



A STUDY ON USERS' PERCEPTION ON E-BIKE

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ABSTRACT

This research delves into the evolving realm of electric bicycles, commonly known as "e-bikes," investigating a wide range of user experiences as well as the complex technology involved. The study examines the characteristics that make up e-bikes, such as motor power, battery capacity, and range, to provide insight into the underlying technologies of this rapidly developing form of transportation. Beyond the technical details, the study investigates the benefits and drawbacks of e-bikes, including everything from legal uncertainty to environmental sustainability. A comprehensive analysis of user experiences is carried out, examining the reasons behind, inclinations, and difficulties people encounter while incorporating e-bikes into their everyday routines. The aim of the study is to offer a thorough comprehension of how the adoption of e-bikes impacts communities. The paper analyses the factors collected from two fifty-five respondents from Chennai. This study seeks to offer insights for decision-making processes that will shape the future of sustainable urban mobility and active transportation. It does so by analyzing the intricate dynamics of e-bikes and their riders.

Keywords: E-bikes, Attitudes, user experience, perceived safety and benefits.

INTRODUCTION:

Global patterns of mobility and transportation have changed significantly as a result of the popularity of electric bicycles, on "E-bikes". With the addition of electric assistance, e-bikes offer the convenience and health advantages of regular bicycles to a broader demographic, increasing accessibility



to cycling. Depending on the type, these bikes can support the rider's pedaling efforts or even provide complete transportation. E-bikes typically have a rechargeable battery. E-bikes are gaining popularity due to several factors, including their ability to make cycling accessible to a broader range of people, their environmental benefits over traditional vehicles, and their convenience for both commuting and recreational riding. Users of e-bikes range widely; they include recreational riders searching for an extra boost on longer rides or in mountainous terrain, as well as commuters looking for a more cost effective and environmentally friendly mode of transportation. The goal of this research is to investigate the attitudes, actions and experience of e-bike riders. Through an exploration of the variables influencing the uptake of e-bikes and the difficulties riders face. Moreover, e-bikes are seeing rising adoption among delivery personnel and other professionals who rely on bicycles for work, as the electric assistance can enhance their efficiency and convenience.

Overall, e-bikes are becoming an integral part of urban transportation systems and outdoor recreation activities.

ADVANTAGES OF E-BIKE USERS:

E-bikes help to create a cleaner environment. It is a cost effective form of transportation. E-bikes encourage exercise and a healthy lifestyle because they need physical activity even with their electric support. E-bikes can move through traffic faster than autos, which can save you time each day on your commute.

DISADVANTAGES OF E-BIKE USERS:

E-bike batteries have a rather short lifespan. Battery charge time is long. Maintenance and repairs are costly.

NEED OF THE STUDY:

E-bikes possess the power to dramatically change the both health and environmental outcomes. The technology behind e-bikes is advancing quickly because to improvements in battery pack technology, motor productivity, and design. Gaining insight into consumer perceptions can assist producers in



creating goods that cater to consumers' requirements and tastes, which will eventually lead to a rise in e-bike usage and satisfaction. In users view of e-bikes is essential to knowing how they will affect transportation, conservation responsibility, and health consequences in the years to come.

OBJECTIVES:

- To find out the demographic profile of the respondents.
- To examine association between purchase information on e-bike and gender.
- To determine difference between demographic profile and factors influencing users' perception on e-bike.
- To analyze the relationship between riding style, attitude, perceived safety, benefits and users perception of E-bike.

REVIEW OF LITERATURE:

Fyhri, A., & Fearnley, N. (2015) conducted a survey to identify objective was to be analysed how e-bikes affect riding, both in terms of total distance travelled and percentage of overall transportation. To be more precise, our hypothesis states that: E-bikes will increase cycling, as measured by the number of trips and distance ridden; female cyclists will be more affected by e-bikes than male cyclists; older cyclists will be more affected by e-bikes; and commuting will be more affected by e-bikes than leisure travel. Sixty-six samples were gathered during the investigation. In this investigation, the t-test and Analysis of variance had been used. This study found a number of theories regarding how e-bikes affect people's bicycle usage and whether there is a learning impact. Based on a controlled study involving sixty-six participants in real life, the impact of the e-bike increased over time, indicating that users learned from it. This effect was more pronounced among female riders compared to male riders. Age-related difference did not exist. Overall, the findings show that using an e-bike for everyday travel is actually possible.

Marincek, D. (2023) emphasizes a study on riding-friendly atmosphere and riders that possess particular characteristics (gender, age, etc.) come together at a certain point to be deemed safe. The study obtained from 1260 owners of e-bikes in Lausanne, Switzerland. Chi-square and cluster analysis were the



statistical tools used. The results of the study could provide a useful baseline for other low-cycling communities that have invested in new cycling infrastructure and seen a significant increase in the number of individuals taking up cycling due to e-bikes. The rapid development of e-bikes has highlighted adverse cycling conditions, posing new challenges. While e-bikes have been effective in attracting a wide variety of riders with different backgrounds and skill levels, increasing the perceived degree of safety will be necessary to keep e-bikes appealing.

