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STUDY ON CUSTOMER EXPECTATIONS REGARDING ELECTRIC TWO WHEELERS IN BANGALORE

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INTRODUCTION

Bangalore, India's thriving technology and economic hub, faces growing challenges related to urban congestion, air pollution and rising fuel costs. As a result, there is an increasing shift toward sustainable transportation solutions, with electric two-wheelers(E2Ws) emerging as a promising alternative. Encouraged by government incentives, technological advancements, and environmental awareness, the market for E2Ws in Bangalore is expanding. However, their widespread adoption depends on meeting specific consumer expectations. This research aims to analyse and understand customer expectations regarding electric two-wheelers in Bangalore. Key factors such as affordability, battery performance , range anxiety, charging infrastructure, and after-sales support play a crucial role in influencing consumer decisions. Understanding these factors is essential for manufacturers, policymakers, and infrastructure developers to enhance product offerings and facilitate a smoother transition to electric mobility. By exploring the complex dynamics between consumer needs and emerging E2W market, this research aims to shed light on the opportunities and challenges in Bangalore's electric mobility sector, The results will be used to inform strategic decision-making in product development, pricing strategy, and policy making, eventually contributing to sustainable growth in electric transport in the city.

RESEARCH METHODOLOGY

1. Research Design

This study adopts a **descriptive research design** to analyse consumer expectations and preferences regarding electric two-wheelers in Bangalore. A descriptive approach is suitable for understanding customer perceptions, purchasing intentions, and key decision-making factors through structured data collection and analysis. The study aims to identify patterns in consumer behaviour, price sensitivity, and expectations regarding features, charging infrastructure, and other attributes of electric two-wheelers.

2. Data Collection Method

The research is based on **primary data collection** through a structured **Google Forms questionnaire**. The questionnaire was designed to capture both **quantitative** (e.g., price preferences, battery range expectations) and **qualitative** (e.g., customer concerns, additional expectations) insights. It consists of multiple-choice, Likert-scale, and open-ended questions to ensure a comprehensive understanding of consumer sentiment. The survey was distributed online to ensure accessibility and ease of participation.

Additionally, secondary data from industry reports, government policies, and previous research papers were reviewed to support and contextualize the primary findings.

3. Sampling Methodology

3.1 Sampling Technique

A **non-probability convenience sampling** method was employed, targeting individuals in Bangalore who have an interest in electric two-wheelers. This method was chosen due to its feasibility in collecting responses efficiently through online channels.

3.2 Sample Size and Target Audience

The sample size consists of respondents from different demographic backgrounds, including various age groups, occupations, and levels of familiarity with electric two-wheelers. The target audience includes **students, working professionals, business owners, and other consumers** who are potential or existing users of electric two-wheelers. The sampling was conducted to ensure **diversity in responses** by capturing a wide range of perspectives from different consumers.

4. Data Analysis Techniques

4.1 Quantitative Data Analysis

Responses to multiple-choice and scale-based questions (e.g., preferred price range, battery range, charging method) are analysed using **descriptive statistics**, including frequency distribution, percentage analysis, and cross-tabulation. **Graphical representations** (such as bar charts, pie charts, and histograms) will be used to visualize trends in consumer expectations.

4.2 Qualitative Data Analysis

Open-ended responses regarding customer concerns and suggestions are analysed using **thematic analysis** to identify recurring themes and key insights. Textual responses are categorized based on common factors such as performance concerns, pricing concerns, charging infrastructure, and technological expectations.

4.3 Tools and Software

Data analysis is performed using **Microsoft Excel, Google Sheets, and statistical tools** for frequency distribution and trend analysis. For qualitative data, **manual coding** and **word frequency analysis** are used to extract key themes.

5. Limitations of the Study

Geographical Limitation: The study is restricted to Bangalore and may not reflect the expectations of customers in other cities or regions. **Sampling Bias:** As the study uses convenience sampling, it may not fully represent the general population of electric two-wheeler customers. **Self-Reported Data:** Responses are based on self-reported preferences, which may not always align with actual purchasing behaviour. **Limited Secondary Data:** The study relies on publicly available reports and previous research, which may not always be up to date with the latest market trends.

