Users' Perception and Barriers to Using Self-Driven Rental Bikes

Subramanian Meenakshinathan [1]
Sreedhara Raman [2]
Rajni Gupta [3]

Abstract

The research study has two objectives. The first objective of this paper was to find users' perception towards self-drive rental bikes. The second objective was to identify the factors that act as barriers to users using self-drive rental bikes. The research was a formal and structured conclusive research type and used quantitative data analysis techniques. The study had a representative sample of 350 respondents. The population selected for this study were people of various demographics in Bangalore. We used judgemental sampling to decide on the right sample. In achieving both objectives, factor analysis was used to arrive at a minimum number of factors or dimensions. The major perception factors are: Economical Choice, Environmental Consciousness, Alternative Source of Transport, Rationality, and Convenience. The major barriers to using self-drive rental bikes are Safety Issues, Conservative Nature of Users, the Expensive Nature of Service, and the Difficulty in Using Mobile Applications.

Keywords : **self-driven rental bikes, perception of users, alternative source of transport, rationality, convenience, safety issues**

Paper Submission Date : July 25, 2021 ; Paper sent back for Revision : May 10, 2022 ; Paper Acceptance Date : August 20, 2022 ; Paper Published Online : December 15, 2022

The service sector is the most important pillar of any economy and provides numerous research opportunities. Information search behavior for services has been a relatively understudied area of study, particularly in emerging economies such as India. The importance of the service sector in any nation's social and economic development has grown (Malik & Dangi, 2021). Bike-sharing is a new concept and type of rental service in a few developing countries. In this system, commonly, a traveller can borrow a bike from a prescribed station or the dock. After taking the service, he/she returns to another station or port which belongs to the same company or service provider. The whole system is mobile application-driven, based on technology, and uses the internet. There are different bike-sharing mechanisms, including coin deposit stations, automated stations, and dockless bikes (Rosnan & Abdullah, 2018).

The goals of bike-sharing vary from country to country. Some have it to cater to foreign or local travelers, tourists, and residents. Others offer it as an affordable option as bikes for small distance trips. It also serves as a substitute for motorized public transportation and other private vehicles, reducing congestion, pollution, and noise. However, the reasons for using shared bikes for citizens may vary from person to person, which includes fear of theft of own vehicle, convenience, maintenance cost, etc. This system is present in many countries around

[1] *Digital Marketing Executive,* Coinswitch Kuber, Bangalore - 560 048. (Email : m.subramanian@coinswitch.co)
[2] *Associate Professor (Corresponding Author),* School of Business and Management, CHRIST University, Bangalore - 560 029. (Email : raman.sreedhara@christuniversity.in) ; ORCID iD : https://orcid.org/0000-0001-8267-5295
[3] *Assistant Professor,* NSB Academy – Business School, No.85, Singena Agrahara, Huskur Post, Anekal Taluk, Bangalore - 560 099. (Email : rg.singla@gmail.com)

DOI : https://doi.org/10.17010/ijom/2022/v52/i12/172562

the globe, including the USA, Europe, China, and many others. Some countries even use a scooter-sharing system, where they offer electric scooters. The scooter-sharing system somewhat came into existence recently, originated in San Francisco around 2012.

Many researchers associated the perceived use with the evolution of the shared system. Shaheen et al. (2010) discussed the development of bike-sharing systems across three generations, that is, white bikes (free bike systems), coin-deposit systems, and information technology-based systems. Based on the results, they proposed the fourth-generation bike-sharing system, a demand-responsive and multimodal system. The research considered all the uncertainties related to the demand, safety concerns, sustainable business models, infrastructure growth, difficulties in integrating with the public transportation systems, and emerging costs associated with upgraded technologies. Philip (2018) concluded that the shared bike system's success also depends upon the amalgamation of shared bikes and public transport. In continuation, Wang et al. (2018) also suggested that adopting new products or services like bike-sharing greatly depends upon various perceived values like functional, conditional, green, and social. They also showed through their study that personal attitudes towards sustainability and bike-sharing may have a low to moderate relationship with adoption intentions.

In a country like India, where the use of shared bikes is a new concept, it is important to understand customer perceptions and attitudes toward shared bikes. Despite the market's excessive hype and the presence of numerous self-driven bike participants, several difficulties appear to be relevant in the use of rental bikes. When compared to comparable alternatives on the market, this category's acceptability is also rising. There is always room for improvement in the services offered by this category. Some customer segments appear to have yet to try this option, despite the fact that they are beneficiaries of such products and services. In the present research study, we attempt to comprehend the users' opinions of rental bikes and the barriers to their usage.

