to use, they are more likely to use ride-sharing services so, relating effort expectancy with the ride-sharing we can hypothesize,

H2- EE is significantly associated with the BI to adopt ride-sharing services.

2.2.3 Social-influence(SI)

Ajzen, 1991, defines social-Influence(SI) as the perception of an individual that his/her behavior is accepted by his/her peer groups. (Venkatesh et al., 2003) defines social influence (SI) as "the degree to which an individual perceives that important others believe he or she should use the new system". This construct includes social factors, subjective norms, and the image (Kulviwat et al., 2009; Oh et al., 2009). Previous studies confirm the relationship and influence of social influence on the behavioral intention concerning the adoption of new technology in various contexts: internet banking (Rahi and Abd. Ghani, 2019; Raza et al., 2019), social media (Curtis et al., 2010; Rahman and Hidayat, 2019), e-learning (Khechine and Augier,

2019; Mahande and Malago, 2019), health care (Ammenwerth, 2019; Nurhayati et al., 2019), etc. Thus, we hypothesize that:

H3- SI is significantly associated with the BI to adopt ride-sharing services.

2.2.4 Facilitating-conditions(FC)

Facilitating conditions are defined, "as the degree to which a user believes that current resources and infrastructure are present to support the use of the technology and system" (Venkatesh et al., 2003). The current study signifies facilitating conditions as the necessary infrastructure, resources (Internet connectivity, device requirements), and physical conditions required to participate in the digital ride-sharing services. Various studies have confirmed the importance of facilitating conditions(FC) on the behavioral intention(BI) of the users across various contexts: electronic banking (Farah et al., 2018), health care (Apolinário-Hagen et al., 2018; Quaosar et al., 2018), smart wearable gadgets (Li et al., 2019; Talukder et al., 2019), m-learning(Chao, 2019; Kuciapski, 2016; Mojarro Aliaño et al., 2019), etc. Thus, we hypothesize that:

H4- FC is significantly associated with the BI to adopt ride-sharing services.

3. Research Methodology

3.1 Methodology

3.1.1 Respondents

Ride-sharing is an upcoming yet less studied, specifically when it comes to India. The current study is unique in itself as it unveils the behavioral intention of Indian customers towards ride-sharing. By the application UTAUT model (Venkatesh et al., 2003), this study drafts its survey tool to collect responses from four states of India. The data collection method is unique and works on a chain-based referral model. Primary data has been collected from December 2019 to February 2020 through the chain-referral sampling technique. As compared to other sampling approaches, the chain referral process helps the researcher to target communities that are difficult to reach as the process is cost-efficient and straightforward (Johnson, 2014).In the current study, data has been collected from the northern states of India which would have been difficult to reach through any other sampling technique efficiently. So after discussions and rigorous brainstorming sessions with the authors following procedure has been followed to collect the sample data; we first approached the academic department of a public university in Jammu, India, and collected email Ids of students of Management, Engineering, Literature, and Bio-Technology who were currently enrolled in a university program. The university students represent the demographic diversity as they belong from different states and cultures pursuing different courses under centralized academic administration, hence enriches the diversity in the sample. Around 900 emails were sent sharing the link to the google form. The opening page of the google form shared with the respondents described the objective of the study and further asked for their willingness to participate in the study. The positive response of the respondents progressed them to the main survey page where they were asked "Have you ever used a ride-sharing platform like Uber or Ola? those who answered in favor of it were considered eligible to participate in the survey. Around 160

complete responses were collected from these students. The end page of the survey form requested them to share the link of the google form to five of their peer group members. With continuous reminders, around additional 127 positive responses were captured resulting in a total of 287 responses (151 males and 136 females), and the mean age of the respondents is found to be 24.5 years, who represent the following states of India: Delhi, Uttar-Pradesh, Bihar, and Punjab. These states have an active ride-sharing culture and thus were considered fit for inclusion. To examine the ride-sharing service consumption patterns, respondents were asked to give details about their latest ride-sharing service encounters. 185 respondents out of a total 287 representing 64.46 percent of the total sample size have availed these services within one week of filling the google forms. 52 respondents availed their last ride more than a week but less than a month representing 18.11 percent of the total respondents whereas 50 respondents representing 17.43 percent of the total sample size has their last ride a month ago as depicted in Table 1.

