Promoting Research

App-based Ride-Sharing Adoption Behaviour of Commuters: Evaluating through TAM Approach

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Abstract: The purpose of the present study is to identify the antecedents of the behavioural intention in using app-based services used for ride-sharing in an Indian context. The basic TAM model in extended form has been examined for studying the impact of the various factors on attitude formation and behavioural intention to use app-based ride-sharing. The constructs used in the structural model were tested by using software SPSS & AMOS. A total sample of 351 respondents was collected from the Indian capital region who have behavioural intentions in using app-based ride-sharing. The study established that societal influence and ecological concern for the environment are the prime factors for people in making positive attitudes toward using ride-sharing apps. App based ride-sharing providers can provide social media interface to increase the usage of such apps among the masses. This study proposes three additional factors; societal influence, ecological concern, and economical benefits along with existing perceived ease of use and perceived usefulness as an antecedent of app-based ride-sharing service adoption behaviour.

1. Introduction

Sharing is emerging as a basic principle of sustainability in a society with limited resources. More recently app-based ride-sharing is developing as a new concept in the sustainable economy, experiencing a significant boom. The fundamental idea of ride-sharing is traveling more than two persons together in the same car (Ferrero *et al.*, 2018). The success of app-based ride-sharing service is determined by the participation patterns of prospective users and resource suppliers (John, 2013). However, this raises the issue of why and under what conditions a person would accept the concept of sharing services. The literature on the sharing economy explains the forces and motivations behind commuters' adoption and participation in car sharing. Lamberton and Randall (2012) characterized these forces as

a complex collection of social, environmental, and economical incentives that have not yet been completely understood. Lee *et al.* (2021) investigated ride-sharing and technology's impact on the behavioural intention of Uber users, in specific and suggested practical implications for policymakers and researchers.

Along with food and energy, mobility is emerging as one of the priority areas for sustainable consumption and production patterns. The usage of ride-sharing apps for commuting purposes started in 2011 in San Francisco, and is expanding gradually today with approximately 600 different real-time ride-sharing providers across the globe (Cohen and Kietzmann, 2014). Ridesharing not only widens the mobility options but also shows the possibility of fewer vehicles on the road, reducing carbon emissions, light on the pocket of self-owned car travellers, and increasing the mobility of the carless (Zhou, 2012). Car producers such as BMW, Daimler, and the FCA group have also started showing interest in ride-sharing operations, recognizing it as a new business opportunity (Vibhanshu, 2018; Shaheen *et al.*, 2006). Ridesharing helps increase individual mobility and inculcates sustainable mobility behaviour among the masses but still, it is challenging to expand successfully consumer acceptance of app-based ride-sharing service (Burkhardt and Millard-Ball, 1986).

In India, app-based ride-sharing is showing an upward trend due to various reasons. The growing number of smart phone users and decentralization of the Indian cities are the main reasons for this scenario (Shirgaokar, 2014). In Indian cities, one-third of the working people commute on foot, 26 percent use bicycles or public transport and the rest commute through either two-wheelers or four-wheelers. However, due to changing dynamics in emerging countries, private vehicles (two-wheelers and cars) have emerged as the primary means of commuting for the aspirational working class (Baviskar and Ray, 2011; Chhabra and Mehrotra, 2021). Therefore, insights are required to understand what other motives are behind the behavioural intention of using app-based ride-sharing for commuting to the workplace. Also, a comprehensive review of 49 articles by Chalermpong (2022) related to the application of app-sharing rides in South East Asia highlights how the behaviour of commuters influences the transport operators and impacts the environment.

2. Review of Literature

2.1. Theoretical Framework

Numerous research investigations related to technology adoption were done using concepts from the field of social psychology. Chang *et al.* (2018) found fifteen psychological theories related to the car use behaviour used in transportation research. Out of the 32 studies reviewed by them, approximately fifty percent adopted TAM i.e., the technology acceptance model as their basic theory for understanding car-sharing adoption behaviour. The present study selected TAM (Davis, 1989), as a theoretical foundation because of its parsimonious character (Morosan, 2014; Chang *et al.*, 2018) and it is capable of using for various technological and business contexts such as Internet banking services (Patel and Patel, 2018), hotel tablet apps (Kim *et al.*, 2017), fantasy sports league websites (Kwak and McDaniel, 2011) and so forth. Further, some of the studies based on TAM also included additional constructs to capture the intention to use the respective technology. TAM has retained theoretical support over the

years, therefore it was deemed the most appropriate theoretical base for the present study. Also, the additional constructs which are contextually relevant to the study have been discussed further. In a recent study, Elnadi and Gheith (2022) investigated the attitude of Egyptian consumers toward ride-hailing apps using TAM and theory of innovation diffusion to explore the needs of consumers based on their expectations.

