



A STUDY ON CONSUMER PERCEPTION TOWARDS ELECTRIC TWO-WHEELERS WITH SPECIAL REFERENCE TO SALEM CITY

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Abstract: Global warming has become a major problem worldwide, necessitating the implementation of legislation to limit the ever-increasing emissions of greenhouse gases. With modern technologies in place, transportation and communication have experienced a remarkable transformation. The problems of traditional automobiles, such as their negative impact on the environment, rising fuel prices, and so on, prompted buyers to consider an alternative technology, which led in the development of electric vehicles. Customers are also excited about this new technology since it provides several benefits. Marketers are always faced with the difficulty of convincing customers to embrace change and push their items into the market. The study aims to better understand customer perception regarding electric two-wheelers in the Salem district. Responses from around 282 bike riders were gathered to analyse the key factors influencing the purchasing of electric bikes. The data was analyzed using percentages and regression.

Keywords: Consumer Perception, Bike-riders, Electric Two-Wheelers, Transportation, Technology.

I. INTRODUCTION

In today's competitive and fast-paced world, vehicles play a critical part in any person's entire existence. Vehicles save a substantial amount of time and effort by acting as a bridge between various commuting sites, whether in terms of production, performance, or dealing with livelihood difficulties. The bulk of Indians use two-wheelers to get around. In contrast to burning a combination of fuel and gases to create power of an internal combustion engine powers an electric vehicle through the use of electricity. Vehicle is a potential replacement for current-generation vehicles in order to solve challenges such as growing pollution, global warming, and depletion of natural resources and other things. Though the concept of electric automobiles has been around for a while, recent years have seen a lot of attention given to it, because of the increasing environmental effects and carbon footprints of fuel-powered vehicles. A vehicle powered of an electric propulsion system. There is no purpose for internal combustion engines. Electricity is the sole energy source for everything. The main advantage is the electric motor proposed system's high efficiency in power conversion. Large-scale research and development projects have lately been reported in both academic and industrial settings. There are also commercial automobiles available. Many countries provide incentives to users in the form of lower tax rates or exemptions, free parking spots, and free charging stations. In contrast, the hybrid electric car offers an option. In recent years, it has received widespread use. Almost every carmaker provides at least one hybrid electric vehicle type. Consumers have a wide range of options in the two-wheeler industry. The electric bike is a 21st-century invention that helps to minimise society's environmental challenges. The emergence of the electric bike has proven to be a significant challenge to conventional engines in the vehicle market. Consumer attitudes play an important part in the growth of electric bikes in the Indian economy. The attitude works as a conduit for customer preferences towards the product. On that basis, the Electric Bike must satisfy customers by offering a reasonable price, comfort, and other consumer-friendly qualities. Consumer perceptions of the electric bike may alter as a result of the attributes listed above. The challenges of adjusting to new standards, the costs associated, and the transfer to new technology will take time, depending on the consumer's perception towards the electric bike, which will be the subject of the research.

1.1 Review of Literature

According to Surendhranatha Reddy and Ajai Abraham Thomas (2024) stated that the attitudes of young customers towards electric two-wheelers in Bangalore City. Conventional vehicles have several problems, such as adverse impacts on the environment, rising fuel prices, and so on, which has prompted customers to consider an alternative technology, resulting in electric vehicle technology. Customers are also excited about this new technology since it provides several benefits. Marketers are always faced with the difficulty of convincing customers to embrace change and push their items into the market.

Banupriya and Sengamalam (2023) conducted research on consumer awareness of electronic scooters among working women in the Krishnagiri area of Tamil Nadu. According to the marketing school of thinking, a firm should devote all of its efforts to delighting its customers while also making a profit. The marketing idea asks for a shift in the way firms' function. Marketing is one of the most important variables in determining the production and sales volume of a company's products since a marketing-oriented firm would strive to make what customers want rather than what the company has produced. The ultimate goal of marketing is to meet customer requirements and demands, however customers behave differently depending on their position and nature. Consumer awareness is an essential part of the market environment. It enables customers to make more informed decisions, promotes corporate competitiveness, and adds to the marketplace's general efficiency and fairness.

Diwakar Raj and Kannan (2022) investigated customer perceptions of the two-wheeler sector across several brands with a focus on Chennai City. The objective of the study was to find out customer feedback on the two-wheeler market with regard to several Hero Motor Corp. brands, Honda motorbikes and scooters, TVS, Bajaj Auto, Royal Enfield, Yamaha, and Suzuki. The sample of the study client in Chennai region with 200 samples selected in the study. The survey method was used.

Rajesh Kumar (2022) researched car firms' attitudes about the necessity to develop vehicles that do not rely on fossil fuels. As a result, several firms have engaged in R&D to produce electric motorcycles. The study is on analysing user perceptions of electric two-wheelers in Chennai. Responses from around 120 bike riders were gathered to analyse the key factors influencing the purchasing of electric bikes.

