

## Assessing Awareness and Perceptions of E-Bikes: Insights from Trichy City

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### Abstract

The study investigates the awareness, perception, and factors influencing the adoption of electric bikes (e-bikes) in Trichy city, Tamil Nadu. With the increasing environmental concerns and the rise of sustainable transportation options, e-bikes are seen as a potential solution for urban mobility. The research aims to assess how various socio-economic and environmental factors contribute to people's decision to adopt e-bikes in the city. It also explores barriers such as lack of infrastructure, awareness, and the perceived cost of ownership. The findings will offer valuable insights for stakeholders promoting sustainable urban transport in India.

**Keywords:** Electric bikes, Sustainable transportation, Urban mobility, Environmental concerns.

## **I.INTRODUCTION**

The adoption of electric bikes (e-bikes) is gaining momentum in cities worldwide, driven by the need for more sustainable and eco-friendly transportation options. In India, urban mobility issues such as pollution, traffic congestion, and high fuel costs have led to an increased interest in alternative transportation solutions. Trichy, a growing city in Tamil Nadu, is not immune to these challenges. This study aims to explore the awareness and perceptions of Trichy's residents regarding e-bikes and identify the key factors that influence their adoption. By examining these factors, the study will help policymakers and businesses in the city understand how to encourage e-bike adoption.

### **Need and Importance of the Study**

With urban air pollution and traffic congestion becoming critical issues in Indian cities, sustainable transportation solutions like e-bikes offer a promising alternative. Understanding the factors influencing e-bike adoption is crucial for encouraging their use. This study will help city planners, policymakers, and businesses understand the barriers and drivers of e-bike adoption, contributing to the development of more effective policies and marketing strategies for promoting eco-friendly transport.

### **Review of Literature**

1. **Kumar, A. (2020)** - The paper discusses various factors affecting the adoption of sustainable transport options in urban India. Kumar highlights the role of public awareness, affordability, and government policies in influencing consumer choices for green transport alternatives such as e-bikes and electric vehicles.
2. **Sharma, R. (2019)** - Sharma's research focuses on the perception of electric vehicles in urban areas of India. The study highlights how the perception of electric vehicles as cost-effective, eco-friendly, and modern influences adoption. Sharma also examines the lack of awareness and infrastructural challenges that slow down adoption in cities.
3. **Singh, S. (2021)** - Singh's study explores the awareness and acceptance of e-mobility solutions across Indian cities. It highlights factors such as the perceived environmental benefits, convenience, and economic incentives that drive adoption, along with the barriers of high initial costs and lack of charging infrastructure.

### **Statement of the Problem**

Despite the growing environmental concerns and the rise of e-mobility solutions, the adoption of e-bikes in Trichy remains relatively low. This study aims to identify the factors affecting awareness, perception, and the adoption of e-bikes in the city, and to address the challenges that hinder their widespread use.

### **Objectives of the Study**

1. To evaluate the level of awareness regarding e-bikes among residents of Trichy City.
2. To understand the perceptions of the local population about e-bikes.
3. To identify socio-economic, environmental, and infrastructural factors that influence the adoption of e-bikes.

### **Research Methodology**

#### **Sample Design**

The study will involve a sample of 50 residents from different age groups, genders, and income levels within Trichy city. The respondents will be selected using a random sampling technique to ensure diversity and representativeness.

#### **Data Collection**

Data will be collected through structured questionnaires. These questionnaires will be distributed online and in person to ensure a wide range of responses. The questionnaire will cover topics such as awareness of e-bikes, perception of their benefits and drawbacks, and factors influencing adoption decisions, such as cost, environmental concerns, and availability of infrastructure.

#### **Data Analysis**

The collected data will be analyzed using descriptive statistics and inferential statistics through tools like SPSS. Frequency distributions, cross-tabulation, and chi-square tests will be applied to identify relationships between variables such as age, income, and perception towards e-bike adoption.

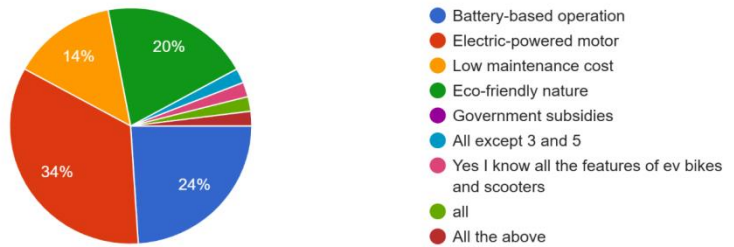
## Analyze And Interpretation

**Table-1**Awareness About Features Of E-Bikes

Awareness of E-Bikes		No. of Respondents	Percentage
Battery-based operation		12	24%
Electric-powered motor		17	34%
Low maintenance cost		7	14%
Eco-friendly nature		10	20%
Government subsidies		0	0%
Others		4	8%
<b>Total</b>	<b>50</b>	<b>100%</b>	

Do you know the features of e-bikes? (Select all that apply)

50 responses

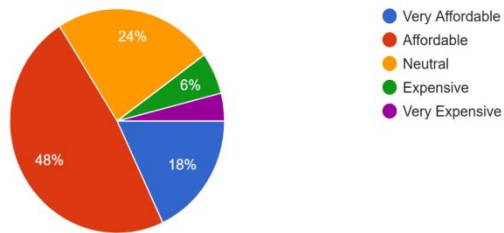


The above Table-1 highlights the awareness of e-bikes among respondents, with 34% identifying the electric-powered motor as a key feature, and 24% recognizing their battery-based operation. Additionally, 20% of respondents are aware of e-bikes' eco-friendly nature, while 14% are aware of their low maintenance cost. Notably, no respondents mentioned government subsidies, and 8% provided other responses. Overall, the majority of respondents are most aware of the motor and battery functions of e-bikes.