2.2. Ride-Sharing Apps

In simple words, an app can be understood as a type of software that allows users to perform a specific task. An app can be for mobile as well as non-mobile devices i.e. desktop apps. The App market is the major and growing part of the smart phone market. The app enables the online search of content related to that particular app without involving any browser (Tak and Panwar, 2017). Every taxi service provider uses various apps like Uber, Ola, Meru, etc., and also there are car-pooling apps such as in Driver, sRide, Bla Bla Car, etc. These apps can be easily downloaded and are available in various app stores. Yu *et al.* (2018) have also found that the increased use of smart phones has enabled companies to connect with their customers on a real-time basis and provide alternate platforms to deliver their services.

2.3. Research Gap in the Adoption of Ride-Sharing App Services in India

Ridesharing has the prospective to considerably affect the personal transportation sector. Earlier studies on ride-sharing have been categorized broadly into two groups: research about the technical and modelling characteristics (Zhou *et al.*, 2017; Jorge and Correia, 2013) and survey-based research with business perspectives on ride-sharing (Verhagen *et al.,* 2012). Although the economic benefits and environmental benefits have been studied by many researchers (Firnkorn and Muller, 2011; Shaheen *et al.*, 2010) there is rarely any study that has sought within the perspective of the TAM's original framework. Second, most of the transportation studies have been conducted in developed regions of the world (North American and European regions) which offer a partial understanding of the towns in developing economies like India. (Chang *et al.*, 2018; Kim *et al.*, 2017; Shirgaokar, 2014). It has been observed that shared-use vehicle systems have also started evolving in Asia, primarily in Japan and Singapore (Chang *et al.*, 2018). Also, liberalization of the economy, better education opportunities and growth in income of the Indian urban working class have made it possible for them to choose those better travel options which were not available earlier (Reddy and Balachandra, 2012; Goel and Halder, 2020 a). Several campaigns have been run by the government to discourage solo driving, but the results are not very encouraging.

Given this, this study is an initial attempt to determine the factors influencing customers' intentions and behaviour to adopt app-based services for ride-sharing to the workplace in the Indian context. It aims to measure intention instead of actual behaviour because app-based ride-sharing is majorly confined to Indian megacities. As a result, the choice of behavioural intention tends to be more relevant in the Indian setting (Reddy and Balachandra, 2012).

3. Research Model and Hypotheses

Davis (1989) has proposed the TAM model of technology acceptance grounded on reasoned action theory initiated by Ajzen and Fishbein (1980). TAM explains the causal relationship between internal

beliefs related to Perceived ease of use, attitude, intentions, and technology/computer actual usage. In the last 30 years, it has developed as a steady model for understanding consumer acceptance of technology (Yousafzai *et al.*, 2007). Figure 1 illustrates the proposed research model used in this study. Five factors that form an attitude towards use that further influence behavioural intention to use app-based services for ride-sharing among the working class of Delhi-NCR has been tested.

3.1. Perceived Usefulness (PU)

Perceived usefulness (PU) is the extent to which a commuter considers how much he can be assisted by using a ride-sharing service to reach his workplace. Ridesharing is primarily useful in areas that are not pedestrian or transit-friendly (Zhou and Kockelman, 2011). Gokenheimer (1999) defined numerous problems such as congestion, radial transit network, non-avoidance of cross-town congestion, inadequate service, and less/ no periphery service which a commuter faces while commuting through public transportation. Gargiulo *et al.* (2015), posited that ride-sharing helps the commuter to select the date, time, place to reach, and car type in the app features. For finding the best interface between the demand and supply sides of ride-sharing, mobile apps have been hailed globally (Nysveen *et al.*, 2005).

Therefore, it is postulated:

H_{01}: Perceived Usefulness (PU) has a significant positive influence on the attitude of the customers to use app-based ride-sharing services.