Shivabeerappa and Divya (2022) investigated customer perceptions of electric two-wheeler vehicles in Southern Karnataka. The purpose of the study was to assess customer satisfaction with electric cars and the challenges to their adoption in terms of selection, economic affordability, acceptability, societal standing, brand loyalty, and so on. This research sought to assess customer opinions in the selected districts of Karnataka. The current analysis sheds insight on consumers' readiness and discontent with corporate and consumer-friendly policies aimed at increasing public engagement in changing carbon-emitting INDIA into zero-emission INDIA.

Debashish Rout et al. (2020) investigated electric vehicles (EV) as a strategy for lowering greenhouse gas emissions through advances in power electrics, energy storage, and support. Plug-in hybrid electric vehicles are more fuel-efficient and have a greater driving range than internal combustion engines. An overview of the current state and potential developments in electric vehicle technology is presented. The focus on the influence of fast growth in electric motors, power electronics, microelectronics, and novel materials. The results of the study revealed that the comparison between several electric drive systems, battery systems, and supercapacitor technologies as a means of increasing the energy capacity of plug-in hybrid electric vehicles.

II. NEED OF THE STUDY.

The consumer's mindset becomes critical to the expansion of electric bikes. The Electric Bike must match customer perceptions when compared to traditional bikes. The study assumes relevance on the basis that the perception of electric bikes must be analyzed in order to determine their validity in the vehicle market. Consumer preferences will be the determining element in the development of electric bikes. To ensure the success of these advancements, the general people must be made aware of them. To ensure the success of these advancements, the general people must be made aware of them. Electric vehicles will emerge as a vital component in achieving an emission-free world. The objective of the was to learn about customers' perception about electric bikes and their performances.

III. RESEARCH METHODOLOGY

3.1 Data and Statistical Tools

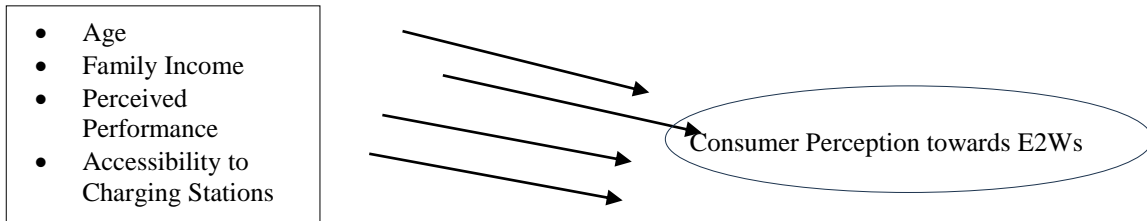
The study was conducted to understand customers' perception about electric two-wheelers in the Salem district. The study's primary data were acquired utilizing a structured questionnaire. The tool employed a five-point Likert scale to evaluate the numerous elements to consider when purchasing an electric two-wheeler. 282 samples were obtained from the population using simple random sampling. In addition to Cronbach's Alpha reliability test (0.832), a construct validity test was conducted using factor analysis to confirm that the questionnaire items effectively measure the intended variables. Factor loadings above 0.60 were considered acceptable, ensuring robust data validity. Customers aged 18 to 40 from the Salem district participated in the study. The data was examined using statistical procedures such as regression.

3.2 Theoretical framework

The two-wheeler section of the Indian vehicle business contributes significantly to the country's GDP. The automotive sector contributes more than 7% of GDP. Two-wheelers are the backbone of India's vehicle sector. The two-wheeler sector has a market share of more than 75%. The car industry is perpetually dependent on traditional modes of transportation. The pollution emitted by traditional engines have created a demand for alternate modes of transportation. A structural modification has been implemented to address environmental issues. Our country is experiencing a transformative period in the two-wheeler industry.

The two-wheeler section of the vehicles industry must restructure itself in order to maintain market competitiveness. Companies that react to changes will have a competitive edge when it comes to electric bikes. There are several aspects on electric bikes that must be communicated to customers in order for this transitional phase to be a success. The impression of electric bikes must be evaluated in order to understand the thoughts of customers. To address the issue of environmental deterioration, electric bikes must become more widespread. That being said, the electric bike must be user-friendly. The assessment on this note will help us anticipate the future of electric bikes in our country.

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3.3 Objectives

- ❖ To recognize the perception of customers towards electric two-wheelers.
- ❖ To explore the expectations of customers towards the performance of electric two-wheelers.
- ❖ To recommend strategies to create awareness about electric two-wheelers in the market.