**Table-2 Perception of Affordability Of E-Bikes**

Affordability of E-Bike	No. of. Respondents	Percentage
Very Affordable	9	18%
Affordable	24	48%
Neutral	12	24%
Expensive	3	6%
Very Expensive	2	4%
<b>Total</b>	<b>50</b>	<b>100%</b>

How do you perceive the affordability of e-bikes?  
50 responses

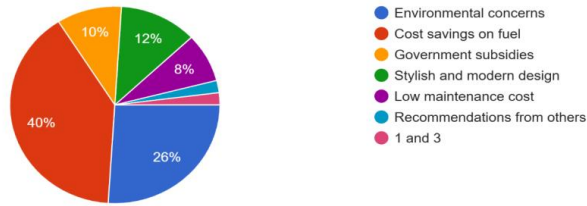


The above Table 2 shows that most respondents find e-bikes affordable, with 48% rating them as "Affordable" and 18% as "Very Affordable." A smaller portion, 24%, expressed a neutral stance. On the other hand, only 10% of respondents felt e-bikes were expensive, with 6% labeling them as "Expensive" and 4% as "Very Expensive." This suggests that e-bikes are generally considered affordable by the majority of respondents, with few perceiving them as costly.

**Table-3 Factors Influencing Purchase of E-Bikes**

Factors	No. of. Respondent	Percentage
Environmental Concerns	13	26%
Cost Savings On Fuel	20	40%
Government Subsidies	5	10%
Stylish And Modern Design	6	12%
Low Maintenance Cost	4	8%
Recommendations From Others	1	2%
Others	1	2%
<b>Total</b>	<b>50</b>	<b>100%</b>

What factors influenced your decision to buy or consider buying an e-bike? (Select all that apply)  
50 responses



The above Table-3 reveals that the primary factor driving interest in e-bikes is cost savings on fuel, with 40% of respondents citing it. Environmental concerns follow closely at 26%. Other factors include stylish design (12%), government subsidies (10%), and low maintenance costs (8%). A small percentage of respondents mentioned recommendations from others (2%) and other factors (2%). Overall, fuel savings and environmental concerns are the most influential reasons for considering e-bikes.

### Findings

1. **Awareness of E-Bike Features:** In Tiruchirappalli, 34% of respondents are aware of the e-bike's electric motor, and 24% recognize the battery-based operation as key features of e-bikes.
2. **Perception of E-Bike Affordability:** The majority of respondents perceive e-bikes as affordable, with 66% rating them as "Affordable" or "Very Affordable," indicating a positive perception of their cost in the city.
3. **Key Factors Driving E-Bike Adoption:** The main motivators for adopting e-bikes in Tiruchirappalli are cost savings on fuel (40%) and environmental concerns (26%), reflecting a growing interest in sustainable and economical transportation.
4. **Additional Influencing Factors:** Other factors influencing e-bike adoption include the stylish design (12%), government subsidies (10%), and low maintenance costs (8%), though they play a secondary role.
5. **Perceived Expense:** A small segment (10%) of respondents in Tiruchirappalli consider e-bikes expensive, with only 4% categorizing them as "Very Expensive," suggesting that cost concerns are not widespread.

### Limitations of the Study

1. **Geographical Limitation:** The study is limited to Trichy city and may not represent the perceptions of people in rural areas or other cities.
2. **Sample Size:** With a sample size of 50 respondents, the results may not fully capture the diverse views of all Trichy residents.
3. **Data Accuracy:** The research relies on self-reported data, which may be subject to bias or inaccuracies.

### Scope for Further Research

This study highlights the increasing awareness and positive perception of e-bikes in Tiruchirappalli, with key features like the electric motor and battery being most recognized. E-bikes are generally viewed as affordable, and the main reasons for adoption are fuel savings and environmental concerns. While a small percentage find e-bikes expensive, government subsidies were not a notable factor, indicating potential for further research in this area. Overall, e-bikes are seen as a cost-effective and eco-friendly transportation option, with opportunities for deeper exploration into adoption challenges and their environmental impact.

## II.CONCLUSION

This study shows that e-bikes are gaining awareness and positive perception in Tiruchirappalli, with key features like the electric motor and battery being well recognized. Most respondents find e-bikes affordable, and the main adoption drivers are fuel savings and environmental concerns. Although a few perceive e-bikes as expensive, the role of government subsidies has not been explored. Overall, e-bikes are seen as a cost-effective and eco-friendly transportation option, with further research needed on adoption barriers and their broader environmental impact.

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