3.2. Perceived Ease of Use

The perceived ease of use (PEOU) is a crucial attitude component in the TAM framework in adopting any new behaviour (Bailey *et al.*, 2017; Kumar and Mathur, 2021). It is regarded as the extent to which a person believes about the ease with which a given system can be used (Davis,1989). Various studies suggested PEOU as a significant factor influencing customers' willingness to use ride-sharing apps if they consider it to be effortless, easily available, can help them in obtaining relaxation, and safe (Passafaro *et al.*, 2014; Verhagen *et al.*, 2012). Since these ride-sharing apps are a contemporary phenomenon, they must be designed in a consumer-friendly manner (Roy, 2017). Hence, it is postulated that:

H_{02}: Perceived Ease of Use (PEOU) has a significant positive influence on the attitude of the customers to use app-based ride-sharing services.

3.3. Attitude and Behavioural Intention toward Using App-Based Ride-Sharing

Attitude is defined as a person's perspective on adopting the desired action (Davis, 1989). Various studies suggested an association between attitude to use and intended behaviour (Bailey *et al.*, 2017; Moon and Kim, 2001). Ajzen (1991) proposed that attitude influences the behavioural intention of users. Most of the durables like cars are used for shorter periods and hence have spare capacity. By using the technology-enabled market space these durable goods can be utilized from an economic perspective (Vibhanshu, 2018; Goel and Halder, 2020 b). Hence, we propose that:

H_{03}: Positive attitude toward app-based ride-sharing is positively related to behavioural intention to use the ride-sharing services.

3.4. Ecological Concerns

A substantial body of research provides evidence for the environmental advantages of ridesharing (Shaheen *et al.*, 2006). Research studies show that ride-sharing impacts the environment in a positive way, including a reduction in CO_2 emission (Firnkorn and Muller, 2011), a reduction in noise pollution (Rodier and Shaheen, 2003), reduction in vehicle kilometres travelled (Shaheen *et al.*, 2006). Studies further suggest that commuters consider environmental benefits as altruistic (Schaefers, 2013) and lead to an improvement in the quality of life (Burkhardt and Millard-Ball, 1986). Ciari *et al.* (2009) found that ride-sharing participants reported an increased level of ecological concern after joining the ride-sharing program. Hence, we propose that:

> H_{04}: Ecological concern positively influences the attitude of consumers to use app-based ride-sharing services.

3.5. Economical Benefits

Ridesharing services are commonly seen as cost-effective, with users opting for lower-cost alternatives to single-car ownership (Hamari *et al.*, 2016). The commuter's choice to use a car on a shared basis is based on the relative time and cost of all the modes available for the trip (Rodier and Shaheen, 2003). Ridesharing provides significant value to the members since rideshare customers pay either for the duration of vehicle operation or the total distance travelled (Cohen and Kietzmann, 2014). Lately, most people have started using specific apps for their purchases and perceive these as economically beneficial (Tak and Panwar, 2017). Monsuwe *et al.* (2004) suggested that users have cost considerations in mind while shopping on a real-time basis. Hence, we propose that:

> H_{05}: Economical benefits significantly influence the attitude of consumers to use the app-based ride-sharing services.

3.6. Societal Influence (SI)

SI is the relevance of social context in influencing attitudes and behavioural intentions (Ajzen and Fishbein, 1980). Social influence evaluates an individual's perception that others have about him/ her attitude and behaviour intentions toward new technology (Kwak and McDaniel, 2011). Recent studies recognized that social influence is a noteworthy reason to make purchases using advanced mobile services (Kim *et al.*, 2017). Since app-based ride-sharing services is at an early stage of implementation in India, this study hypothesizes that ride-share service users will be influenced by others' opinions towards app-based ride-sharing services. Hence, it is postulated that:

> H_{06}: Societal influence significantly influences the attitude of consumers to use services of app-based ride-sharing services.