Self-Drive Rental Bikes in India

The bike rental industry in India is an evolving industry with more and more start-ups coming up in this segment and more users for the same as well. Brands are also concentrating on convenience for their customers by providing options like pickup locations, several payment modes, various bikes, easy accessibility, and low price limits. The variety of bikes mentioned above ranges from a Honda Activa to a Hayabusa, making it an exciting business genre, and attracting various segments and needs.

The bike rental systems started with the primary objective to target tourists. Modern tourists, especially youngsters, prefer to hire bikes and explore the city rather than hire a car. Even today, this is just that the brands have expanded the target consumers from tourists to even daily local commuters within the city.

Scooter rental start-ups in India are VOGO, Bounce, and Yulu, which primarily target day-to-day commuters within the city to reach their final destination, that is, getting off public transport and going to one's home or office. Bounce offers dockless scooters where commuters can choose one near their location and leave it off at any parking location, as per their convenience; whereas, VOGO uses a substation model, where the commuters can take the bike from one substation and return it to the other prescribed substation. VOGO's model may not seem as convenient as Bounce's model, but it helps the company tackle theft and abandonment. However, Yulu focuses on sustainable transport by offering bicycles and electric scooters. Travelers can hire them from selected parking areas.

Review of Literature

Kumar and Kumar (2016) studied the factors influencing consumers while selecting transportation services and found that consumers are interested in the cash in coupons while choosing these services, especially among price-

conscious users. Coupon redemption helps customer retention because modern users are price-sensitive and innovative.

Infrastructure is another important factor affecting shared bikes' perceptions and usage intentions in developing countries like India (De Sousa et al., 2014). However, Balachandran and Hamzah (2017) found that service quality is vital in generating user satisfaction. Comfort is the most influencing factor on user satisfaction among all the variables. The concept of the shared bike is beneficial as it not only acts as an addition to the extra transport option but also helps to reduce the congestion in cities. However, there are some barriers to using the same. Fishman et al. (2014) suggested that the availability of the docking station is crucial in areas with fewer public transportation facilities, and the same also plays as a barrier to using in case of unavailability of the dock. However, De Sousa et al. (2014) claimed security and climate as significant barriers to usage. Similarly, Campbell et al. (2016) concluded that bike-share demand mostly showed a negative relationship with long trips, high-temperature conditions, precipitation, and pollution. But they found that demographics did not play many roles in choosing the bike-share system in Beijing.

Literature suggests that people's demographic characteristics also play an essential role in using shared bike services. For instance, Garrard et al. (2008) claimed that women users are more conscious of using the shared bike as they are more concerned about safety. However, they also found that women users found it more convenient to use personal cars to perform various activities like shopping, dropping kids off at school, etc. Alternatively, Parkin et al. (2008) claimed that young people under 34 had more intentions to use shared bikes because of their health consciousness and low personal vehicle ownership factor.

Literature has also witnessed the studies which have applied Davis's (1989) model of technology adoption to understand people's perceptions of using shared bikes. For example, Chen and Lu (2016) found that the attitude and perceived usefulness of the users positively influenced the adoption intentions. In addition to this, they also claimed that user attitude also had a mediation effect on preferences. However, perceived ease of use played an insignificant role in the intentions.

However, Shen et al. (2018) found that larger bike stations with more available bikes are also related to more acceptance. In addition, factors like easy access to public transportation, more supportive cycling facilities, high land use mixtures, and promotional activities like free rides positively impact the usage of dockless bikes. However, rainfall and high temperatures harm bike utilization. Like other authors, Fishman et al. (2012) also argued that the sign-up process, safety concerns, and mandatory helmet legislation are significant barriers to using shared bikes. Guo et al. (2017) found many other factors contributing to the usage of shared bikes, for instance, gender, owned bikes, trip time, accessibility to bike docks, etc. The researchers found that bike-sharing usage and satisfaction degree were positively and strongly related.