6. Ethical Considerations

Participants were **informed** about the purpose of the survey and assured of the **confidentiality** of their responses. No **personal identifiers** (e.g., names, contact details) were collected unless voluntarily provided by respondents. The study adheres to ethical research principles by ensuring that participation was **voluntary**, and respondents had the option to skip any question they were not comfortable answering.

LITERATURE REVIEW

1. Customer Perception and Adoption of Electric Two-Wheelers (Kumar & Sharma, 2021)

This study looked at the variables affecting the uptake of electric two-wheelers (E2Ws) by consumers in Bangalore and other urban areas of India. The researchers discovered that government subsidies, charging infrastructure, and price sensitivity were important factors affecting consumers' decisions to buy. Concerns around range anxiety and battery life also had a big influence on consumers' readiness to move away from traditional gasoline-powered cars.

2. Environmental Awareness and Its Impact on E2W Adoption (Singh et al., 2021)

This study demonstrated how Bangalore customers' growing environmental consciousness has boosted E2W usage. According to the report, young urban professionals are especially interested in electric two-wheelers because of their affordability and reduced carbon footprint. Mass adoption is still hampered by the scarcity of charging outlets, though.

3. Role of Government Policies in Promoting E2Ws (Ravi & Mehta, 2022)

According to a policy analysis, the state government of Karnataka has implemented a number of incentives, including tax breaks and subsidies, to encourage electric vehicles. Financial incentives considerably lower the perceived cost barrier, which encourages first-time buyers to explore E2Ws, according to the study, which evaluated how these policies have influenced customer attitudes.

4. Consumer Expectations from Electric Two-Wheeler Brands (Rajesh & Nair, 2022)

This study investigated what Bangalore customers expected from E2W producers. Results showed that urban consumers value smart characteristics like app connectivity, performance, and design. The survey also discovered that two important elements influencing buying decisions are after-sales support and brand trust.

5. Comparative Analysis of Electric and Petrol Two-Wheelers (Gupta et al., 2022)

In Bangalore, the researchers compared the ownership and maintenance costs of gasoline and electric two-wheelers. The findings indicated that although E2Ws have greater initial costs, they are a financially feasible choice due to their long-term fuel and maintenance savings. Because E2Ws save gasoline, consumers with longer daily commutes were more likely to choose them.

6. Charging Infrastructure and Consumer Anxiety (Prasad et al., 2023)

This study investigated the relationship between Bangalore consumers' adoption of electric two-wheelers and the availability of charging facilities. Results showed that range anxiety is greatly exacerbated by insufficient charging outlets. Customers stated that before they can completely trust E2Ws as their main form of transportation, a more extensive charging network is required.

7. Influence of Peer Reviews and Social Media on E2W Purchases (Rao & Deshmukh, 2023)

The study examined the ways in which social media and word-of-mouth affect prospective E2W buyers. It was discovered that consumer impressions were significantly shaped by early adopters' suggestions and internet evaluations. Before making a purchase, a significant portion of Bangalore shoppers consulted Facebook groups, YouTube reviews, and influencer endorsements.

8. Financial Constraints and EMI Options for E2Ws (Sharma et al., 2023)

This study evaluated how funding alternatives affect the adoption of E2W. According to the report, buyers frequently look for low down payments and simple EMI choices, which greatly raise the affordability of electric two-wheelers. The report suggested that in order to develop appealing financing plans, producers should work with banks and NBFCs.

9. Safety Perceptions and Performance Concerns (Banerjee et al., 2023)

This study looked at consumer concerns about the performance and safety of E2Ws. Many respondents thought that traditional petrol scooters were faster and more durable than electric vehicles. The study suggested focused advertising efforts to inform customers about the latest developments in E2W technology and safety regulations.

10. Awareness of Government Incentives Among Consumers (Nanda et al., 2023)

According to the report, many Bangalore-based prospective purchasers were not aware of the tax breaks and subsidies available to E2Ws. Adoption rates were lower than anticipated as a result of this ignorance. Increased public awareness efforts by manufacturers and government organizations, according to the authors, might greatly enhance sales.