4. Research Methodology

4.1. Instrument Design

The structured questionnaire method has been used for data collection, comprising two sections. Section one of the questionnaire was intended to gather demographic data namely age, gender,
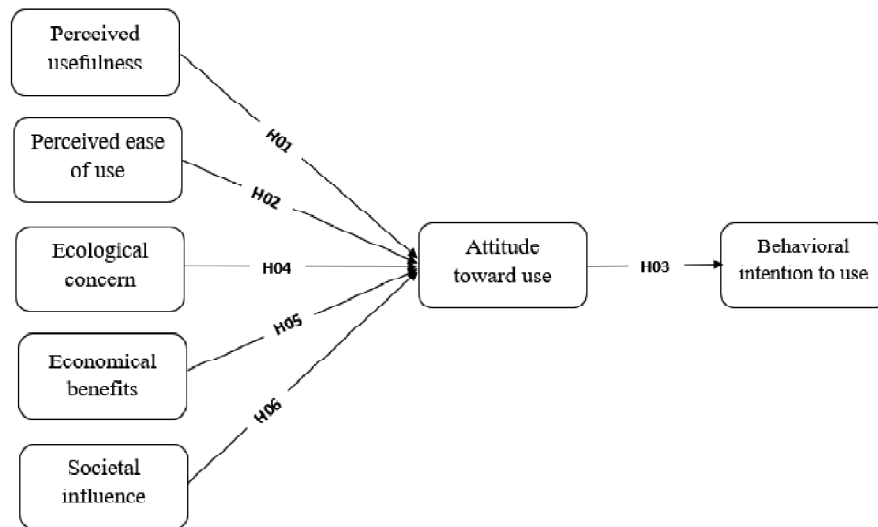
Figure 1: Proposed Research Model

Source: Authors' Deliberation

educational qualification, duration of usage of ride-sharing apps, and the number of times ride-sharing apps services are used by the respondents. The second part of the research study was developed following a comprehensive review of literature related to urban transport and technology adoption models and their extension in the app-based ride-sharing services in particular. The conceptual research model comprised seven constructs: PU, PEOU, ecological concern, economic benefit, societal influence, attitude, and intention to use app-based ride-sharing services.

A three-item scale was used to measure the PU of an app-based ride-sharing service based on (Gargiulo *et al.*, 2015; Nysveen *et al.*, 2005) study. A four items scale was used to measure PEOU based on Verhagen *et al.* (2012) and Passafaro *et al.* (2014) study. To measure the economic benefits of app-based ride-sharing services, three statements were adapted from Firnkorn and Muller (2011) & Tak and Panwar (2017) study. The four statements from Haefeli *et al.* (2006) & Firnkorn and Muller (2011) were used to measure ecological concern. The SI was measured using a three-item scale by Tak and Panwar (2017). The attitude towards use was measured with three statements revised by (Hamari *et al.*, 2016). Finally, all three items of behavioural intentions of using app-based ride-sharing services for reaching the workplace were tailored from three studies (Moon and Kim 2001; Bailey *et al.*, 2017; Zhou *et al.*, 2017). A five-point Likert scale was used to evaluate statements ranging from (1 = strongly disagree) to (5 = strongly agree). To examine the face validity, input was obtained from academic staff engaged in the area of sustainable transportation, and recommended changes were implemented further into the questionnaire.

The pre-testing of the questionnaire was done with respondents using app-based ride-sharing services in a pilot study. The first twenty respondents' submissions were integrated with regard to the structure and word choice of the scale items.

4.2. Data Collection

The research was conducted around the Delhi and NCR region to examine commuters' behavioural intentions toward app-based ride-sharing services for reaching their respective workplaces. The target population of the study was either active app-based ride-sharing services users aged 20 or above, or at least have an intention to use such app-based services for ride-sharing within the foreseeable future. In the absence of any list available of the commuters availing these app-based ride-sharing services for going to their offices, respondents were selected through the convenience cum snowball sampling method. 351 responses were utilized for the data analysis obtained using online and physical modes of the survey.

The demographic profile of the respondents is displayed in Table 1. The majority of the sample study (83.3 percent) are users of app-based services for ride-sharing. The male app-based users are 63.6 percent and 65.2 percent are below the age of 30 years. More than two third are car owners who either use ride-sharing through apps or showed the intent to use it for commuting to their work.