Like many researchers, Shrivastava (2018) also noticed the evolution of the shared bike concept and supported his results with emerging technologies like internet penetration, smartphones, and end applications. Due to this, the service providers can provide various required services and solutions for the bike users, like last-mile connectivity issues, etc., which is an essential criterion for the users' selection and use of these shared bike concepts. For example, Abrar (2019) concluded that the success of many shared bike service providers depends on addressing last-mile connectivity issues for commuters. Similarly, Mishra and Abrar (2019) claimed that these service providers would spread to other cities due to better services like last-mile connectivity. Kashyaap (2019) claimed bike rental start-ups and India have the highest two-wheeler owning population, so Bounce chose two-wheelers. It helps reduce commute time and be more convenient. Pricing, which is at INR 5 per km, is one of the most cost-effective commute options for users. This is much less cheaper than app-cab services in metro cities of India (Chakraborty, 2021).

This particular study attempts to fill the research gap with the following objectives :

- To find the frequency of use of self-drive rental bikes among the users in Bangalore.

- To find the most used brands of self-drive rental bikes among the users in Bangalore.
- To understand the perception of users towards self-drive rental bike services.
- To study the factors that act as barriers to the use of self-drive rental bikes.

Research Design

The research is a formal and exploratory study and uses quantitative methods for data collection and analysis of the data for both descriptive and inferential statistics. The study uses a representative sample of 350 respondents from Bangalore. The period of data collection was January – March 2020. We used the purposive sampling method to choose the sample from the entire population and calculated the sample size using the formula given below with a confidence level of 95% and a margin of error of around 10%.

$$\text{Sample Size} = (Z\text{-score})^2 * \text{Std. Dev.}*(1\text{-Std.Dev.}) / (\text{margin of error})^2$$

The responses were collected by serving a structured questionnaire to a group of potential respondents. We designed the questionnaire by covering the various components related to the adoption and barriers. We designed the statements, and the whole questionnaire was validated by distributing the same to five subject experts in the area of academics and industry professionals. After incorporating the experts' suggestions, the questionnaire was used for data collection. The questionnaire had two parts, one for capturing demographic information of the respondents and the second for collecting information regarding perceptions and barriers to using self-driven bikes using nominal (open-ended and closed-ended) questions using the 5-point Likert scale. We screened the data by removing unwanted or insincere responses, missing values, outliers, etc.

Analysis and Results

Table 1 presents a brief demographic profile of the respondents; 55% of the respondents were male and 45% were female. The respondents were mostly young, with nearly 63.4% aged 18 – 35 years. Furthermore, 45.4% of the respondents were employed, while 31% were students.

Table 1. ***Demographic Profile of the Respondents***

Characteristics of the Respondents		Frequency	Percentage (%)
Gender	Male	194	55.4
	Female	156	44.6
Age	18 – 25 years	123	35.1
	26 – 35 years	99	28.3
	36 – 45 years	67	19.1
	> 45 years	61	17.4
Occupation	Employed	159	45.4
	Unemployed	34	9.7
	Self-employed	22	6.3
	Retired	27	7.7
	Student	108	30.9

Table 2. ***Users and Non-Users of Self-Drive Rental Bikes Among the Respondents***

Particulars	Frequency	Percent
Non-users	152	43.4
Users	198	56.6
Total	350	100.0

Table 3. ***Frequency of Use of Self-Drive Rental Bikes Among the Users in Bangalore***

Particulars	Frequency	Percentage
Daily	32	16.1
More than once a week	43	21.7
Few times in a month	76	38.3
Rarely	47	23.7
Total	198	100

Users and Non-Users of Self-Drive Rental Bikes in Bangalore

Table 2 shows the percentage of users and non-users of self-drive rental bikes. The representative sample shows that 56.6% of the respondents used self-drive rental bike services in Bangalore. The remaining 43.4% of the respondents were non-users of self-drive rental bike services.

Table 3 shows the frequency of use of self-drive rental bikes among users. Out of the 198 total users, 16.1% of the users used self-drive rental bikes daily, 21.7% used the services more than once a week, 38.3% used the services a few times a month, and 23.7% rarely used the services.

Most Used Brands of Self-Drive Rental Bikes Among the Users in Bangalore

According to Table 2, 56.6% of the respondents used self-drive rental bike services in Bangalore, and they chose from multiple response options of different brands of self-drive rental bikes. As shown in Table 4, further analysis provides insights into the most popular brands among commuters.

