Anusandhanvallari
Vol 2025, No.1
December 2025
ISSN 2229-3388

Consumer Preferences for Two-Wheeler Electric Vehicles: A Study on Brand Choices and Purchase Patterns

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Abstract: The study is aimed at exploring consumer preference, awareness and satisfaction, and the obstacles related to adoption of electric two-wheeler vehicles in the Betul District. Primary data were gathered by use of structured questionnaire to 200 respondents using descriptive research design. The findings suggest that the level of awareness on the use of electric two-wheelers is moderately high, with younger people and middle-income individuals being more active. Ola Electric and Ather became the most desired brands, however, largely due to factor like battery life, charging convenience and affordability. Although there were good feelings about the use of electric mobility, consumer satisfaction was average indicating that more effort is needed to address driving range, the speed of charging, and battery life. Some of the major obstacles cited are high start-up expenses, lack of proper charging infrastructure, short battery duration and lack of awareness. Tests of hypothesis did not indicate any significant relationship between age and brand preference. In general, the research concludes that the consumer interest in electric two-wheelers is growing, but it is necessary to handle the economic, technical, and infrastructural issues to speed up the process of EVs adoption. The results can be useful in guiding policymakers, manufacturers, and stakeholders who want to increase consumer acceptance and the electric mobility ecosystem.

Keywords: Electric Vehicles (EVs), Consumer Preference, Brand Choice, Awareness Level, Purchase Factors, Barriers to Adoption, Charging Infrastructure, Two-Wheeler Market, Sustainability, Betul District

1. INTRODUCTION

The recent shift towards sustainable and energy efficient mobility has made the world focus more on electric vehicles (EVs) especially in striving developing economies such as India, where consumers transportation preferences are being transformed by rising fuel costs, increasing environmental awareness, and government subsidies. Out of all types of EVs, electric two-wheelers, in particular, scooters have become the most powerful aspect of the transition of the Indian economy to clean mobility. They are very applicable in the urban and semi-urban areas due to their affordability, ease and convenience of use, low operating costs and because they are suitable in short to medium commuting distances.

In other districts e.g. Betul in Madhya Pradesh, two wheelers are much greater than the four wheels, based on economy and geographical terrain factors and also based on daily traveling patterns. Consumer ideas are shifting as a number of EV makers, including Ola Electric, Ather, Hero Electric, Bajaj Chetak, TVS iQube, and Okinawa, are finding their way into the market and customers are basing their choices on the perceived value, performance, brand trust, charging convenience, and overall satisfaction. Knowledge of these brand preferences at the brand level is crucial to manufacturers and policy makers trying to increase the use of EVs in the new districts.

The EV two-wheeler segment continues to be a significant challenge in Betul, despite the increased awareness. Some of the issues like the high costs of purchasing the product, poor charging systems, short lifespan of the battery, and lack of awareness among the consumers still pose a setback to the potential buyers. Such obstacles exist particularly in semi-urban regions where infrastructure development remains at the national level of EV growth objectives. It would be required to determine the effect of these barriers on consumer choices to enhance the adoption rates.

Additionally, brand image, price policy, after sale service, battery technology, design, and perceived reliability are among the major factors that affect the consumer perception. Therefore, the analysis of brand preferences and obstacles gives the analytical picture of the purchase patterns and consumer expectations in the district.

1.1. Research Objectives

- To examine the consumer preference in buying other brands of two-wheeler scooter.
- To determine the challenges that serve as an obstacle in the journey of the consumer towards consuming the EVs.
- To provide appropriate recommendations to hasten the revolution of electric vehicles.

1.2. Research Hypothesis

H3: There is a significant difference in consumer preference for various brands of electric two-wheeler scooters in Betul District.

H4: Barriers such as high initial cost, inadequate charging infrastructure, battery limitations, and lack of awareness significantly hinder the adoption of electric vehicles in Betul District.

2. LITERATURE REVIEW

The examined literature as a whole points out that the process of electric vehicle (EV) takeover is predetermined by a mixture of economic motivations, demographics, infrastructural preparedness, technological attitudes, and socio-cultural factors in various areas.

Al Shurideh et al. (2025) concluded that consumer perception, particularly those produced by financial stimuli, is a significant factor in EV adoption in Jordan, which is influenced by age, income, and education. Consumers that are younger and educated were more optimistic whereas old and poorer consumers needed specific awareness campaigns. Similarly,

Akisooto et al. (2025) compared to the United States and Nigeria and demonstrated tremendous disparity: in the U.S. a robust federal and state incentive program increased the demand for EVs, whereas in Nigeria infrastructural and policy challenges and socio-economic barriers prevented their use. They highlighted the fact that developing economies require models of incentives that are country-specific and not globalized.