Table 1. Demographic profile of respondents

Item	Frequency	Percentage
Gender		
Male	151	52.6%
Female	136	47.4%
Age Group		
20 or under	42	14.7%
21 to 30	202	70.3%
31 or above	43	15%
Education Qualification		
Higher Secondary or below	63	21.96%
Bachelor's Degree	147	51.21%
Master's degree or above	77	26.83%
Service Provider Preference		
Ola	92	32.05%
Uber	89	31.01%
Both	95	33.10%
other	11	3.84%
Last ride-sharing service encounter		
within one week	185	64.46%
more than a week but less than a month	52	18.11%
a month ago or more	50	17.43%

3.1.2 Procedure

The current study is empirical and tests the hypothesis conceptualized in Figure 1. The research uses Structural Equation Modelling (SEM) for the empirical testing of the proposed conceptual model (Faraoni et al., 2019; Laudano et al., 2018). Since the constructs are adapted

from the literature, the items modified and used basis the current study requirements. Since these scales are adopted for the new environment so the reliability of the scale is verified through Cronbach's alpha value before proceeding for further analysis. For exploratory factor analysis, a sample size of 150 is sufficient, to obtain precise output and subsequently, for confirmatory factor analysis, it should be 200 (Hinkin, 1995). Hence the sample size of 287 for this study is sufficient to conduct the structural equation modeling (SEM).

3.2 Measures

Prior tested scales from the literature have been used in the study. The items and constructs of the UTAUT model were measured by adopting the scales developed by Venkatesh et al. (2003), with some modifications suitable for the new environment. All the items in the study were evaluated on the seven-point Likert scale with 1 as "strongly disagree" and 7 as "strongly agree". Gender was encrypted using 0 and 1 dummy variable, where 0 is coded as male and 1 as female, and age was measured in years.

3.2.1 Performance expectancy

Performance expectancy measures the expectations of an individual to attain the enhancement in performance by adopting a new system. The scale developed by Venkatesh et al. (2003), to measure the performance expectancy originally amalgamated five variables from different models: “outcome expectations(SCT)”, “relative advantage(IDT)”, “Job-fit(MPCU)”, “extrinsic motivation(MM)” and “perceived usefulness(TAM)”. The responses were evaluated on a seven-point Likert scale with "1= strongly disagree and 7=strongly agree". The sample item to measure the construct is "I find online ride-sharing services useful in my daily life".

3.2.2 Effort Expectancy

Effort expectancy measures the comfort level of an individual to use a new system. Three variables from different models were integrated to measure this construct by Venkatesh et al. (2003), "perceived ease of use (TAM)", "complexity (MPCU)" and "ease of use (IDT)". The responses were evaluated on a seven-point Likert scale with "1= strongly disagree and 7=strongly agree". The sample item is "I find online ride-sharing platform services easy to use".

3.2.3 Social Influence

Social influence in the UTAUT model measures the importance of others in the individual's decision making to adopt the new system and this scale was developed by Venkatesh et al. (2003), by integrating three constructs of the previous models: "subjective norm" (TRA; TAM; TPB), "image" (IDT). The responses were evaluated on a seven-point Likert scale with "1= strongly disagree and 7=strongly agree". The sample item is "People who are important to me think that I should use online ride-sharing services."

3.2.4 Facilitating Conditions

The scale of facilitating conditions which measures the importance of digital and technological infrastructure in the process of adoption of a new system is originally developed by Venkatesh et al. (2003), by integrating three variables from the available tested models in the literature: "Perceived behavioral control (TPB; combined TAM-TPB)", "facilitating

conditions (MPCU)", "Compatibility (IDT)". The responses were evaluated on a seven-point Likert scale with "1= strongly disagree and 7=strongly agree". The sample item is "Online Ride-sharing services are compatible with other technologies I use."

