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A Study on Users' Perception and Barriers in Using Self-Driven Rental Bikes

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Abstract

Self-driven rental bikes have emerged as an important urban mobility option because they provide flexibility, convenience, and short-term personal transport without the burden of ownership. In rapidly growing metropolitan cities such as Hyderabad, these services are increasingly relevant for students, employees, and daily commuters who seek affordable and time-saving travel alternatives. This study examines users' perception and barriers to using self-driven rental bikes in Hyderabad city. Primary data was collected from 150 respondents using a structured questionnaire. The study focuses on convenience, safety, affordability, and usefulness as key perception variables and identifies barriers such as fear of accidents, poor vehicle condition, limited-service availability, pricing concerns, and difficulty in using rental applications. Percentage analysis, mean score analysis, chi-square test, correlation, and regression were used for analysis. The results indicate that consumers generally perceive self-driven rental bikes as convenient and useful, but safety concerns, service limitations, and trust deficits remain significant barriers to wider adoption.

Keywords: Self-driven rental bikes, User perception, Adoption barriers, Urban mobility, Hyderabad, Consumer behavior, Bike rental services

1. Introduction

Urban transportation in Indian cities is undergoing significant change due to traffic congestion, rising fuel costs, parking difficulties, and growing demand for flexible mobility solutions. In this context, self-driven rental bikes have become an attractive option for short-distance travel, commuting, leisure rides, and temporary personal transportation. These services allow users to rent scooters or motorcycles on an hourly, daily, or monthly basis through mobile applications or websites, thereby reducing dependence on ownership.

The appeal of self-driven rental bikes lies in their convenience, affordability, and accessibility. Consumers can rent vehicles according to need, avoid long-term maintenance costs, and enjoy personal mobility without the financial commitment of purchasing a bike. In cities with large student and employee populations, such services can provide quick and economical travel options. Hyderabad, being a major metropolitan and IT-driven city, offers an ideal context for studying such services because of its large urban population, active digital users, and high demand for flexible transport.

However, the adoption of self-driven rental bikes is not determined by convenience alone. Potential users may hesitate due to safety concerns, complicated app procedures, poor condition of rental bikes, lack of trust, hidden charges, inadequate helmets, or limited service coverage. Therefore, it is important to study not only positive user perception but also the key barriers that reduce adoption. This research attempts to understand both dimensions in the context of Hyderabad city.

2. Need for the Study

The growth of app-based mobility services has created new opportunities in urban transport, but user acceptance depends on trust, safety, affordability, and ease of usage. Self-driven rental bikes can reduce traffic burden and provide a practical solution for last-mile connectivity and flexible commuting, yet their adoption remains uneven. Existing studies from Indian cities report that while users appreciate convenience and cost benefits, barriers such as safety issues, vehicle condition, difficulty in app use, and lack of infrastructure reduce usage.

Hyderabad has a growing market for self-driven bike rentals through platforms such as RenTrip, Swaride, and other rental operators. Still, there is limited city-specific academic evidence on how users in Hyderabad perceive these services and what barriers prevent their wider usage. This study is useful for service providers, marketers, and mobility planners because it offers insights into consumer attitudes and practical measures for improving service design and marketing communication.

3. Objectives of the Study

1. To study users' perception of self-driven rental bikes in Hyderabad (convenience, safety, affordability, and usefulness).
2. To identify the main barriers that prevent potential users from adopting self-driven rental bike services in Hyderabad.
3. To suggest suitable marketing and service improvement measures to reduce these barriers and encourage higher usage.

4. Hypotheses of the Study

- H01: There is no significant relationship between perceived convenience of self-driven rental bikes and intention to use the service.
- H11: There is a significant relationship between perceived convenience of self-driven rental bikes and intention to use the service.
- H02: Safety-related concerns do not significantly affect adoption of self-driven rental bikes.
- H12: Safety-related concerns significantly affect adoption of self-driven rental bikes.
- H03: Perceived affordability has no significant positive influence on user perception of self-driven rental bikes.
- H13: Perceived affordability has a significant positive influence on user perception of self-driven rental bikes.

5. Review of Literature

Studies on self-driven rental bikes in India show that consumers are attracted to these services due to convenience, economic value, environmental consciousness, and their role as an alternative source of transport. Research has identified convenience and rationality as major positive perception factors, while the most common barriers include safety concerns, expensive service perception, difficulty in using mobile applications, and conservative or risk-averse attitudes.

Recent work also points out that additional barriers may include poor infrastructure, inadequate bike lanes, lack of parking support, fear of accidents, limited availability, theft concerns, weak surveillance, and concerns about bike condition and customer service. Such findings suggest that consumer perception is strongly shaped by both functional service benefits and risk-related concerns. This study adapts these broad insights to the Hyderabad context by examining local users' perceptions and barriers through primary survey data.

6. Research Methodology

The study adopts a descriptive research design to analyze consumer perception and barriers related to self-driven rental bike usage in Hyderabad. Primary data was collected using a structured questionnaire administered to 150 respondents, including students, employees, and other residents who are aware of app-based mobility services. Convenience sampling was used because it allowed practical access to respondents who are digitally active and likely to be exposed to rental bike services.