Table 1: Sample Profile

Demographics	Frequency	percentage
Use of App based ride sharing		
User	300	83.3
Non-user	51	16.7
Total	351	100
Age		
Less than 30 years	226	65.2
30 years- 40 years	115	33.3
More than 40 years	10	1.5
Total	351	100
Gender		
Female	129	36.4
Male	222	63.6
Total	351	100
Annual Income (in Rs.)		
Less than Rs. 10,00,000	212	60.6
Rs.10,00,000 - Rs. 20,00,000	111	31.8
More than Rs. 20,00,000	28	7.6
Total	351	100
Since when use of ride share apps		
Less than 1 year	91	25.80

contd. table 1

Demographics	Frequency	percentage
1 year- 3 year	168	48.41
More than 3 year	32	8.9
Never	59	16.81
Total	351	100
Frequency of using app- based ride sharing		
More than 5 days a week	20	5.3
3-5 (days per week)	79	22.6
1-2 (days per week)	45	12.7
0-1 (days a week)	149	42.9
Not used	59	16.5
Total	351	100

Source: Authors' Own Compilation

5. Data Analysis and Results

5.1. Structural model Measurement

The measured constructs were evaluated on the opinions of the respondents. The validity along with the reliability of the model was computed by Amos 21 using confirmatory factor analysis to understand relationships among the constructs. Table 2 shows the outcomes of the extended model for the scale items, reliability, standardized parameter estimates (beta values), and average variance extracted (AVE).

Table 2: Results of Extended Model for Scale Items

Construct and item	Std. Loading	Beta Values	CR	AVE
Perceived Usefulness		.714	.763	.533
App-based ride-sharing services saves my time in booking a cab	.794			
Booking is convenient through app	.869			
Overall, I find app-based ride- sharing services useful.	.462			
Perceived ease of use		.835	.842	.571
It is easy to use app-based ride-sharing services.	.804			
I feel that it is easy to understand and interpret messages shared by vendors of app-based ride-sharing service providers.	.756			

contd. table 2

Construct and item	Std. Loading	Beta Values	CR	AVE
Payments can be made easily while using app-based ride-sharing services.	.758			
I feel that bookings can be easily made through my phone for app-based ride-sharing services.	.701			
Ecological Concern		.823	.825	.543
App-based ride-sharing services help in protecting environment	.695			
App-based ride-sharing services help in promoting sustainable transportation	.757			
App-based ride-sharing services result in reduction of fuel consumption energy	.824			
App-based ride-sharing services is environmental friendly	.661			
Economical Benefits		.789	.819	.571
App-based ride-sharing services are more economical than individual ride	.698			
App-based ride-sharing services help in reducing individual mobility cost.	.989			
App-based ride-sharing services give good value for money	.609			
Societal Influence		.760	.767	.524
Peer group influence to use app-based ride-sharing services.	.724			
Many people around me are using app-based ride-sharing services.	.649			
People related to me think that app-based ride-sharing services should be utilized by me.	.792			
Attitude towards using		.896	.902	.754
I find it as a wise option	.805			
I think it is a correct approach	.950			
I think it is a good habit	.844			
Behavioural Intention		.830	.848	.654
I would use it in the future	.848			
I recommend others about it	.895			
I would myself prefer to use app based	.665			

Note: [a]All factors loadings are significant at p < 0.01

Source: Authors' Own Compilation

The various items load significantly, ranging from 0.469 to 0.950 on their respective dimensions. Also, the computed AVE values are above 0.50, signifying convergent validity for the measured construct (Hair *et al.*, 2006). Cronbach's alpha values for each item are above 0.70 (Hair *et al.*, 2006), which shows the composite reliability. The correlation matrix in Table 3 shows maximum shared variances (MSV) and average squared variances (ASV) values.

Table 3: Correlation Matrix, MSV Values, ASV Values

Constructs	MSV	ASV	ATT	Eco	Econol	SI	PEOU	PU	BI
ATT	.566	.192	**.868**						
Env.	.300	.134	.512	**.737**					
Economic	.300	.128	.471	.548	**.782**				
SI	.206	.086	.312	.056	-.085	**.724**			
PEOU	.484	.093	-.076	-.064	.049	.206	**.756**		
PU	.484	.122	-.023	.123	.069	.454	.696	**.730**	
BI	.566	.203	.752	.469	.480	.401	.135	.148	**.809**

Note: 1. Diagonals represent the square root of the average variance extracted, while off-diagonal values represent the correlation.