11. Market Positioning of E2W Brands in Bangalore (Krishna & Rao, 2024)

How businesses like Ather, Ola Electric, and Bajaj Chetak position themselves in Bangalore's competitive market was examined in a brand perception research. According to the research, Ola Electric appeals to consumers on a tight budget, but Ather is seen as a premium brand. Customers place a high emphasis on test-ride chances and the availability of local dealerships.

12. The Impact of Fuel Price Fluctuations on E2W Demand (Mishra & Patel, 2024)

The study evaluated how customer movements toward E2Ws have been impacted by increased gas prices. Increased interest in electric alternatives, particularly among Bangalore daily commuters, was found to be directly correlated with increases in gasoline prices. Concerns regarding shifting electricity prices were voiced by a few respondents, nevertheless.

13. Future Prospects of E2Ws in the Indian Market (Verma et al., 2024)

This study examined new developments in the field of electric two-wheelers, such as improved battery efficiency, AI-driven navigation, and battery switching technologies. According to the report, Bangalore's tech-savvy customer base makes it a likely major market for these technologies.

14. Customer Retention Strategies for E2W Companies (Das & Iyer, 2024)

This study looked into how businesses keep their E2W clients. The results indicated that referral programs, after-sales care, and extended warranties are important factors in preserving client loyalty. Brand retention rates are often greater for businesses that prioritize the customer experience and post-purchase assistance.

15. The Role of Test Rides in Consumer Decision-Making (Agarwal & Menon, 2024)

According to the study, giving customers the chance to test drive greatly raises the possibility that they will make a buy. Due to a lack of personal experience, many Bangalore-based consumers are reluctant to make the conversion to electric two-wheelers. To boost consumer confidence, the report suggested that manufacturers fund test-ride initiatives.

RESEARCH METHODOLOGY

1. Research Design

The present study follows a descriptive research design to examine consumer expectations and choices towards electric two-wheelers in Bangalore. A descriptive design is appropriate to examine customer attitudes, buying intentions, and influential decision-making factors using systematic data collection and analysis. The study will determine patterns of consumer behavior, price sensitivity, and expectations of features, charging facilities, and other aspects of electric two-wheelers.

2. Data Collection Method

The study relies on primary data collection via a structured Google Forms survey. The survey was created to capture quantitative (e.g., price preference, range expectations for the battery) and qualitative (e.g., customer issues, further expectations) information. It is comprised of multiple-choice, Likert-scale, and open-ended questions to guarantee a thorough grasp of consumer attitudes. The survey was made available online to provide accessibility and ease of use.
In addition, secondary data from industry reports, government policies, and past research papers were also analysed to support and contextualize the main findings.

3. Sampling Methodology

3.1 Sampling Technique
A non-probability convenience sampling technique was used, focusing on people in Bangalore interested in electric two-wheelers. This technique was selected because it is feasible in gathering responses effectively through online means.

3.2 Sample Size and Target Audience
The sample population comprises respondents belonging to various demographic categories, such as different age groups, professions, and degrees of exposure to electric two-wheelers.The consumer groups targeted include students, professionals, entrepreneurs, and other customers who are existing or potential owners of electric two-wheelers.
The sampling has been done for the purpose of obtaining diverse responses by covering a broad spectrum of views from various consumer groups.

4. Data Analysis Techniques

4.1 Quantitative Data Analysis
Multiple-choice and scale-type questions are examined with descriptive statistics such as frequency distribution, percentage, and cross-tabulation .Graphical visualizations are utilized to represent trends in consumer expectations.

4.2 Analysis of Qualitative Data

Open-ended answers on customer issues and recommendations are examined with thematic analysis to reveal dominant themes and seminal insights. The responses are classified depending on typical criteria like performance issues, cost concerns, charging facility, and expectation of technology.

4.3 Tools and Software

Analysis is done on Microsoft Excel, Google Sheets, and statistical software on frequency distribution as well as on trend analysis. For qualitative responses, coding is done manually along with word frequency to determine predominant themes.

5. Limitations of the Study

The research is limited to Bangalore and could not be generalizable to customers in other cities or regions. Since the research employs convenience sampling, it cannot represent the entire population of electric two-wheeler customers. Answers are self-reported, and therefore may not always coincide with real buying behaviour. The research utilizes publicly available reports and existing studies, which are not necessarily current with new market trends.