3.2.5 Behavioral Intention

Behavioral intention measures the attitude of an individual towards the adoption of any new system and this scale amalgamates four constructs from previous well tested models: "Attitude towards behavior (TRA; TPB)", "intrinsic motivation (MM)", "affects toward use (MPCU)" and "affect (SCT)". The responses were measured on a seven-point Likert scale with "1= strongly disagree and 7=strongly agree". The sample item is "I intend to continue using online ride-sharing platforms in the future"

4. Data Analysis

4.1 Measurement model

Structural equation modeling (SEM) is a two-step process where the measurement model is analyzed before proceeding to study the structural model (Anderson and Gerbing, 1982). All the items in the study are verified for reliability analysis followed by the discriminant and convergent validity analysis. Three different methods are adopted in this research to verify the reliability of the items (Table-2). The internal consistency of the items was verified through Cronbach's alpha(α) values and the value above 0.6 is considered as satisfactory results (Nunnally, 1978). Composite Reliability and Average Variance Extracted (AVE) are other two methods of verifying the reliability of the scale with the threshold value of 0.6 and 0.5 separately (Fornell and Larcker, 1981). Discriminant validity is verified based on the methodology suggested by Fonrnell and Larcher, (1981). According to this method, the square root of average variance extracted (AVE) of each construct should be larger than the value of correlation between the 2 constructs. The square root of AVE in this study is found to be much higher than the correlation between the constructs. The correlation between various constructs is given in Table-3. The measurement model was estimated by employing the maximum likelihood estimation method.

Table2. Reliability Analysis

Construct	Cronbach's alpha	"Composite Reliability"	"AVE"
"Performance Expectancy (PE)"			
"PE1"			
"PE2"	0.801	0.612044	0.583258
"PE3"			
"Effort Expectancy (EE)"			
"EE1"			
"EE2"	0.822	0.69587	0.544772
"EE3"			
"EE4"			
"Social Influence (SI)"			
"SI1"			
"SI2"	0.843	0.669856	0.623245
"SI3"			
"Facilitating conditions (FC)"			
"FC1"			
"FC2"	0.801	0.646530	0.526499
"FC3"			
"FC4"			
"Behavioral Intention(BI)"			
"BI1"			
"BI2"	0.839	0.532456	0.520503
"BI3"			

Note: - PE1, PE2, PE3 are the items to measure the construct of PE; EE1, EE2, EE3, EE4 are the items to measure the construct of EE; SS1, SS2, SS3 are the items to measure the construct SI; FC1, FC2, FC3, FC4 are the items to measure the construct of FC; BI1, BI2, BI3 to measure the construct BI.

Table 3. Correlation between constructs

Construct			Correlation
PE.	<-->	EE.	0.405
PE.	<-->	SI.	0.418
PE.	<-->	FC.	0.273
EE.	<-->	SI.	0.577
EE.	<-->	FC.	0.618
SI.	<-->	FC.	0.342

<--> denotes the correlation between the two variables

4.2 Structural Model

A model requires determining every relationship and variable association in the suggested model. To test the hypothesis conceptualized, Structural Equation Modelling was conducted. The overall causal model was evaluated using the fit indices. CFA was conducted and All the fit indices indicates good model fit with the values ($\chi 2$=315.808, df =110, p = .000, CFI =.900,