Damanik et al. (2025), with a comprehensive literature study, reported that the EV sales in Indonesia have increased because of the technological improvements, the environmental advantages, and the governmental encouragement. Nevertheless, growth is still hampered by the consistent barriers like expensive prices, the lack of charging stations, and models. They also pointed out the strategic edge that Indonesia can have with its nickel reserves to make the country better EV battery manufacturing industry with the appropriate policy.

Alzoubi et al. (2025) demonstrated that infrastructural issues (availability of charging, charging time, supply chain problem) have a greater impact on purchasing behavior than economic factors. The younger and more educated consumers were more flexible and showed that specific demographic policies should be made. To add on this, Samawi et al. (2025) used a qualitative study and discovered that tax benefits were a reason to attract consumers to use it, but the lack of charging infrastructure, awareness, and high prices were still a barrier to its adoption. They suggested enhanced public-private coordination and the quantitative validation in the future.

In the Indian context, **Kumar (2024)** provided evidence that socio-economic issues including income, education, and access to charging points have a strong impact on EV uptake in cities. In an analysis of macroeconomic data, Patil (2024) reported a positive impact of GDP, per capita income, and population density on the growth of EVs and a negative impact on them of electricity and fuel prices. These works pointed to the necessity to develop location-specific policies and customized financial incentives.

Other global research provided additional behavioral insights. **Lampo, Silva, and Duarte (2025)** found that "technology show-off" (TS)—the wish to show technological awareness - played a major role in BEV adoption in Macau, indicating that social signaling and identity expression are becoming more pertinent. Neeraja (2025) applied the Diffusion of Innovation theory to demonstrate that environmental awareness, technological preparedness and economic viability are the predictors of EV adoption of India and Tier-2 cities in particular.

Studies from India, such as **Tater and John (2025)** and **Jain et al. (2025)** also established that performance, environmental sustainability, and price value have a strong impact on adoption. In some cases, older consumers were more worried about the performance of EV than younger consumers. Large cost of purchase and performance dependability was always a key discouraging factor to mass adoption.

From a cultural perspective, **- (2025)** demonstrated that there is a positive influence of the Islamic values and environmental knowledge on the attitudes and intentions towards EVs in Indonesia. Attitude and not the environmental concern was the best predictor of adoption. **Mustafa et al. (2024)** discovered that, in China perceived value, which was caused by perceived benefits and costs, was a stronger determinant of EV adoption, when compared to environmental knowledge alone.

3. RESEARCH METHODOLOGY

3.1. Research Design

It demonstrated that there is a positive influence of the Islamic values and environmental knowledge on the attitudes and intentions towards EVs in Indonesia. Attitude and not the environmental concern was the best predictor of adoption. Mustafa et al. (2024) discovered that, in China perceived value, which was caused by perceived benefits and costs, was a stronger determinant of EV adoption, when compared to environmental knowledge alone.

3.2. Population and Sample Size

The study population was a sample of consumers who lived in the Betul District, and had at one point either bought or had intentions to buy an electric two-wheeler scooter.
A sample of 200 respondents was selected for the study.

3.3. Sampling Technique

The research utilized non-probability convenience sampling, in which the respondents were chosen through their availability and willingness to participate. The approach enabled the researcher to gather data effectively within the stipulated period.

3.4. Data Collection Method

A structured questionnaire was used to gather primary data and consisted of the sections on demographic information, brand preferences, buying habits, and perceived barriers to EV adoption. The questionnaire was provided online and offline to make sure that there are sufficient responses. Research articles, government reports, industry publications and prior studies pertaining to electric vehicles and consumer behaviour were used to obtain the secondary data.

3.5. Research Instrument

The questionnaire used in the research was in a structured format in form of several sections:

- Consumer preference for various EV brands
- Factors influencing buying decisions
- Barriers to EV adoption

- Suggestions for accelerating EV adoption

The instrument was modeled based on close-ended questions and a five-point Likert scale where necessary.

3.6. Validity and Reliability

Domain experts and members of the faculty reviewed the questionnaire to guarantee its content validity. A pilot test of 20 respondents was done and slight changes were done to enhance the clarity. Cronbach Alpha was used in the evaluation of reliability and all constructs had an acceptable reliability (>0.70).