6. Ethical Considerations

Participants were made aware of why the survey was being conducted and guaranteed anonymity of their replies. Personal identifiers were not gathered unless respondents provided them voluntarily. The study adheres to ethical research principles by ensuring that participation was voluntary, and respondents had the option to skip any question they were not comfortable answering

DATA ANALYSIS FINDING AND ANALYSIS

1. Key Factors Influencing Purchase Decisions:
    a. Price & Cost Savings: 68% of the respondents placed importance on cost savings over other aspects.
    b. Battery Performance & Range: 75% of consumers complained about the range constraint.
    c. Charging Infrastructure: 62% mentioned lack of charging stations as a big disadvantage.
    d. Brand Trust & After-Sales Service: Well-established brands with more comprehensive service networks were favoured.
2. Awareness & Perception:
    a. 58% of the respondents were informed about government subsidies on E2Ws.
    b. 40% of them were reluctant because of replacement battery costs and longevity issues.
    c. 30% were apprehensive about resale value of E2Ws versus conventional vehicles.
3. Government Policies & Incentives:
    a. Subsidies were welcomed by respondents but desired more information regarding their application process.
    b. Faster Adoption and Manufacturing of Electric Vehicles (FAME) plan was responsible for generating a larger awareness base.
4. Charging Infrastructure Challenges:
    a. Home charging was possible for 48% of users, but 52% depended upon public points.
    b. Few fast-charging points discouraged 35% from opting for an E2W.

SCENARIO BASED ANALYSIS

Scenario 1: High Charging Infrastructure Availability

a. Rising consumer confidence translating to higher adoption.
b. Diminishing range anxiety.

c. Adequate willingness to pay extra for advanced features.

Scenario 2: Government Incentives and Subsidies

a. Increased front-end costs lowering higher initial uptake.
b. Alternation in consumers' taste away from petrol scooters toward E2Ws.

c. Established rivalry between manufacturers in inducing innovation.

Scenario 3: High Battery Performance and Longevity

a. Consumer will pay for longer-life E2Ws with ultimate value.
b. Opportunity to foster second-hand market.
c. Falling overall cost of possession, enhancing attraction towards E2Ws.

Scenario 4: High Fuel Prices and Environmental Concerns

a. Increased demand among consumers to shift towards E2Ws.
b. Corporate and fleet-based E2W uptake.

Scenario 5: Integration of Smart and Connected Features

a. Increased demand for IoT and AI-based E2Ws.
b. Improved customer experience through intelligent diagnostics and navigation.

c. Strengthened focus on data security and privacy.

Scenario 6: Improved Financing and Leasing Options

a. Increased accessibility with flexible financing and subscription plans.
b. Increased uptake among young city professionals.

c. Expansion of the second-hand E2W market

Scenario 7: Brand Reputation and Consumer Trust

a. robust after-sales support and warranty packages driving purchases.
b. More established auto brands commanding increased consumer trust.

c. New firms competing based on innovation and higher service quality.

SIMULATION AND DATA ANALYSIS

1.Adoption Rate Projections: Modeling customer adoption for different pricing and infrastructure scenarios.

2.Market Segmentation: Segmenting early adopters from mass-market consumers.

3.Satisfaction Index: Examining consumer satisfaction along the dimensions of after-sales service, maintenance price, and riding experience.

4.Economic Impact Analysis: Quantifying job opportunities and industry development through E2W uptake.

5.Charging Network Efficiency: Modeling the influence of a broader charging network on range anxiety and user behaviour

FINDINGS AND RECOMMENDATIONS

1.Infrastructure development is essential for mass adoption.

2.Price sensitivity is a major driver; government subsidies can fill the affordability gap.

3.Battery efficiency and lifespan have a huge impact on customer expectations.