RMSEA = 0.087, TLI=0.87, IFI=0.901, GFI=.866, Normed $\chi 2$=2.871) as shown in Table 4. The detailed results of the CFA are shown in Table 5. The results of the hypothesis testing indicate that the behavioral intention to adopt ride-sharing services is positively influenced by the performance expectancy (SE=0.046; Critical ratio=2.071) with a p-value of 0.038, which supports H1 of the study and effort expectancy has also a significant positive relationship with the behavioral intention with SE= 0.093; Critical ratio=2.567 at p-value= 0.01, which supports the H2. Furthermore, social influence was also found to have a significant positive relationship with the behavioral intention to adopt the ride-sharing services (SE=0.072; critical ratio=2.567 at p=0.0000) which supports the H3 of the study, and BI is also positively associated with the FC (SE=0.064; critical ratio= 3.367) with p-value as 0.000, which supports the H4 of the study. The detailed results are given in Table 6. The results verified the acceptance of the UTAUT model in the scenario of the ride-sharing economy and subsequently, the constructs of the UTAUT model are positively associated with the BI of the Indian customers to adopt the ride-sharing services.

Table 4. Model Fit Indices

Model Indices	**Obtain Value**	**Critical value**	**Model fit**
"CMIN/df"	2.871	<5	Good
"Comparative fit Index (CFI)"	0.9	>0.9	Good
"Root mean square error of approximation(RMSEA)"	0.087	<0.08	Moderate
"Tucker-Lewis Index (TLI)"	0.87	0 to 1	Good
"Incremental fit index (IFI)"	0.901	>0.9	Good
"Goodness of fit (GFI)"	0.86	0 to 1	Good

Table 5. CFA results for structure model

			Estimate	SE	CR	P
"PE1	<---	PE".	1			
"PE2	<---	PE".	1.072	0.098	10.986	***
"PE3	<---	PE".	0.798	0.082	9.765	***
"EE1	<---	EE".	1			
"EE2	<---	EE".	1.084	0.101	10.749	***
"EE3	<---	EE".	1.094	0.097	11.246	***
"SI1	<---	SI".	1			
"SI2	<---	SI".	1.035	0.078	13.243	***
"SI3	<---	SI".	0.954	0.08	11.955	***
"FC1	<---	FC".	1			
"FC2	<---	FC".	1.218	0.107	11.371	***
"BI1	<---	BI".	1			
"BI2	<---	BI".	1.18	0.103	11.407	***
"BI3	<---	BI".	1.074	0.099	10.887	***
"FC3	<---	FC".	1.027	0.097	10.608	***
"EE4	<---	EE".	1.239	0.111	11.201	***
"FC4	<---	FC".	0.699	0.089	7.853	***

Note: SE denotes Standard error; CR denotes critical ratio; p is the probability value

Table 6. Standardized regression weights

Hypothesis				Estimate	SE	Critical Ratio	Result
H1	PE.	<---	BI.	0.096	0.046	2.071*	Supported
H2	EE.	<---	BI.	0.238	0.093	2.567*	Supported
H3	SI.	<---	BI.	0.632	0.072	8.774**	Supported
H4	FC.	<---	BI.	0.216	0.064	3.367**	Supported

*Note: *1 Significant at 0.05; **2 Significant at 0.01*

5. Discussion

The objective and aim of this research are to extend the UTAUT (United theory of acceptance and use of technology) model to explore the factors affecting the behavioral intention of the customers to participate in the ride-sharing services in the setting of the Indian sharing economy. A total of 287 respondents from the northern states of India participated in the study who are active users of ride-sharing services. The respondents comprised 52.6 percent of males and 47.4 percent of females with a mean age of 24.5 years. The demographic profile and division of the respondents reflect the real characteristics of the total population. This is evident from the fact that the total Indian population comprised of 48.03 percent of females against 51.97 percent of males (The World Bank, 2019b) with the mean age of 26.8 (Statista, 2021) representing the half of the population is below that. Even in the developed economies like the United States, the mean age of the ride-sharing users is 33 and young users between the age group of 18 to 29 years are seven times more likely to use these services as compared with those of age group 65 or above(Smith, 2016). Older adults are less likely to use these services as a regular mode of transportation due to a lack of awareness and facilitating conditions(Smith, 2016). Another study conducted by Vivoda et al. (2018), to investigate the behavior of the older adults found that only 1.7% of the respondents used ride-hailing apps to book a ride. Also within the older adult subcategory, it is well known that older age is associated with less use of technology (Andreson and Perrin, 2017) and are dependent on younger family members to arrange a ride for them. This gap is required to be addressed by the service providers by providing alternatives to the older people such as booking a cab through call or creating digital awareness among this group.