As can be inferred from Table 4, the most used brand among the users of self-drive rental bikes is the brand VOGO as 82.8% of the users used the brand. The second most used brand among the users is the brand Bounce, which 82.3% of the users used. The following three most used brands are Yulu Bikes (usage by 37.9% of the respondents), Drivezy (usage by 30.8% of the respondents), and ONN Bikes (usage by 28.3% of the respondents). The bottom five least-used brands are Royal Brothers, TWIC Bikes, Metro Bikes, Fae Bikes, and Urban Drive. Urban Drive is the least-used brand among users, and only 3.5% of the users used this brand of self-drive rental bikes.

Perception of Users Toward Self-Drive Rental Bike Services

This research uses factor analysis to know the perceptions of commuters. The respondents stated agreeableness towards statements related to perception towards self-drive rental bikes over a 5 – point Likert scale. Initially, we identified 15 variables for this purpose but finally conducted a reliability test on 14 variables (Table 6). We

Table 4. ***Brands of Self-Drive Rental Bikes Used by the Users of the Services***

Brands of Self-Drive Rental Bikes	Responses	Percentage of Cases
Bounce	163	82.3%
VOGO	164	82.8%
Yulu Bikes	75	37.9%
Urban Drive	7	3.5%
ONN Bikes	56	28.3%
Drivezy	61	30.8%
Royal Brothers	51	25.8%
Fae Bikes	16	8.1%
TWIC Bikes	31	15.7%
Metro Bikes	22	11.1%

Table 5. ***KMO and Bartlett's Test***

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.697
Bartlett's Test of Sphericity	Approx. chi-square	1073.830
	df	91
	Sig.	0.000

Table 6. ***Rotated Component Matrix***

Statements	Factors				
	***F*1**	***F*2**	***F*3**	***F*4**	***F*5**
The digital payment options available are convenient for me.	0.793				
I save money on commuting.	0.867				
I manage to save time while commuting.	0.836				
The number of electric bike options needs to be increased on the platforms.		0.792			
Electric bike options available are a great initiative toward sustainable transportation.		0.900			
I don't feel the need to own a two-wheeler of my own.			0.767		
I have reduced using cab services like Uber/Ola.			0.578		
I use these services to project myself as a tech-savvy person.			0.835		
I feel the cost of using self-drive rental bikes is much less than owning a two-wheeler.				0.850	
Parking is very convenient / hassle-free.				0.510	
I always prefer to use brands that provide electric bike options.				0.621	
My day-to-day commuting has become convenient.					0.772
I always have a seamless and smooth experience while using these platforms.					0.826
I feel that the last-mile connectivity issue is solved.					0.611
Total	2.465	1.938	1.934	1.912	1.858
% of Variance	17.608	13.845	13.817	13.657	13.272
Cumulative %	17.608	31.453	45.27	58.927	72.199

discarded one statement due to low communality. Before applying factor analysis, it is desirable to check the underlying assumptions of factor analysis. The first assumption is sampling adequacy or data sufficiency, that is, whether the sample data was adequate to run factor analysis. Table 5 shows the KMO measure of sampling adequacy as 0.697, which is above the acceptable limit of 0.05 and indicates that the sample and the factors chosen for the study are appropriate and fit for further analysis. Another assumption of factor analysis is that the items or variables should be correlated to each other. Bartlett's test of sphericity is significant at the acceptance level of 5%, which means that the correlation matrix is not an identity matrix. All the variables chosen are correlated with each other.

Factor analysis groups the chosen variables into five factors (refer to Table 6). We have named factor F1 as Economical Choice, F2 as Environmental Consciousness, F3 as Alternative Source of Transport, F4 as Rationality, and F5 as Convenience (refer to Table 7). Table 6 shows the variance explained by each factor, and Table 7 shows the variables that comprise the corresponding factor. The factor F1, that is, Economical Choice, accounts for 17.608% of the total variance explained and consists of three variables related to convenient digital payment options, saving money on commuting, and I manage to save time while commuting. The factor F2, Environmental Consciousness, accounts for 13.845% of the total explained variance and consists of two variables relating to the users wanting more electric bike options on platforms and how the users felt that the electric bike options available are a great initiative for sustainable transportation. Factor F3, Alternative Source of Transport, accounts for 13.817% of the total explained variance and consists of three variables. These variables relate to users