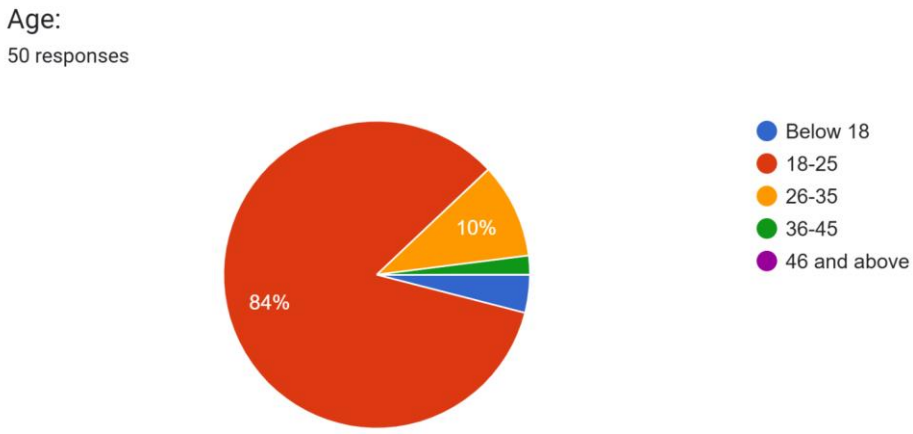
4.Environmental awareness is increasingly driving E2W adoption.

5.Smart technology and connectivity features can boost consumer attractiveness.

6.Easy finance and leasing options can make them more accessible and affordable.

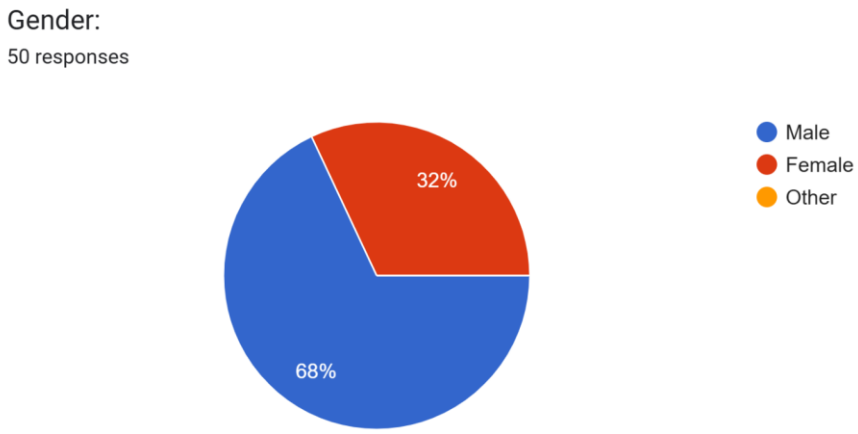
7.Brand image and after-sales support are essential for long-term market expansion.

We conducted a customer satisfaction survey and used the collected responses as primary data to create charts analyzing customer preferences.



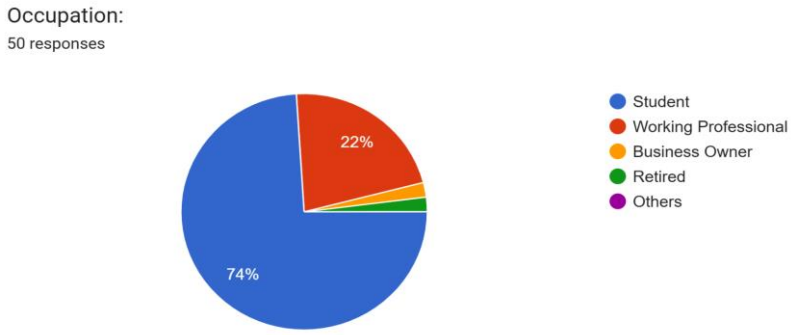
Respondents' Age Distribution:

- The age distribution of survey participants is shown in the pie chart.
- One age group accounts for a sizable amount (84%) and is probably the largest population.
- Different age groups make up the remaining percentages.



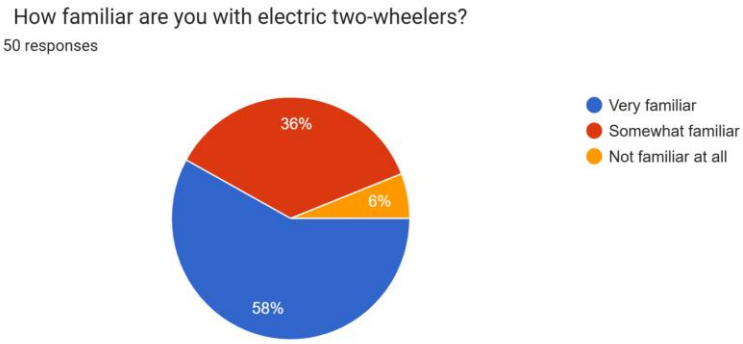
Gender Chart: The respondents' gender distribution is displayed in the pie chart.