The findings of the study empirically supported the potential and authenticity of the UTAUT model to prognosticate the intention of the customers to adopt the ride-sharing services. It is found that constructs of the UTAUT model are well accepted in studying the behavioral intention towards usage of ride-sharing services and are significantly affected by performance expectancy(PE), effort expectancy(EE), social influence(SI), and facilitating conditions(FC). These results are in line with the studies conducted by (Huang and Chen, 2017; Lan and Chu, 2016) in the field of bike-sharing business models and car-sharing services in the Shanghai city of China respectively. Min et al. (2019), also found a significant association between the social influence and perceived usefulness of the ride-sharing services towards the behavioral attitude towards the usage of these services. Another study conducted by Wang et al. (2020), also found a significant association of perceived usefulness or performance expectancy with the behavioral intention to use ride-sharing services but contrary to our results effect of perceived ease of use is found insignificant. This shows the differences in the acceptance behavior of the consumers of the developing economies when compared with the developed nations such as China. In the developed economies, consumers have prior and many experiences of using the latest technologies which is also reflected in their acceptance behavior as they do not give much weightage to the perceived ease of use during the process of acceptance of any new system. In this study, among the various variables of the model, social influence came out to be the strongest determinant followed by the facilitating condition, effort expectancy, and performance expectancy. The majority of the studies concerned with the

application of the UTAUT model (Wang et al.2019; No and Kim, 2014); Ramírez-Correa et al., 2019; Salloum and Shaalan, 2019; Park et al., 2007; Teo et al., 2015; Revythi and Tselios, 2019; Nurhayati et al., 2019; Talukder et al., 2019; Apolinário-Hagen et al., 2018) found PE or EE as the strongest determinant for the adoption of any new system but in this study role of social influence acts as a major determinant for the adoption of ride-sharing services. This point of difference indicates the importance of the Indian society, peer members, and family members on the decision making of an individual and inference can be drawn from the study that in the context of the ride-sharing economy, Indian customers are much more influenced by the societal forces as compared to the functionality of the product, ease of use or infrastructure required. Performance expectancy indicates the importance of utility for the customers and based on the empirical results it can be drawn that it plays an important and positive role for the users to adopt the ride-sharing services. In simple words, the more the benefits and usefulness of using services, the more is the probability of an individual to participate in the collaborative consumption. The drivers of adopting ride-sharing services depend upon the convenience and value provided by the service providers. The significant relationship of performance expectancy concerning the adoption of ride-sharing services is consistent with the previous studies conducted by Shukla and Sharma, (2018), on mobile technology, Assaker et al. (2020), on online travel purchasing, Malik et al. (2019), on mobile wallets and Wang et al. (2020), adopted the TAM model and found a positive significant relationship between perceived usefulness and behavioral intention(BI) to adopt the ride-sharing services. Effort expectancy also contributes to user acceptance significantly in the context of ridesharing services. Hawlitschek et al. (2018), also found effort expectancy as a key driver for the behavioral intention of the customers to get involved in peer-to-peer sharing services through e-commercial platforms. Some previous studies concerned with the effort expectancy showed a significantly positive relationship with the behavioral intention(BI) to adopt a new system (Hossain et al., 2019; Revythi and Tselios, 2019; Park et al., 2007) whereas at the same time few studies are vice-versa (Cheng and Huang, 2013; Wu and Wang 2005).