    2. Att- Attitude of use, Eco-ecological concern, Econo- Economic benefits, SI- Societal influence, PEOU- Perceived ease of use, PU- Perceived usefulness, BI- Behavioural intention

Source: Authors' Own Compilation

The computed measurement model fit values with $\chi^2 = 372.110$ and 209 degrees of freedom, $\chi^2/d.f. = 1.780$ depict a sufficient fit to the data (Hair *et al.,* 2015). Table IV shows other values measured namely, the goodness-of-fit index (GFI) and comparative fit index (CFI).

Table 4: Measurement Model Estimates

Model	χ^2	d.f.	$\chi^2/d.f.$	GFI	TLI	CFI	REMSEA
	372.110	209	1.780	.705	.860	.806	.078

Source: Authors' Own Compilation

5.2. Assessment of the Structural Model

Various indices such as GFI, TLI, CFI, and REMSEA of the structural model are towards a good model fit as shown in Table V. For the structural model, the chi-square value is $\chi^2 = 23.315$ (at 5 d.f.) and CMIN ($\chi^2/d.f.$) value is 4.663.

Table 5: Structural Model Estimates

Model	χ^2	d.f.	$\chi^2/d.f.$	GFI	TLI	CFI	REMSEA
	23.315	5	4.663	.921	.915	.928	.023

Source: Authors' Own Compilation

The path estimates and beta values depicted in Table 6 suggest that except PEOU, all other measured variables significantly and positively influence the ATT towards the use of app-based ride-sharing services. The estimates further indicate that attitude to use significantly influences behavioural intention towards app-based ride-sharing services. It was further found that SI was the most important predicting factor with (β = .59, p< 0.01), while PEOU was a non-significant factor (β = .22) in adopting the attitude to use the service, therefore H_{02} is rejected. All other hypotheses other than H_{02}, are accepted at the p < 0.01 level of significance. Figure 2 shows the beta values of the research model.

Table 6: Path Estimates

Hypothesis	Estimates	Results
H_{01}. Perceived Usefulness ———> Attitude to Use	.59***	Accepted
H_{02}. Perceived ease of use ——— >Attitude to Use	.31 N.S.	Not- accepted
H_{03}. Attitude to Use ———— > Behavioural Intention	.87***	Accepted
H_{04}. Ecological Concern ——— > Attitude to Use	.57***	Accepted
H_{05}. Economic Benefits ——— > Attitude to Use	.39***	Accepted
H_{06}. Societal Influence ———— > Attitude to Use	.52***	Accepted