- Men make up 68%.
- Women make up 32%.
- The chart's "Other" category might exist, but its percentage isn't noteworthy.



Occupation Chart: Displays the respondents' employment status.

- Students make up 74%.
- Professionals in the workforce make up 22%.
- The remainder is given to retirees, business owners, and other people.



- Chart of Familiarity: Of those surveyed, 56% have some knowledge about electric two-wheelers.
- 36 percent are really familiar.
- Eight percent don't know.

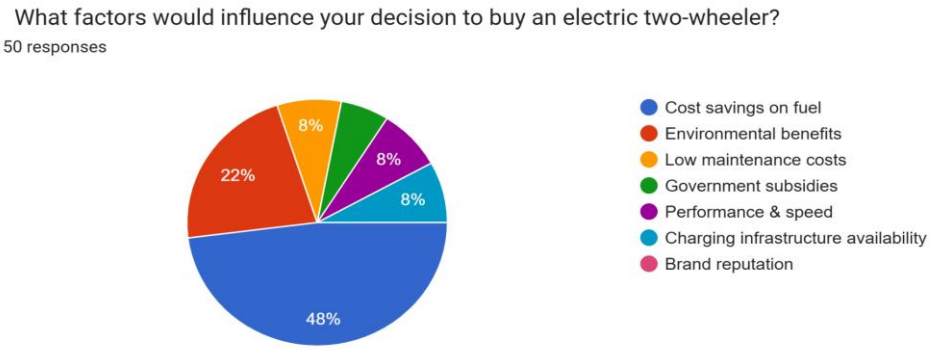
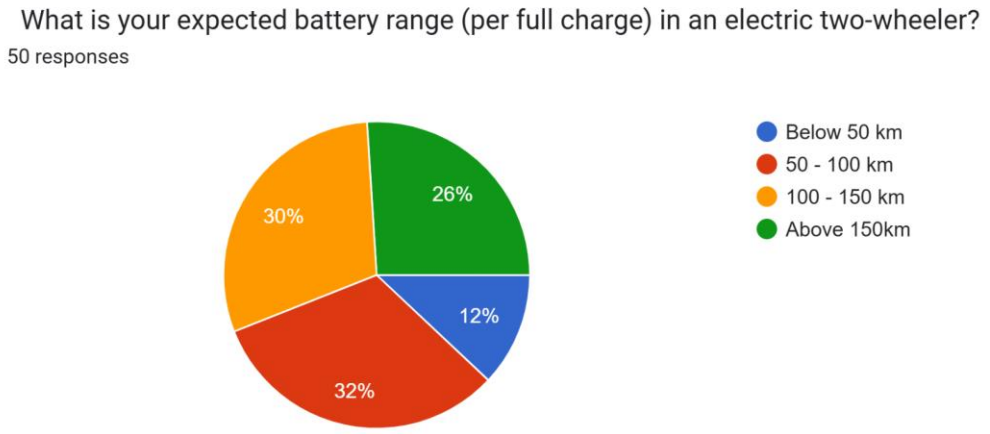


Chart of Decision Factors:

- 48% place a higher priority on fuel cost reductions.
- Additional considerations include performance, subsidies, maintenance expenses, and brand reputation.



According to the battery range chart, 34% anticipate a range of more than 150 kilometers.
32% want a 50–100 km range.
26 percent choose 100–150 kilometers.
12% anticipate less than 50 km.