Van Cauwenberg, J. et al., (2019) emphasize a study on better understanding why older people purchase e-bikes, as well as the advantages and disadvantages of these vehicles, as well as their applications, frequency of use, substitution effects, and crash characteristics. For the inquiry, a total of Three hundred and Fifty-Seven responses were received. The chi-square was one of the instruments used. To sum up, our findings suggest that e-bikes may improve older people's ability to move sustainably and actively. The advantages of e-bikes could be highlighted in campaigns to promote their use. Strategies to encourage the usage of e-bikes could be included in governmental initiatives to support active ageing. These tactics ought to center on highlighting the advantages that have been shown, minimizing the drawbacks, and raising e-bike safety. Confirming existing findings will require research in nations with less conducive cycling cultures.

METHODOLOGY:

This is a descriptive and an analytical study. This study employed both primary and secondary data sources. Primary data was gathered through a questionnaire, while secondary sources included published papers, websites, books, and other literature. The empirical research utilized a structured questionnaire featuring a five-point Likert scale. The sample area where the data collected was within Chennai city. A sample size of 255 and method of convenience sampling was adopted.



DATA ANALYSIS AND INTERPRETATION:

❖ Percentage Analysis:

Table 1: Demographic Profile

Factors	Category	Percentage
Gender	Male	51.8
Age	18-25	26.7
Educational Qualification	Undergraduate	33.3
Employed Status	Private sector	46.3
Income(Monthly)	20001-40000	32.9

Source- Primary data

- In the above table, the percentage of respondents according to gender, Male - 51.8% & Female - 48.2%
- 26.7% belonged to the age group of 18 - 25 years; 22.4% were between 36 - 45 years; 22% were between 26 - 35 years; 19.6% were below 46 - 55 years of age and 9.4% were above 55 years old.
- Educational qualification, 33.3% were under graduate, 29.4% were post graduate, 13.7% were diploma, 12.5% were higher secondary, 11.0% were professional.
- Employed status, 46.3% were private sector, 28.2% were Self – Employed, 14.1% were public sector, 11.4% were professional.
- Monthly income between Rs 20001 – 40000 has the highest percentages of 32.9%, followed by the income Below 20000 (25.5%) and income between 40001 – 60000 (25.1%). 16.5% of respondents Above 60000.



Table 2: Purchase Details of E-bike

Variables	Category	Percentage
E-bike brand	TVS	30.2
Cost of E-bike	75001 - 100000	31
Place of Purchase	E-bike showroom	60
Reason to Purchase	Cost effective form of transportation	54.9
Frequency of e-bike	Every day or almost	30.6
Hours	30 – 45 minutes	38.4
Using a e-bike	1 year	34.1
Different Season	Summer	37.6
Speed of e-bike	35 km – 45 km	34.5
Fast or aggressive manner	Occasionally	32.5

Source-Primary Data

- In terms of the kind of e-bike brand 30.2% of the respondents using TVS, 27.5% of the respondents using Ola electric, 23.5% of the respondents using Bajaj, 15.3% of the respondents using Ather energy, and 3.5% of the respondents using other brands.
- Cost of e-bike 31.0% of the respondents spent 75001 – 100000, 22.7% of the respondents were 50001 – 75000, 21.2% of the respondents were 100001 – 125000, 19.2% of the respondents were 25000 – 50000, 5.9% of the respondents spent 125000 above.
- E-bike place of purchase 60.0% of the respondents were E-bike showroom, 32.2% of the respondents were online, 7.8% of the respondents were others.
- Reasons to purchase an E-bike 54.9% of the respondents were that e-bike is cost effective transportation, 31.8% of the respondents were to be able to keep up when riding with friends/family, and 13.3% of the respondents were to increase fitness.
- Frequency of E-bike 45.9% of the respondents uses every day or almost, 30.6% of the respondents use once or twice in a week, 18.0% of the respondents use once or twice in a two week, and 5.5% of the respondents use a few times per month or less.



- E-bikes for hours 38.4% of the respondents were 30 – 45 minutes, 33.3% of the respondents were 45 – 1 hour, 16.1% of the respondents were 15 – 30 minutes, 12.2% of the respondents were more than 1 hour.
- Using an E-bike for long 34.1% of the respondents was 1 year, 27.8% of the respondents were 1 – 2 years, 25.1% of the respondents were less than six months, and 12.9% of the respondents were more than 2years.
- E-bike in different seasons were 37.6% of the respondents were summer, 32.5% of the respondents were winter, 22.0% of the respondents were spring, and 7.8% of the respondents were autumn.
- The speed of electric bike 34.5% of the respondents were 35 – 45 km, 20.4% of the respondents were 25 – 35km, 18.4% of the respondents were 45 – 55 km, 15.7% of the respondents were more than 55, and 11.0% of the respondents were 15 – 25km.
- In terms, riding a e-bike in a fast or aggressive manner 32.5% of the respondents were Occasionally, 29.4% of the respondents were Rarely, 17.3% of the respondents were Frequency, 16.1% of the respondents were Never, and 4.7% of the respondents were Always.