Table 7. ***Perception of Users Towards Self-Drive Rental Bikes***

Sl. No.	Name of the Factors	Statements	Loadings
***F*1**	**Economical Choice**	The digital payment options available are convenient for me.	0.793
		I save money on commuting.	0.867
		I manage to save time while commuting.	0.836
***F*2**	**Environmental Consciousness**	The number of electric bike options needs to be increased on the platforms.	0.792
		Electric bike options available are a great initiative toward sustainable transportation.	0.900
***F*3**	**Alternative Source of Transport**	I don't feel the need to own a two-wheeler of my own.	0.767
		I have reduced using cab services like Uber/Ola.	0.578
		I use these services to project myself as a tech-savvy person.	0.835
***F*4**	**Rationality**	I feel the cost of using self-drive rental bikes is much less than owning a two-wheeler.	0.850
		Parking is very convenient / hassle-free.	0.510
		I always prefer to use brands that provide electric bike options.	0.621
***F*5**	**Convenience**	My day-to-day commuting has become convenient.	0.772
		I always have a seamless and smooth experience while using these platforms.	0.826
		I feel that the last-mile connectivity issue is solved.	0.611

Table 8. ***KMO and Bartlett's Test***

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.624
Bartlett's Test of Sphericity	Approx. chi-square	1128.052
	df	91
	Sig.	0.000

feeling that they don't need to own a two-wheeler of their own, reduced usage of cab services like Uber/Ola, and users using these applications to project themselves as tech-savvy. Factor F4, Rationality, accounts for 13.657% of the total explained variance and consists of three variables. These relate to the users' perceptions towards the cost of using self-drive rental bikes, convenient / hassle-free parking, and users' preference for electric bike options. Finally, Convenience accounts for 13.272% of the total variance explained and consists of three variables related to convenient day-to-day commuting, users having a seamless/smooth experience, and the issue of last-mile connectivity.

Factors that Act as Barriers to the Use of Self-Drive Rental Bikes

The second part of the study analyses the barriers to using self-drive bikes, and we further used principal component analysis for the same. We identified 14 variables/statements for measuring the barriers to using self-drive rental bikes.

Like the influencing factor, we conducted a factor analysis to know the significant barriers to adopting the bike-sharing system. Table 8 shows that the KMO measure of sampling adequacy is 0.624, which is above the acceptable limit of 0.05 and indicates that the sample and the factors chosen for the study are appropriate and fit for further analysis. Bartlett's test of sphericity is significant at the acceptance level of 5%, which means that the correlation matrix is not an identity matrix, which implies that all the variables chosen for the study are related to each other.

As shown in Table 9 and Table 10, we extracted four factors from factor analysis, and they are Safety Issues (F1), Conservative Nature (F2), Affordability (F3), and Difficulty in Using the Application (F4)

Table 9. *Rotated Component Matrix*

Statements	Factors			
	F1	*F2*	*F3*	*F4*
Helmets are often not available on bikes.	0.777			
Petrol is not usually available in bikes.	0.829			
The rear-view mirror is not there on many bikes.	0.837			
I find the bikes are not in good condition.	0.760			
I am not comfortable riding another two-wheeler.		0.804		
I am not comfortable with the payment options available.		0.605		
The pickup location of the bike is not near me.		0.840		
The models of bikes available don't suit my liking.		0.784		
There is always a shortage of two-wheelers on the platforms.			0.735	
I feel it is too costly/not affordable.			0.820	
The deposit amount charged initially is high.			0.748	
I had a bad experience in the past when I tried using a self-drive rental bike.			0.651	
I find it difficult to onboard the apps through the KYC process.				0.915
I find the process of using such applications to be complicated.				0.834
Total	2.866	2.751	2.610	1.944
% of variance	20.472	19.648	18.640	13.883
Cumulative %	20.472	40.121	58.761	72.644

Table 10. ***Factors that Act as Barriers to the Use of Self-Drive Rental Bikes***