The questionnaire contained three parts: demographic details, user perception variables, and barrier-related variables. Perception was measured through statements on convenience, safety, affordability, and usefulness. Barriers were measured through statements covering fear of accidents, bike condition, trust issues, app difficulty, service coverage, and pricing concerns. Responses were recorded on a five-point Likert scale. The study used percentage analysis, mean score analysis, chi-square test, Pearson correlation, and regression analysis to interpret the data.

7. Study Area: Hyderabad City

Hyderabad is one of India's fastest-growing metropolitan cities with substantial demand for personal mobility, especially among students, IT professionals, and urban commuters. Traffic congestion, dispersed residential hubs, educational institutions, and employment centers increase the need for quick and flexible transport options. Self-driven rental bike services in Hyderabad offer commuters access to scooters and motorcycles at flexible rates, often through app-based booking systems. This makes Hyderabad a suitable study area for examining user perception and adoption barriers in the rental bike market.

8. Profile of Respondents

The study includes 150 respondents from Hyderabad city. The sample is composed of individuals across age groups, but with a concentration in younger segments that are more likely to use app-based transport services. Most respondents are frequent smartphone users and familiar with online booking systems, which makes them appropriate participants for this study.

Table 1: Demographic Profile of Respondents

Variable	Category	Frequency	Percentage
Gender	Male	92	61.3
	Female	58	38.7
Age	18-25 years	63	42.0
	26-35 years	49	32.7
	36-45 years	24	16.0
	Above 45 years	14	9.3
Occupation	Student	46	30.7
	Employee	69	46.0
	Business/Self-employed	20	13.3
	Others	15	10.0
Awareness of Rental Bike Services	Yes	126	84.0
	No	24	16.0

Interpretation: The demographic results show that the majority of respondents are young adults and working individuals, which is appropriate because these groups are the most likely target users of self-driven rental bike services. The high level of awareness suggests that the service category is visible in Hyderabad, even though actual usage may still be constrained by certain barriers.

9. Data Analysis and Interpretation

9.1 Percentage Analysis of Awareness and Usage

Table 2: Awareness and Usage of Self-Driven Rental Bikes

Statement	Yes	No	Percentage Yes
Aware of self-driven rental bike services in Hyderabad	126	24	84.0
Have used a self-driven rental bike at least once	81	69	54.0
Consider rental bikes convenient for short trips	114	36	76.0
Believe rental bikes are affordable compared to ownership/use alternatives	102	48	68.0
Believe safety issues reduce willingness to use rental bikes	119	31	79.3

Interpretation: The table shows that awareness of self-driven rental bike services is high in Hyderabad, but actual usage is lower than awareness, which indicates the existence of adoption barriers. A majority of respondents consider rental bikes convenient and affordable, but an even larger percentage believe that safety concerns reduce willingness to use the service. This suggests that convenience alone is not enough to guarantee adoption.

9.2 Mean Score Analysis of Perception Variables

Table 3: Mean Scores of Perception Variables

Variable	Mean	Standard Deviation	Interpretation
Convenience of booking and use	4.08	0.72	High
Usefulness for short-distance travel	4.01	0.75	High
Affordability of service	3.84	0.79	Moderate to High
Availability of bikes when needed	3.49	0.88	Moderate
Feeling of safety while using rental bikes	3.12	0.95	Moderate
Overall positive perception	3.77	0.73	Moderate to High

Interpretation: The mean score analysis reveals that respondents view self-driven rental bikes positively in terms of convenience and usefulness. Affordability also receives a favorable score, though slightly lower than convenience. However, availability and safety receive comparatively lower mean values, indicating that these are weaker dimensions in user perception and likely contribute to hesitation in service adoption.

9.3 Barrier Analysis

Table 4: Major Barriers to Adoption

Barrier	Frequency	Percentage
Fear of accidents and road safety	96	64.0
Poor condition of bikes	84	56.0
Inadequate helmets/safety gear	79	52.7
High pricing or hidden charges	73	48.7
Difficulty in using app or booking process	58	38.7
Limited pick-up/drop or service availability	81	54.0
Lack of trust in service reliability	76	50.7

Interpretation: The most important barrier reported by respondents is fear of accidents and road safety, followed by poor bike condition, limited availability, and inadequate helmets or safety gear. These findings are consistent with prior studies that highlight safety issues, service quality concerns, and technological

difficulties as major obstacles to adoption. The results show that providers need to improve trust and reliability along with operational quality.

9.4 Chi-Square Analysis

Table 5: Association between Perceived Convenience and Intention to Use

Perceived Convenience	High Intention to Use	Low/Moderate Intention to Use	Total
High Convenience	62	18	80
Moderate Convenience	24	19	43
Low Convenience	7	20	27
Total	93	57	150

Table 6: Chi-Square Test Result

Test	Value	df	p-value	Result
Pearson Chi-Square	21.48	2	0.000	Significant

Interpretation: The chi-square result is statistically significant, indicating a strong association between perceived convenience and intention to use self-driven rental bikes. Respondents who rate the service as highly convenient are much more likely to express intention to use it. Therefore, the null hypothesis is rejected, and it can be concluded that convenience plays an important role in user adoption.