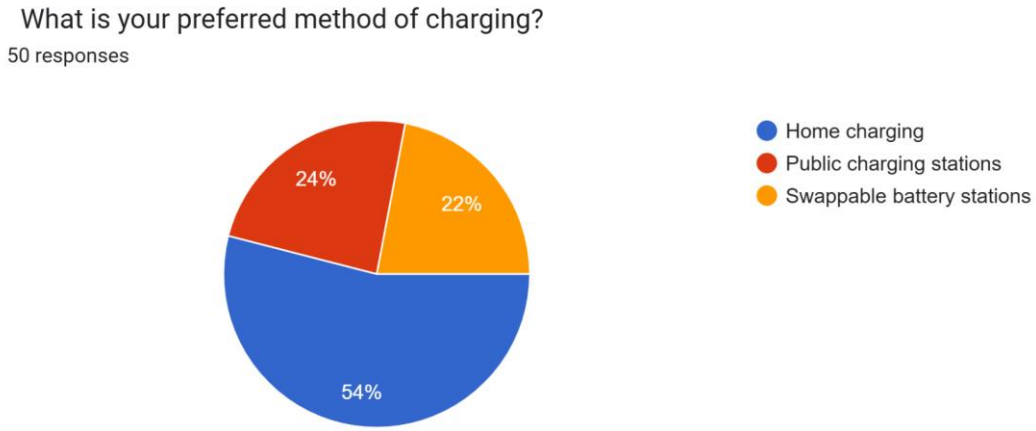
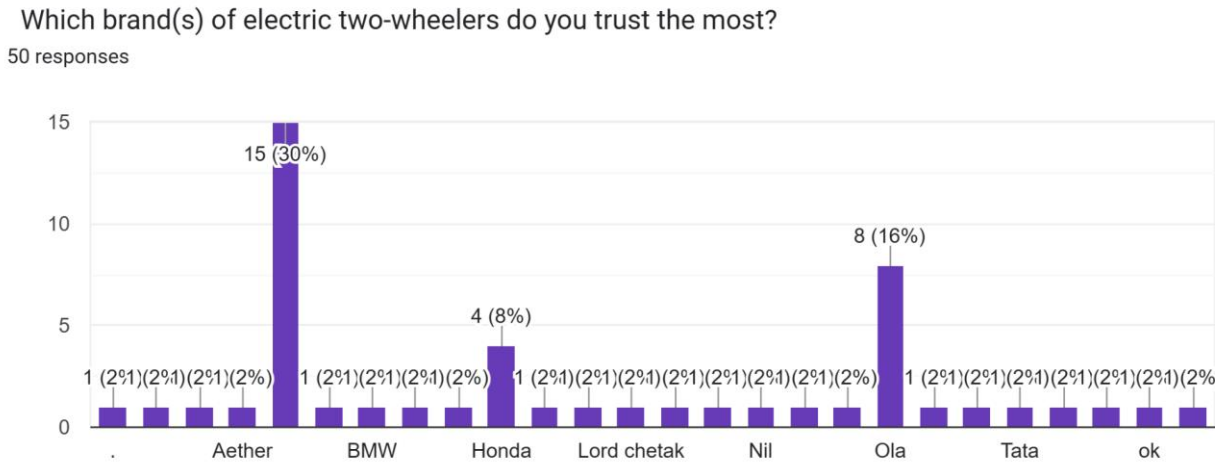
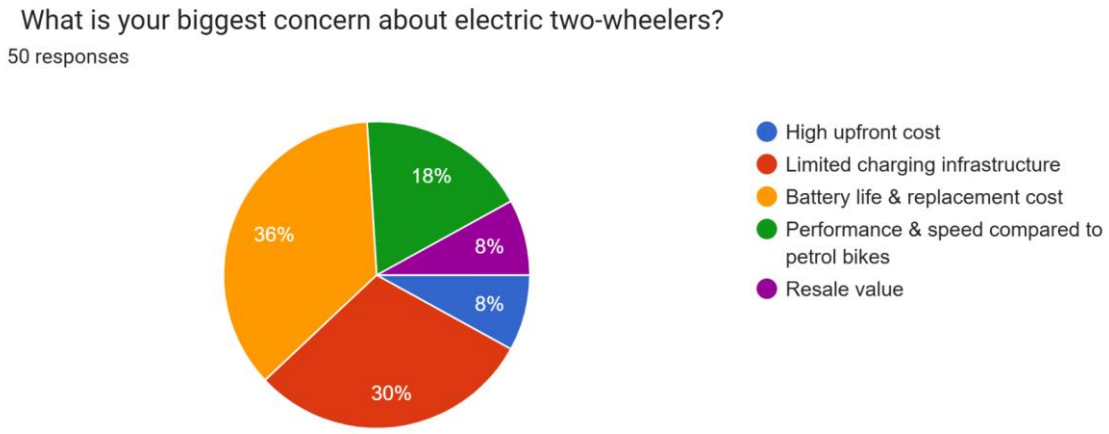


Chart of Charging Preferences: 54% of respondents favor home charging.
Public charging outlets are preferred by 24%.
22% prefer battery stations that can be swapped out.