Sl. No	Name of the Factors	Statements	Loadings
***F*1**	**Safety Issues**	Helmets are often not available on bikes.	0.777
		Petrol is not usually available in bikes.	0.829
		The rear-view mirror is not there on many bikes.	0.837
		I find the bikes are not in good condition.	0.760
***F*2**	**Conservative Nature of the Users**	I am not comfortable riding another two-wheeler.	0.804
		I am not comfortable with the payment options available.	0.605
		The pickup location of the bike is not near me.	0.840
		The models of bikes available don't suit my liking.	0.784
***F*3**	**Expensive Nature of Service**	There is always a shortage of two-wheelers on the platforms.	0.735
		I feel it is too costly/not affordable.	0.820
		The deposit amount charged initially is high.	0.748
		I had a bad experience in the past when I tried using a self-drive rental bike.	0.651
***F*4**	**Difficulty in Using Mobile Applications**	I find it difficult to onboard the apps through the KYC process.	0.915
		I find the process of using such applications to be complicated.	0.834

(refer to Table 10). Safety Issues account for 20.472% of the total explained variance and consist of four variables related to the unavailability of helmets, less petrol in bikes, absence of a rear-view mirror, and bad condition of bikes on the platforms. Conservative Nature accounts for 19.648% of the total variance explained and consists of four variables that relate to respondents feeling uncomfortable riding another two-wheeler, not comfortable with the payment options available, not satisfied with the pickup locations, and not liking the models of bikes available on the platforms. Affordability accounts for 18.640% of the total variance explained, which relates to respondents feeling it is too costly to use the services, the high initial deposit amount charged, the shortage of two-wheelers on the platforms, and a bad experience in the past. Finally, the Difficulty in Using the Application accounts for 13.833% of the total variance explained, which relates to onboarding the apps through the KYC process and finding the applications complicated.

Conclusion

The results and findings of the study give an idea about users' perception of self-drive rental bikes and the barriers to their use. Out of the total respondents, 56.6% of the respondents used self-drive rental bike services in Bangalore. Out of the actual users, most users used self-drive rental bikes a few times a month, followed by users using the services rarely. Some users use it daily. The top three most used brands among the users are VOGO, Bounce, and Yulu Bikes. The research results show close competition between VOGO and Bounce. There is almost no difference in the percentage of responses for each brand at 82.8% and 82.3%. The availability and convenience are the factors that contributed the most to the success of these two brands. The reason for the same is that there is a wide gap between the most used brands and the third most used brand, Yulu bikes, which 37.9% of the users had used.

Users believe electric bike options offered by several self-drive rental bike brands are a great initiative toward sustainable transportation. At the same time, the users also felt that the service providers must increase the number of electric bike options on these platforms. The users are also satisfied with the digital payment options available on these platforms and feel convenient. However, the users responded that they do not use these services to project

themselves as tech-savvy people. Also, the users did not believe they don't need to own a two-wheeler because of the availability of self-drive rental bikes. Some users did not have a smooth and seamless experience when using these platforms. Users' perception of self-drive rental bikes is grouped based on five factors: Economical Choice, Environmental Consciousness, Alternative Source of Transport, Rationality, and Convenience.

The primary reasons that act as barriers to self-drive rental bike services are the unavailability of helmets on the bikes followed by the bad condition of bikes, the absence of a rear-view mirror, and less petrol in the bikes. Some of the reasons that acted as a barrier in using the self-drive rental bikes are the high deposit amount charged initially, the awful experience while using the services, not having a license, and not riding two-wheelers. The study finds that most users possessed a valid license and rode two-wheelers. The reasons that acted as barriers to the use of self-drive rental bikes are grouped based on four factors, and they are: Safety Issues, Conservative Nature, Affordability, and Difficulty in Using Mobile Applications.

Managerial and Theoretical Implications

Our study allows us to conclude that the self-driven rental bike system serves as an element that contributes to the city's sustainable transportation. The self-driven rental bike system is popular among its users, and more people are using it. As a result, the city should have a dense network of bike-sharing stations that are easily accessible. The findings may help plan actions to boost bike-sharing system utilization and satisfaction.

The study results indicate that more than half of the respondents used the services in Bangalore. But this can be further increased by extensive branding and more valuable consumer offerings to stimulate more usage. For instance, brands can decrease the deposit amount charged, which is a significant barrier among consumers. Another problem is that respondents felt the process of using the apps to be complicated. The service providers should address this problem by providing additional services like a demo to use these bikes. Major brands that face this problem are Bounce and VOGO. Price and promotional offers are the two main factors users consider when choosing a brand of self-drive rental bikes. So, brands like Yulu bikes and others with more usage compared to Bounce and VOGO can focus on pricing and offers to attract users to their platforms. The study identifies Safety as one of the significant barriers to using these services. Brands must tackle this issue by bringing faith among consumers about bike safety. In addition, users are affected in three stages: the need to identify subconsciously, information search, and assessing alternatives. Marketers must understand the driving force behind such service purchases (Gupta & Barkathunissa, 2021). Furthermore, the identified factors and barriers to using any product or service can assist marketers in reducing the 'intention-behavior gap' among consumers (Laheri, 2020).