*** Significant at the 0.01 level; N.S. – Not significant

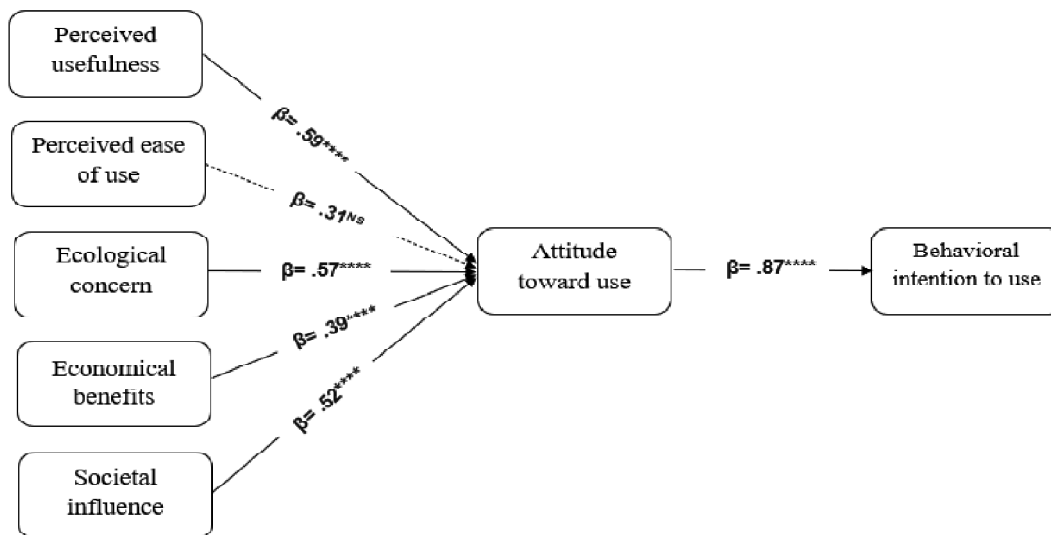*Source*:   Authors' Own Compilation

Figure 2: Research Model

Source: Authors' Own Compilation

6. Discussion

The TAM model approach was used to determine the factors influencing people's intentions to use ride-sharing apps for work travel as shown in the proposed framework (Figure III). The empirical results indicate that perceived usefulness is a significant antecedent for the formation of attitude to use app-based ride-sharing services (β = .58). The results support previous studies on the usefulness of app-based ride-sharing services (Chen and Lu, 2015; Yu *et al.*, 2018). The results of the study are that PEOU has non-significant associations with attitude to the use of app-based ride-sharing services. PEOU was found to have a non-significant influence on the attitude to use in one-third of the studies reviewed in a meta-analysis (Yousafzai *et al.*, 2007).

Though attitude to use has a direct effect on PEOU (Yu *et al.*, 2018), some other studies (Eriksson *et al.*, 2005) showed that involuntary setting PEOU is important at the initial stages of the decision process only for determining the use of a system. The model developed in this study also included three more antecedents that have never been theorized and empirically tested together for app-based ride-sharing services. The results show that people view app-based ride-sharing services as a sustainable model for work-related mobility. Results show that these factors (concern for the environment, SI, and economic benefits) were significantly impacting the attitude to use the app-based ride-sharing services for commuting purposes. Agatz *et al.* (2012) found that consumers are concerned about rising fuel prices and air pollution on both global (in terms of climate change) and local scales (vehicle emissions effects on health).

Sharing goods and services in general sounds not only logical but also economical. The result highlighted the economic benefits as a significant predictor. These economic benefits while participating in ride-sharing are rational and understandable motivators wherein the user sometimes substitutes exclusive rides with lower-cost app-based ride-sharing services (Lamberton and Rose, 2012). Also, among all the antecedents studied for the present study, social influence is the strongest predictor of attitude to use with the highest beta value (0.59). Most of the respondents (98.5 percent) are up to the age of 40 years, therefore they are more prone to social influence (Patel and Patel, 2018). Also, the behaviour of users is largely influenced not only by family and friends but also by their peer group (Tak and Panwar, 2017). In sum, this study reveals that PU, SI, ecological concern, and economic benefits are decisive factors to understand the attitude and behavioural intention toward the usage of the ride-sharing app services. Therefore, the contribution of this paper is to enhance existing theoretical frameworks used for app-based ride-sharing services adoption studies and categorize the existing antecedents that impact the behavioural intention of customers to use app-based ride-sharing services.

7. Conclusion and Way Forward

There has been no comprehensive research done in the Delhi-NCR region to assess the behavioural intention to use app-based ride-sharing of the working class for commuting to their workplaces. Thus, the determinants of attitude to use app-based ride-sharing services are likely to build up a new framework in this context. These findings will aid in the development of promotional strategic plans for app-based ride-sharing services providers in particular. Chaudhuri *et al.* (2022) used cluster analysis to evaluate car sharing implications on consumer's attitudes in the light of Sustainability Goals defined by

United Nations (2019). The pioneering study conducted in an objective manner highlights the potential of the car subscription business model in India. They can also use social media platforms which may further help in instilling confidence regarding ride-sharing apps among the public. Furthermore, because ride-sharing is emerging as a new service, it will help the economy grow by providing people with job opportunities.

It also provides insight to the government in terms of developing transportation initiatives that encourage urban areas to embrace sustainable modes of transportation by commending people who choose sustainable modes of transportation. In summary, the study's findings indicate that users have a favourable behavioural intention to use app-based ride-sharing services which will benefit all stakeholders, including customers, businesses, policymakers, and society as a whole. An important implication of the findings is the need to construct a study model to explore how people evaluate the flexibility of public transportation networks and direct future research for consumer research on flexible mobility.

The present study has several limitations that must be mentioned. First, the study's generalizability is limited due to the non-random sampling approach used to obtain data from only Delhi-NCR. Second, several demographic variables such as gender, age and kind of vehicle owned can be used as moderators to assess the behaviour intention to use ride-sharing apps. Longitudinal research may give further information regarding the behavioural responses of prospective customers especially taking into consideration the security and privacy concerns of commuters.

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