3.3.1 Hypothesis

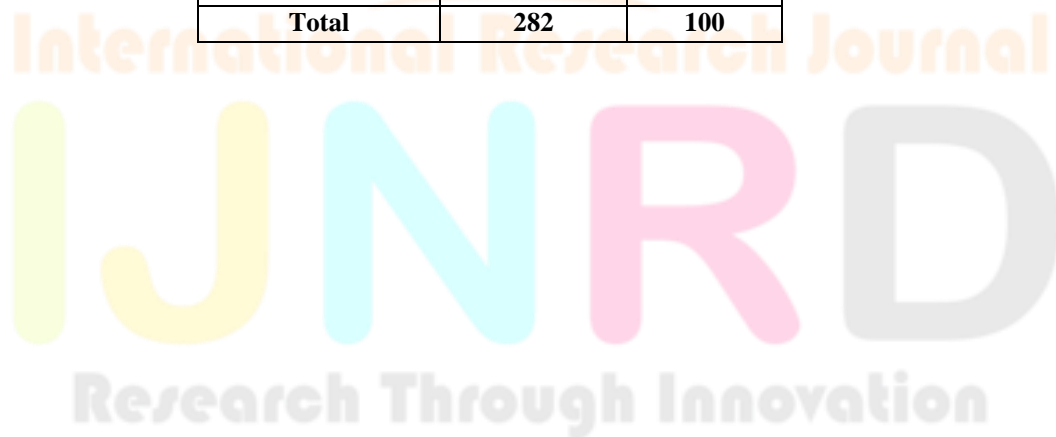
- ❖ Hypothesis 1: Customers’ gender has no significant impact on their perception towards electric two-wheelers.
- ❖ Hypothesis 2: Customer’ family income has no significant impact on their perception towards electric two-wheelers.
- ❖ Hypothesis 3: Customers’ family income has no significant impact on the opinion about fuel efficiency of Electric two-wheelers.

IV. RESULTS AND DISCUSSION

4.1 Results of Analysis

Table 1: Profile of the Respondents

Gender	Frequency	Percentage
Male	154	54.61
Female	128	45.39
Total	282	100
Occupation	Frequency	Percentage
Student	122	43.26
Employed	75	26.59
Business	41	14.54
House wife	44	15.6
Total	282	100
Family income	Frequency	Percentage
Less than 200,000	22	7.8
200,000 to 400,000	34	12.06
400,000 to 600,000	182	64.54
600,000 to 800,000	12	4.25
Above 800,000	32	11.35
Total	282	100



Inference

Gender is an important factor in determining the type of bike utilized for travel. Male and female categories have about similar representation, with males receiving 54.61% and females receiving 45.39%, respectively.

The majority of respondents (43.26%) are students, who are the target segment for electric vehicles, followed by employed (26.59%), housewives (15.60%), and self-employed (14.54%).

The respondents' family income is the primary influence on their decision to purchase the bike. It shows that many respondents had a household income of 400,000 to 600,000 (64.54%), followed by 200,000 to 400,000 (12.06%) and more than 800,000 (11.35%).

Table 2: Perception of Consumers Towards E-Two-Wheelers

	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree	Mean
I will buy an E-two-wheeler if accessibility to efficient charging stations is enough	184 (65.25%)	47 (16.67%)	32 (11.35%)	19 (6.74%)	0	4.60
I will buy an E-two-wheeler if it has good mileage	201 (71.28%)	31 (10.99%)	37 (13.12%)	11 (3.90%)	2 (0.07%)	4.52
I will buy an E-two-wheeler because it is environmentally friendly	152 (53.90%)	53 (18.79%)	42 (14.89%)	30 (10.64%)	5 (1.77%)	4.88
I feel that the price of an E-two-wheeler is worth its value	122 (43.26%)	87 (30.85%)	52 (18.44%)	21 (7.45%)	0	4.90

Inference

From the above table, it is inferred that 65.25% of respondents strongly agree that they will buy an electric two-wheeler if accessibility to efficient charging stations is ensured.

71.28% of respondents strongly agree that they will purchase an electric two-wheeler if good mileage is provided, highlighting the importance of range and battery efficiency.

53.90% of respondents strongly agree that they are inclined to buy an electric two-wheeler due to its environment-friendly.

43.26% of respondents strongly agree that the price of an electric two-wheeler is worth its value, suggesting that while price is a consideration, consumers perceive value in the features and benefits offered.

Table 3: Testing hypothesis based on Gender

H₀: Customers' gender has no significant impact on their perception towards electric two-wheelers.

Model	Unstandardized coefficients		Standardized coefficients	t	Sig
	B	Std. error	Beta		
Constant	3.314	0.124		27.456	0.000
Gender	-0.017	0.072	-0.007	0.121	0.927

a. Dependent Variable: Perception of consumers towards E-Two-wheelers

Inference

Table-3 shows that the null hypothesis is accepted since the coefficient value (0.927) exceeds the significance level ($p > 0.05$). This suggests that the customer's gender does not substantially influence their perception towards electric two-wheelers. Since gender does not significantly affect perception and does not have inherently different preferences for electric two-wheelers. No direct cause-effect relationship between gender and purchasing perception was observed.