The business models, however, are not without flaws. The lack of bikes for the disabled, tricycles that senior users might use, and bikes with manual drive are among its major drawbacks. The malfunction of bikes and stations, as the respondents mentioned in their responses, is another downside of the system.

Limitations of the Study and Scope for Further Research

The study is localized in nature concerning the sample as 350 respondents were from Bangalore city. Consumers differ in their perceptions and barriers to using these services. Therefore, a separate study must be conducted in different geographical areas to verify and generalize these results. The analysis is based on primary data and may have biasing issues. Another limitation is that many different constructs can affect one's intention to adopt self-driven bikes and hence may be considered in future studies.

Authors' Contribution

Mr. Subramanian Meenakshinathan conceived the idea and developed a quantitative design to undertake the study. He also extracted research papers with high repute, filtered these based on keywords, and generated concepts and codes relevant to the study design. Dr. Sreedhara Raman verified the analytical methods and supervised the study. The interviews were conducted by Subramanian Meenakshinathan and Rajni Gupta in English. The numerical computations were done by Dr. Sreedhara Raman and Rajni Gupta using SPSS 20.0. Dr. Sreedhara Raman wrote the manuscript in consultation with both authors.

Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

Funding Acknowledgement

The authors received no financial support for this article's research, authorship, and/or publication.

References

Abrar, P. (2019, July 31), Bengaluru's bounce becomes world's fastest-growing bike-sharing start-up. *Business Standard*. https://www.business-standard.com/article/companies/bengaluru-s-bounce-becomes-world-s-fastest-growing-bike-sharing-start-up-119073100559_1.html

Balachandran, I., & Hamzah, I. B. (2017). The influence of customer satisfaction on ride-sharing services in Malaysia. *International Journal of Accounting & Business Management*, *5*(2), 184 –196. https://doi.org/10.24924/ijabm/2017.11/v5.iss2/184.196

Campbell, A. A., Cherry, C. R., Ryerson, M. S., & Yang, X. (2016). Factors influencing the choice of shared bicycles and shared electric bikes in Beijing. *Transportation Research Part C: Emerging Technologies, 67,* 399 – 414. https://doi.org/10.1016/j.trc.2016.03.004

Chakraborty, D. (2021). Factors influencing passengers' purchase intention towards app-cab services in metro cities of India: A study on smartphone users. *Indian Journal of Marketing*, *51*(1), 41–54. https://doi.org/10.17010/10.17010/ijom/2021/v51/i1/156933

Chen, S.-Y., & Lu, C.-C. (2016). A model of green acceptance and intentions to use bike-sharing: YouBike users in Taiwan. *Networks and Spatial Economics, 16*, 1103–1124. https://doi.org/10.1007/s11067-015-9312-8

De Sousa, A. A., Sanches, S. P., & Ferreira, M. A. (2014). Perception of barriers for the use of bicycles. *Procedia - Social and Behavioral Sciences, 160,* 304–313. https://doi.org/10.1016/j.sbspro.2014.12.142

Fishman, E., Washington, S., & Haworth, N. (2012). Barriers and facilitators to public bicycle scheme use : A qualitative approach. *Transportation Research Part F: Traffic Psychology and Behaviour, 15*(6), 686 – 698. https://doi.org/10.1016/j.trf.2012.08.002

Fishman, E., Washington, S., & Haworth, N. (2014). Bike share's impact on car use: Evidence from the United States, Great Britain, and Australia. *Transportation Research Part D: Transport and Environment, 31,* 13–20. https://doi.org/10.1016/j.trd.2014.05.013

Garrard, J., Rose, G., & Lo, S. K. (2008). Promoting transportation cycling for women: The role of bicycle infrastructure. *Preventive Medicine*, *46*(1), 55–59. https://doi.org/10.1016/j.ypmed.2007.07.010

Guo, Y., Zhou, J., Wu, Y., & Li, Z. (2017). Identifying the factors affecting bike-sharing usage and degree of satisfaction in Ningbo, China. *PLoS ONE, 12*(9), e0185100. https://doi.org/10.1371/journal.pone.0185100