❖ **Chi-Squared Test:**

H₀: There is no significant association between purchase information on e-bike and gender.

H₁: There is a significant association between purchase information on e-bike and gender.

Table 3: Association between Purchase Information on E-Bike and Gender

E-Bike Users	Chi Square Value	Degree of Freedom	Significant	H ₀ is
E-bike Brand	8.941	4	0.063	Accepted
Cost of e-bike	7.051	4	0.133	Accepted
Place of purchase	1.428	2	0.490	Accepted
Reason to Purchase	0.423	2	0.809	Accepted



Frequency of e-bike	3.640	3	0.303	Accepted
Hours	2.625	3	0.453	Accepted
Using of e-bike	6.731	3	0.081	Accepted
Speed of e-bike	5.443	4	0.245	Accepted
Aggressive manner	1.591	4	0.810	Accepted

Source: Primary Data

The above table 4.4 showed p value is more than is 0.05, the null hypothesis is accepted. Therefore, there is no significant association between purchase information on e-bike, brand of e-bike, cost, place of purchase, reason to purchase, frequency, hours, using of e-bike, speed, aggressive manner and gender.

❖ **One Way ANOVA:**

H₀: There is no significant difference between the demographic profile of the respondents and users' perception on e-bike.

H₁: There is a significant difference between the demographic profile of the respondents and users' perception on e-bike.

Table 4: Difference between Demographic Profile and Factors Influencing Users' Perception on E-Bike

Demographic	Category	Mean	Standard Deviation	F Value	Significant	H ₀ is
Gender	Male	3.759	0.639	2.571	0.110	Accepted
	Female	3.875	0.503			
Age	18-25	3.824	0.629	0.460	0.765	Accepted
	26-35	3.842	0.516			
	36-45	3.827	0.601			
	46-55	3.723	0.527			
	55 Above	3.893	0.646			



Educational Qualification	Higher Secondary	3.864	0.688	1.815	0.145	Accepted
	Diploma	3.993	0.556			
	Under graduate	3.760	0.564			
	Post graduate	3.782	0.609			
	Professional	3.903	0.568			

Source: Primary Data

From the above table 4.5 shows the significant value is more than “P” value (0.05%), the null hypothesis is accepted. Therefore, there is no significant different between demographic profiles of gender, age, educational qualification, employed status, monthly income and users’ perception on e-bike.

❖ **Regression Analysis:**

H₀ : There is no relationship between riding style, attitude, perceived safety, benefits and users perception of E-bike.

H₁ : There is a relationship between riding style, attitude, perceived safety, benefits and users perception of E-bike.

Table 3 Relationship of style, attitude, safety, benefits and users perception

Variables	Regression Coefficients	t-value	Sig.
(Constant)	.234	1.338	.182
Style	.142	2.938	.004
Attitudes	.320	6.427	.000
Safety	.414	7.352	.000



Benefits	.053	.913	.362
F	117.453**		.000
R	0.808		
R Square	0.653		
Adjusted R Square	0.647		

**significant at the 0.01 level. Source : Primary Data

The above table 3 shows that the R value is 0.808, R^2 value is 0.653 & F value is 117.453 at the 1% level of significance. Hence the null hypothesis is rejected and the alternative hypothesis accepted. This study concludes that there is a relationship between riding style, attitude, perceived safety, benefits and users perception of E-bike.

SUGGESTIONS:

- More people would utilize e-bikes if some of their weight were decreased.
- In the future, there are more power stations. It will be beneficial to those who use e-bikes.
- It will be more beneficial if it has features like removed batteries for simple charging.
- With advancements in battery technology, some e-bikes boast longer range capabilities allowing for extended rides without the need for frequent recharging.

CONCLUSION:

Our investigation into e-bikes and their riders, has shed light on the many benefits that e-bikes offer. E-bikes are not only a technological marvel but also a practical answer to today's urban problems because of their low maintenance and running costs and environmentally benign footprint. The health advantages of riding an ebike highlight how nicely technology and wellbeing can coexist. In addition to supplying electric assistance, the pedal-assist system encourages exercise, giving customers a



distinctive and comprehensive method of staying fit throughout their everyday trips. Convenience is crucial since e-bikes are a flexible and effective form of transportation that let riders move through traffic with ease. As fewer conventional vehicles are used, traffic congestion is lessened, which is in line with the goal of creating accessible and sustainable metropolitan areas. E-bikes make accessibility, which was previously a barrier for some people, easier. By bridging the gap for a wider range of users, including those who might have physical restrictions with conventional bikes, these electrically assisted bicycles promote a more inclusive approach to active commuting.

Positive user experiences from our study tell a powerful story about how e-bikes are becoming more and more accepted and integrated into everyday life. Users enjoy the pleasure of traveling, getting a close-up look at their environment, and supporting a better, healthier way of life. It is clear that e-bikes are more than just a means of transportation - rather, they are agents of positive change in our cities. These bikes' electric hums not only herald technological advancement but also a movement in society toward efficient and sustainable urban mobility. In this study, users perceived e-bikes' positive momentum drives us toward more connected, healthy, and environmentally friendly communities.

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