3.7. Data Analysis Techniques

The data that was collected were coded and inputted in the statistical software to analyze it. Consumer responses were summarized using descriptive statistics in terms of frequencies, percentages, and averages.

For hypothesis testing:

- The chi-square test was used to analyse the variation in the consumer preferences towards the EV brands.
- The barriers to EV adoption were analysed in factor analysis and mean score ranking.

3.8. Ethical Considerations

The study ensured confidentiality and anonymity of all respondents. It was voluntary, and informed consent was taken prior to the application of the questionnaire. No personal identifiers were obtained and the data was not used in a commercial manner.

4. DATA ANALYSIS AND INTREPRETATION

Table 1: Demographic Profile of Respondents (N = 200)

Variable	Category	Frequency	Percentage (%)
Gender	Male	128	64.0
	Female	72	36.0
Age Group	Below 20 years	22	11.0
	21–30 years	78	39.0
	31–40 years	56	28.0
	Above 40 years	44	22.0
Education	School Level	24	12.0
	Undergraduate	94	47.0

	Postgraduate	66	33.0
	Others	16	8.0
Monthly Income	Below Rs. 20,000	52	26.0
	Rs. 20,001–40,000	68	34.0
	Rs. 40,001–60,000	46	23.0
	Above Rs. 60,000	34	17.0

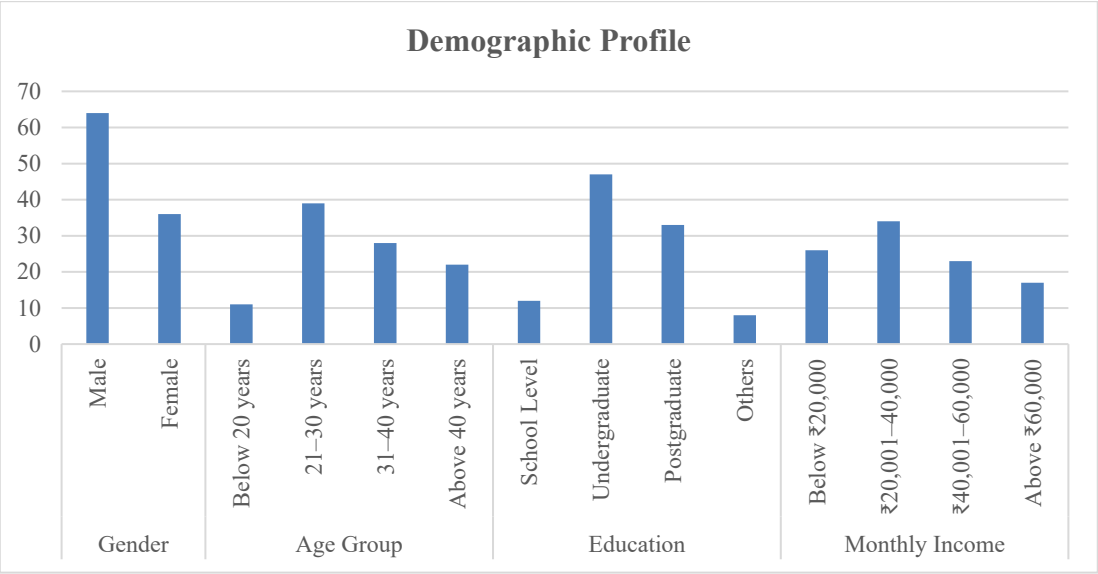

Figure 1: % of Demographic Profile

Table 1 depicts that most of the respondents were male (64%), hence there were more males doing or interested in electric two-wheelers. The largest age bracket is 2130 (39%), which implies that younger adults are the main consumers of EVs. On the educational level, the sample was moderately educated (47% of the respondents were undergraduates). Income distribution shows that 34% of the respondents are within the 20,001-40,000-income bracket, which indicates that the middle-income brackets are the most active in the EV market. In general, Table 1 validates the presence of a diverse and balanced demographic sample that can be analyzed meaningfully.

Table 2: Reliability Statistics (Cronbach's Alpha)

Construct	**No. of Items**	**Cronbach's Alpha (α)**
Brand Preference Scale	5	0.82
Purchase Factors Scale	7	0.88
Barrier Scale	6	0.86

Table 2 is highly reliable in all the measurement scales applied in the research. The Brand Preference Scale (α= 0.82), Purchase Factors Scale (α= 0.88), and Barrier Scale (α= 0.86) are greater than the desirable level of 0.70. This shows that questionnaire items that were used in the study were internally consistent and reliable. Hence, the findings obtained with the help of these scales can be deemed as statistically reliable, and may be further analyzed.