Gupta, P., & Barkathunissa. (2021). Exploring the plausibility of pre-purchase decision process in user acceptance of smart wearable technology devices. *Indian Journal of Marketing*, *52*(4), 44–62. https://doi.org/10.17010/ijom/2022/v52/i4/169109

Kashyaap, S. (2019, April 18). From wicked ride to bounce: How this bike rental startup is on the road to changing the way urban India commutes. *YOURSTORY.* https://yourstory.com/2019/04/startup-bounce-bike-rental-platform

Kumar, P. K., & Kumar, N. R. (2016). A study on factors influencing the consumers in selection of cab services. *International Journal of Social Science and Humanities Research, 4*(3), 557–561.

Kumar, R., & Kaushal, S. K. (2019). A study of factors affecting consumer behaviour towards electronic durable goods. *Indian Journal of Marketing*, *49*(7), 35–48. https://doi.org/10.17010/ijom/2019/v49/i7/145403

Laheri, V. K. (2020). Moderating effect of facilitators and barriers for purchase of green products in India. *Indian Journal of Marketing*, *50*(3), 7–21. https://doi.org/10.17010/ijom/2020/v50/i3/151026

Malik, A., & Dangi, H. K. (2021). A qualitative inquiry on information search behaviour for services in India. *Indian Journal of Marketing, 51*(3), 8–20. https://doi.org/10.17010/ijom/2021/v51/i3/158059

Mishra, B. R., & Abrar, P. (2019, May 2). Bike-sharing platforms bring last-mile connectivity to India. *Business Standard.* https://www.business-standard.com/article/technology/dockless-bike-sharing-platforms-bring-last-mile-connectivity-to-india-119050101072_1.html

Parkin, J., Wardman, M., & Page, M. (2008). Estimation of the determinants of bicycle mode share for the journey to work using census data. *Transportation*, *35*, 93–109. https://doi.org/10.1007/s11116-007-9137-5

Philip, C. M. (2018, November 8). As demand surges in Bengaluru, rental bike firms make a beeline at transport dept for permits. *The Times of India*. https://timesofindia.indiatimes.com/city/bengaluru/rental-bikes-gain-traction-among-city-commuters/articleshow/66538388.cms

Rosnan, H., & Abdullah, N. C. (2018). Public perceptions and behaviours towards bicycle sharing offered by SMEs as a mode of transportation and the way forward. *Environment-Behaviour Proceedings Journal*, *3*(8), 180–185. https://doi.org/10.21834/e-bpj.v3i8.1411

Shaheen, S. A., Guzman, S., & Zhang, H. (2010). Bikesharing in Europe, the Americas, and Asia : Past, present, and future. *Transportation Research Record, 2143*(1), 159–167. https://doi.org/10.3141/2143-20

Shen, Y., Zhang, X., & Zhao, J. (2018). Understanding the usage of dockless bike sharing in Singapore. *International Journal of Sustainable Transportation, 12*(9), 686–700. https://doi.org//10.1080/15568318.2018.1429696

Shrivastava, P. (2018, December 22). From daily commute to long drives, bike rental market is scaling up. *BW Business World.* http://www.businessworld.in/article/From-Daily-Commute-To-Long-Drives-Bike-Rental-Market-Is-Scaling-Up/22-12-2018-165360/

Wang, Y., Douglas, M. A., Hazen, B. T., & Dresner, M. (2018). Be green and clearly be seen: How consumer values and attitudes affect the adoption of bicycle sharing. *Transportation Research Part F: Traffic Psychology and Behaviour, 58*, 730–742. https://doi.org/10.1016/j.trf.2018.06.043

About the Authors

Subramanian Meenakshinathan is employed with Coinswitch Kuber in Bangalore as a Digital Marketing Executive. He has strong research interests and has presented several research papers on contemporary marketing topics at national and international conferences.

Dr. Sreedhara Raman is working as an Associate Professor at the School of Business and Management (MBA), Christ University, Bangalore. He has published his research papers in reputed national and international journals. He has also presented his research works at several conferences.

Rajni Gupta is currently working as an Assistant Professor at NSB Academy – Business School, Bangalore. She is currently pursuing her PhD from Christ University in the area of marketing. She has a very strong hold on statistical techniques and the usage of SPSS.