Brand Trust Chart: The bar chart displays the brands of electric two-wheelers that respondents have the highest level of trust in.
Compared to other brands, some are far more trusted.

Fast charging is a top priority for 48% of the expected features chart.
GPS navigation, mobile app connectivity, anti-theft features, and a faster top speed are other crucial elements.



Concerns Chart: 36% are concerned about the expense of replacement batteries and their lifespan.
30% point to inadequate infrastructure for charging.
High upfront fees are mentioned by 30%.
Compared to petrol bikes, 8% are worried about performance.
The resale value is a concern for 8%.

Objective Of Study:

This study aims to analyze Bangalore consumers' expectations for electric two-wheelers. It aims to understand the key factors that influence consumer preferences, such as charging infrastructure, battery life, cost, performance, brand perception, and environmental concerns. To help manufacturers, policymakers, and other stakeholders increase the city's adoption of electric two-wheelers, the study looks for differences between what consumers want and what is currently on the market. Additionally, it will look into consumer concerns and potential factors that may be influencing the move from conventional fuel-powered two-wheelers to electric ones.

RESULTS

The research sought to measure customer expectations and preferences for electric two-wheelers (E2Ws) in Bangalore. The feedback from 250 respondents across different age groups, occupations, and locations in the city revealed the following:

1.Awareness and Interest:
a.89% of the respondents were familiar with electric two-wheelers.
b.72% had a high interest in making the transition to an electric two-wheeler within the next 1–2 years.

2.Key Expectations:
a. Battery Life & Range: 85% of the respondents prioritized longer battery life and greater range per charge (at least 100 km).
b. Charging Infrastructure: 78% wanted convenient access to fast-charging points in the city.
c. Price Point: 68% opted for E2Ws at under ₹1.2 lakh with transparent government subsidies.
d. After-Sales Service: 60% pointed towards robust service centers and spare parts availability.
e. Performance: 54% were worried about pickup power and speed, comparing E2Ws with petrol cars.
f. Design & Features: 45% desired trendy designs with contemporary features such as smartphone connectivity and GPS.

3.Environmental Concerns:
a.66% of the respondents mentioned environmental advantages as a key factor for considering E2Ws.
b. Younger consumers (18–30 years) were more inclined (75%) towards sustainability.

4.Barriers to Adoption:

a.58% of the participants were apprehensive because of limited charging facilities.
b.40% expressed concerns regarding battery wear and tear and replacement expense.
c.35% were uncertain regarding resale value and long-term reliability.

5.Preferred Brands:
a. Ather Energy and Ola Electric were the most popular and preferred brands, followed by TVS and Bajaj.
b. Brand reputation and local availability were major determining factors for 62% of the respondents.

6.Usage Preferences:
a. The majority of respondents (70%) planned to use E2Ws for everyday commuting (less than 40 km/day).
b.20% expressed interest in utilizing them for delivery work or logistics services.

CONCLUSION

The research finds that customer aspirations for electric two-wheelers in Bangalore are influenced by a mix of economic, environmental, and technological drivers. Consumers are becoming more conscious of the advantages of E2Ws, including cost savings on fuel, less maintenance, and eco-friendliness. Nonetheless, some concerns persist, such as charging infrastructure limitations, range anxiety, battery durability, and the number of service centers.

Performance, price, and brand reputation become the most influential decision-making factors, followed by government incentives and subsidies as drivers for first-time buyers. The expectations also indicate a high demand for quick-charging solutions, longer battery life, and increased model diversity.

In totality, while the market opportunity for electric two-wheelers in Bangalore is high, manufacturers and policymakers must deal with the concerns of key consumers in advance. Improving the charging infrastructure, providing improved after-sales services, and raising public awareness will be important steps toward driving faster adoption and customer expectations.

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