Table 3: Awareness, Brand Preference, and Consumer Satisfaction (N = 200)

Category	Sub-Category	Frequency	Percentage (%)
Awareness Level About Electric Two-Wheelers	Very Low	10	5.0
	Low	32	16.0
	Moderate	74	37.0
	High	58	29.0
	Very High	26	13.0
Preferred Brand of Electric Two-Wheeler	Ola Electric	66	33.0
	Ather	42	21.0
	TVS iQube	38	19.0
	Bajaj Chetak	24	12.0
	Hero Electric	18	9.0
	Others	12	6.0
Overall Consumer Satisfaction with EV Options	Very Unsatisfied	8	4.0
	Unsatisfied	22	11.0
	Neutral	76	38.0
	Satisfied	68	34.0
	Very Satisfied	26	13.0

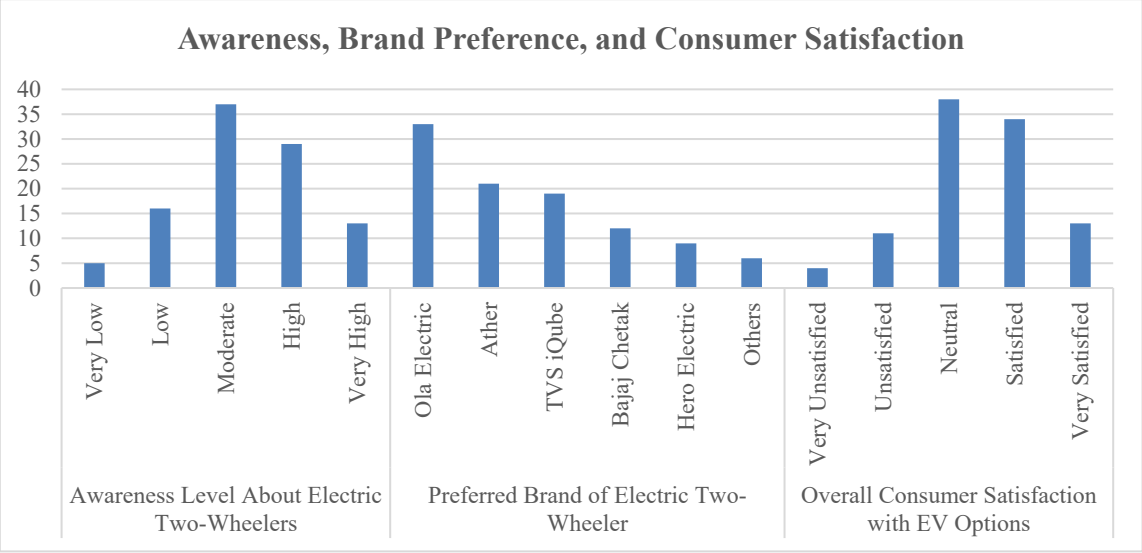

Figure 2: % of Awareness, Brand Preference, and Consumer Satisfaction

Table 3 demonstrates that awareness of electric two-wheelers is moderate (37%), to high (29%), and it represents that consumers are becoming more aware of EVs. Regarding the brand preference, Ola Electric has

the highest figure of 33% of respondents, Ather is at the 21% mark and TVS iQube is at 19%. This implies that consumers are attracted to brands that have good positioning in the market and technological advancements. Speaking of the level of satisfaction, the majority of respondents claimed that they were either neutral (38%) or satisfied (34%), with the small percentage (15%) of dissatisfaction being noted. According to Table 3, the level of awareness and interest in EVs is rising, but at the same time, the levels of satisfaction are low, which means that there is a possibility of improving the performance and infrastructure.

Table 4: Factors Influencing Purchase Decision (Mean Score Ranking)

(Likert Scale 1–5)

Factor	Mean Score	Rank
Battery Performance	4.42	1
Charging Convenience	4.26	2
Price / Affordability	4.18	3
Brand Reputation	3.92	4
Maintenance Cost	3.81	5
Driving Range	3.74	6
Design & Style	3.56	7

Table 4 implicates that the two biggest factors that are considered in the purchase decisions of the consumers include battery performance (mean = 4.42) and the charging convenience (mean = 4.26). Price and affordability were ranked as the third one with a mean score of 4.18, and this point reflects the price sensitivity of the consumers. Even less significant aspects like design, style, and range of drive make it seem like functional features of EVs have a higher priority than their appearance. In general, Table 4 indicates that realistic and performance-based features are the main concerns of consumers.