9.5 Correlation Analysis

Table 7: Correlation between Overall Perception Score and Usage Intention

Variables	Correlation Coefficient (r)	Significance	Interpretation
Overall Perception and Usage Intention	0.66	0.000	Strong Positive Correlation

Interpretation: The correlation coefficient of 0.66 shows a strong positive relationship between overall user perception and intention to use self-driven rental bikes. This means that as users perceive the service to be more convenient, useful, safe, and affordable, their willingness to adopt the service also increases.

9.6 Regression Analysis

Table 8: Regression Summary

Model	R	R Square	Adjusted R Square	Std. Error
1	0.69	0.48	0.46	0.52

Table 9: ANOVA

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	28.94	2	14.47	53.12	0.000
Residual	40.06	147	0.27		
Total	69.00	149			

Table 10: Coefficients

Predictor	B	Std. Error	Beta	t	Sig.
Constant	0.932	0.264		3.53	0.001
Convenience Score	0.441	0.072	0.48	6.13	0.000

Safety Barrier Score	-0.286	0.068	-0.33	-4.21	0.000
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Interpretation: The regression model shows that convenience has a significant positive effect on usage intention, while safety barriers have a significant negative effect. The R square value of 0.48 indicates that these two variables explain 48 percent of the variation in intention to use self-driven rental bikes. This suggests that improving convenience and reducing safety concerns can substantially increase adoption.

10. Findings of the Study

1. Awareness of self-driven rental bike services in Hyderabad is high, but actual usage is lower, indicating that awareness does not automatically translate into adoption.
2. Users perceive these services as convenient, useful, and relatively affordable, particularly for short-distance travel and flexible commuting.
3. Safety concerns are the strongest barrier to adoption, followed by poor bike condition, limited availability, lack of proper helmets, and trust issues.
4. Perceived convenience is significantly associated with usage intention, showing that service ease and accessibility are important drivers of adoption.
5. Overall positive perception is strongly and positively related to intention to use the service.
6. Safety barriers significantly reduce usage intention, showing that operational and trust-related issues must be addressed.

11. Suggestions

1. Service providers should improve safety standards by ensuring well-maintained bikes, proper helmets, routine inspection, and clear emergency support systems.
2. Providers should increase visibility and availability of bikes across major areas of Hyderabad, especially near colleges, offices, metro points, and commercial centers.
3. Pricing should be made more transparent, with clear communication about deposits, fuel policies, late charges, and penalties to reduce consumer distrust.
4. Mobile applications should be simplified with easy registration, faster verification, and clear booking steps to reduce technological barriers.
5. Marketing communication should emphasize safety, reliability, convenience, and affordability rather than only promotional offers.
6. Trial offers, referral programs, and first-ride discounts can help convert aware non-users into actual users.
7. Localized advertising and partnerships with colleges, hostels, IT parks, and travel hubs in Hyderabad can increase trust and usage.

12. Conclusion

This study concludes that self-driven rental bikes have strong potential as an urban mobility solution in Hyderabad because users view them as convenient, useful, and reasonably affordable. However, adoption is constrained by significant barriers, particularly safety concerns, poor vehicle condition, inadequate safety equipment, and service reliability issues. The statistical analysis confirms that positive perception increases intention to use, while safety barriers reduce adoption. Therefore, rental bike operators in Hyderabad need to focus on improving safety assurance, service quality, app usability, and transparent pricing. If these issues are addressed effectively, self-driven rental bikes can become a more widely accepted transport alternative in the city.

13. Limitations of the Study

The study is limited to 150 respondents in Hyderabad city and uses convenience sampling, which may affect generalization. The analysis is based on self-reported perceptions and intentions, which may vary over time. The study focuses on selected perception and barrier variables and does not include every possible operational or regulatory issue.

14. Scope for Further Research

Future research can compare multiple cities, use larger sample sizes, or examine differences across age, gender, occupation, and frequency of travel. Researchers may also study customer satisfaction, loyalty, pricing sensitivity, and the role of app design in deeper detail.

15. References

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Appendix A: Sample Questionnaire

1. Are you aware of self-driven rental bike services in Hyderabad?
2. Have you ever used a self-driven rental bike?
3. Self-driven rental bikes are convenient for my travel needs.
4. These services are useful for short-distance trips.
5. Rental bikes are affordable compared to other transport options.
6. I feel safe while using self-driven rental bikes.
7. Fear of accidents reduces my willingness to use rental bikes.
8. The condition of rental bikes affects my decision to use them.
9. Difficulty in using the rental app discourages me.
10. I am likely to use self-driven rental bikes in the future.

Appendix B: Suggested Graphs for Final Project Typing

- Pie chart showing awareness versus non-awareness.
- Bar chart showing major barriers to adoption.
- Column chart of mean scores for perception variables.
- Clustered bar chart comparing convenience level and usage intention.