Ride-sharing businesses in developing countries such as India are still in their evolving phase and moreover, Asian customers are less prepared to take the risk to use new products or services (Schuttr and Ciarlante, 1998) which leads to less number of early adopters in these regions. In the same context, Indian consumers maybe not fully aware of the process to use the ride-sharing services such as booking the ride, payment options, car-pooling, etc. and that is why they prefer to use those new services where effort expectancy is high. Social influence proved to be the strongest predictor amongst all other constructs of the model to determine the behavioral intention(BI) to adopt ride-sharing services in India. In the previous studies, social influence has been proved to have a positive influence on the sharing consumption patterns of the customers (Wang et al., 2019) which is also statistically proved in the case of ride-sharing in this study. Customers can also be socially influenced by observing the actions and behavior of others and imitating the same (Sridhar and Srinivasan, 2012). The easy availability of technology has promoted the growth of sharing economy (Daunorienė et al., 2015). The success or failure of any sharing-based business models depend upon the infrastructure or the facilitating conditions e.g. Internet-enabled mobile phone is the basic requirement of the rider to get engaged with the ride-sharing services, so the belief of an individual that present

infrastructure is available to get themselves involved in the participation or booking of the ride-sharing services will influence his or her behavioral intention to participate, which is also statistically proved in this study.

6. Implications

The study provides theoretical and practical implications for the investigation of ride-sharing in the Indian context. This study contributes to the sharing economy literature by adopting the UTAUT model in the context of the ride-sharing economy of India and it is statistically concluded that all the constructs of the model positively influence the adoption of ride-sharing services. The findings of the study also delve deeper into the minds of customers to contribute to the body of consumer behavior literature while focusing on the behavioral intention of customers towards ride-sharing businesses. Very few studies primarily focusing on Indian sharing economy services have been conducted in the past and received insufficient scholarly attention, so this study bridges the mentioned gap in the literature. Furthermore, this study also extended the application of the UTAUT model given by Venkatesh et al. (2003), by testing and analyzing the constructs of the model in the domain of the ride-sharing economy. The theoretical contributions and findings of the current study are beneficial for the various stakeholders of this field including academicians, researchers, practitioners, and service providers. The unique finding of this paper i.e. importance of the social influence on the adoption of ride-sharing services can be further extended to other new systems in the context of the Indian population.

Apart from theoretical contributions and implications, the present study in the current business scenario validates the performance expectancy(PE), effort expectancy(EE), social influence(SI), and facilitating conditions(FC) as significant predictors to analyze the behavioral intention of the customers towards the purchase of ride-sharing services. Ride-sharing service providers should consider these as important cues for customer retention and attraction, especially for untapped markets. Ride-sharing platforms should offer loyalty-based rewards and referring-based points to increase the perceived value and benefits of using their services. Ride-sharing platforms should focus on developing the content and user-friendly application interface so that new users feel comfortable while using ride-sharing services and the content and information must be customized according to the regions and locations. These platforms should also provide the option for various modes of transactions for paying the fair such as through mobile wallets, online banking, cash, etc. so that customers feel comfortable while choosing the paying option. Considering the importance of societal forces in the process of adopting ride-sharing services, it is recommended for the service providers to adopt the relationship marketing approach to get connected with the customers. Service providers should maintain proximity with their customers by catering to their needs by collecting regular feedbacks so that good rapport is maintained with the existing customers which ultimately results in positive word of mouth.

7. Limitation and Direction for future research

The study faces some limitations, considering the same following suggestions are propounded for future research. First, the sample considered for the study was drawn out of the

Indian customers, so the results cannot be generalized for the rest of the world. Customers from different regions of the world may have a difference in perception and attitude towards the usage of ride-sharing services. Further studies can explore the differences in the behavioral intention of the users in the different parts of the world and subsequently test the extended or same UTAUT model in the context of the ride-sharing economy. Moreover, possible variations in the behavioral intention to adopt the new technology or business model across the different races and cultures can be studied in future research. Various moderators such as age groups, gender, prior experiences of the participants, etc. of the UTAUT model were not considered, and further studies can examine the moderating effect of these variables towards behavioral intention to adopt the ride-sharing services. Future research can also focus on developing the extended UTAUT model from a ride-sharing perspective by adding new variables such as trust, privacy concerns, self-efficacy, perceived security, perceived credibility, etc.

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