Table 5: Barriers to Electric Vehicle Adoption

Barrier	Frequency	Percentage (%)
High Initial Cost	118	59.0
Lack of Charging Infrastructure	102	51.0
Limited Battery Life	86	43.0
Long Charging Time	74	37.0
Low Awareness	52	26.0
Performance Concerns	48	24.0

Table 5 unveils high initial cost (59%), absence of charging infrastructure (51%), as the most major barriers to EV adoption. The negative aspects mentioned are lack of battery life (43%) and lengthy charging period (37%). Performance concerns (24%) and low awareness (26%) are less dominant and interesting to note. Table 5 sheds

light on the fact that economic and infrastructural factors are significant contributors to the slow pace of adoption of the electric two-wheelers in the area of study.

Table 6: Crosstab – Brand Preference by Age Group

Age Group	Ola	Ather	TVS	Chetak	Hero	Others
Below 20	8	4	4	2	2	2
21–30	28	18	14	8	6	4
31–40	18	10	12	6	6	4
Above 40	12	10	8	8	4	2

Table 6 is different in brand preferences among the age groups. The preference towards Ola Electric (28) and Ather (18) was more in the age category between 21-30 years indicating that the younger consumers were preferring the two electric cars. The age groups 3140 and higher 40 also had a moderate interest between different brands thus exhibiting a pattern of distribution preference. Table 6 indicates that brand popularity varies in terms of age category, with the younger consumers having more propensity towards the advanced EV brands.

Table 7: Chi-Square Test for Brand Preference (Hypothesis H3)

Test Statistic	Value
Chi-square (χ^2)	14.62
df	10
p-value	0.145
Result	Not Significant ($p > 0.05$)

Table 7 presents the Chi-square test results for the relationship between age and brand preference. The test value ($\chi^2 = 14.62$) one can find that 10 degrees of freedom and p-value of 0.145 are not statistically significant ($p > 0.05$). Therefore, according to Table 7, the aged group has no significant relationship with the preferred brand of electric two-wheeler. This implies that age does not play an important role in brand preference and decisions are probably made based on other attributes like features, marketing and price.

5. CONCLUSION AND FUTURE SCOPE

The findings of the proposed study give a wide range of information about customer preferences, awareness, satisfaction and challenges related to the adoption of electric two-wheelers in the Betul District. The demographic data indicated that the younger generations, the middle-aged, and individuals with middle incomes are the most active consumers of the electric vehicles (EVs). The result of the question on the level of knowledge turned out to be moderate to high, which implies that the customers get to learn more about EV technology and available brands.The most popular brands were Ola Electric and Ather, and it was primarily due to such factors as battery life, the ease of their charging, and price. The majority of the respondents who responded were either indifferent or satisfied with the current EV products, yet there is still more to work on when it comes to driving range and battery life as well as charging infrastructure. The study also highlighted significant issues that are preventing people to adopt EVs heavily, which include high initial prices, a shortage

of charging facilities, long refueling time, and lack of knowledge. These statistics indicate that despite the growing interest of the consumer in EVs, there are still structural barriers to a complete transition to electric mobility.Hypothesis testing also helped justify that there is no significant relationship between brand preference and age which implies that the interest in electric two-wheelers is not much dependent on the age groups but on product characteristics and market positioning instead of the age groups.The analysis indicates that the attitude of the consumers towards the EVs is good, but there is the need to overcome the economic, technical, and infrastructural barriers so as to hasten the adoption process.

Future Scope

The present research provides a considerable foundation of further studies on the implementation of electric two-wheelers; however, there are many opportunities of deep research still:

- A larger and more diverse sample: Further studies are supposed to involve a bigger and more varied sample of individuals based in other districts or states so that the findings can be more generalized to more individuals and the way in which individuals in various regions think will be better understood.
- Longitudinal Studies: Longitudinal study can help trace the change in customer preferences within time, particularly when EV technology and government policies evolve.
- Comparative Brand Analysis: Further research could be conducted with more close analysis of the performance and customer satisfaction levels of different EV brands so that their positive and negative aspects could be better identified.

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