Table 4: Testing hypothesis based on Family Income

H₀: Customer' family income has no significant impact on their perception towards electric two-wheelers.

Model	Unstandardized coefficients		Standardized coefficients	t	Sig
	B	Std. error	Beta		
Constant	3.563	0.253		14.675	0.000
Family Income	0.007	0.081	0.008	0.142	0.932

a. Dependent Variable: Perception of consumers towards E-Two-wheelers

Inference

Table-4 shows that the coefficient value ($p = 0.932$) is larger than the significance level ($p > 0.05$), implying that the null hypothesis is accepted and that people's perception regarding electric two-wheelers are not impacted by their families' income.

Table 5: Testing hypothesis based on Fuel Efficiency

H₀: Customers' family income has no significant impact on the opinion about fuel efficiency of Electric two-wheelers.

Model	Unstandardized coefficients		Standardized coefficients	t	Sig
	B	Std. error	Beta		
Constant	2.768	0.245		11.675	0.000
Family Income	0.372	0.071	0.298	4.967	0.000
a. Dependent Variable: Opinion about fuel efficiency of Electric two-wheelers					

Inference

Table-5 shows that the coefficient value ($p = 0.000$) is less than the significance level ($p < 0.05$), rejecting the null hypothesis. This suggests that family income significantly impacts consumers' opinions about the fuel efficiency of electric two-wheelers. As family income increases, the perception of better fuel efficiency in electric two-wheelers becomes stronger.

Since the p-value is less than 0.05, we reject H₀ and conclude that family income positively influences perceptions of fuel efficiency.

Table 6: Barriers towards Preference of Electric Two-Wheeler

There are few consumers who prefer to purchase an electric two-wheeler and the reasons for their attitude towards less preference are as below

S.No	Perception	Percentage
1	High Price	19
2	No extra value for extra cost	29
3	Lack of infrastructure for charging	28
4	Lack of awareness	27

Inference

The highest rated concern is the feeling of "No extra value for extra cost" (29%), implying that customers feel electric two-wheelers are not worth it in terms of features, performance, or benefits given the higher price. High price (28%) ranks as a leading deterrent, reflecting that customers find affordability important when making purchase decisions. Lack of awareness (27%) is also a dominant factor, i.e., most consumers are poorly informed about the benefits, cost savings, and government incentives available for electric two-wheelers. Inadequate charging infrastructure (19%) also deters people from adopting, as range anxiety and availability of charging points remain major issues.

4.2 Implications from other studies

Performance and Range as Primary Drivers of Adoption

- **Current Study Finding:**

71.28% of respondents strongly agree that they will purchase an electric two-wheeler if it offers good mileage, highlighting the importance of performance and range.

- **Reference from Other Studies:**

Diwakar Raj and Kannan (2022) identified that performance factors such as mileage, speed, and battery efficiency are critical in influencing consumer preferences.

- **Implication:**

The manufacturers need to focus on battery technology, range, and performance improvements to meet the essential issues of interested buyers and establish electric two-wheelers as a dependable option against conventional models.

Importance of Charging Infrastructure in Purchase Decisions

- **Current Study Finding:**

65.25% of respondents strongly agree that they would buy an electric two-wheeler if charging stations are easily accessible, indicating that infrastructure remains a key determinant.

- **Reference from Other Studies:**

Shivabeerappa and Divya (2022) emphasized that lack of charging infrastructure is a major barrier to the adoption of electric vehicles in Southern Karnataka.

- **Implication:**

Policymakers and private investors need to increase public charging points, home-charging options, and battery-swapping networks to mitigate range anxiety and promote mass adoption.

- **Current Study Finding:**

53.90% of respondents strongly agree that they prefer electric two-wheelers due to environmental benefits such as reduced pollution and lower carbon emissions.

- **Reference from Other Studies:**

Surendhranatha Reddy and Ajai Abraham Thomas (2024) highlighted that younger consumers in Bangalore are motivated by environmental consciousness when considering electric vehicle adoption.

- **Implication:**

Marketing strategies should capitalize on environmental advantages and highlight lower carbon footprints and government incentives to appeal to green buyers.

4.3 Suggestions

- Improve performance to promote adoption – Enhance acceleration, speed, battery life, and efficiency to beat petrol variants.
- Tap into environmental advantages in marketing – Promote zero emissions, lower carbon footprint, and subsidy incentives to appeal to green customers.
- Better battery range and convenience of charging – Spend on high-capacity batteries, quick charging, and battery swap technologies to alleviate range anxiety.
- Scale up charging facilities – Build additional public charging stations, home charging points, and battery-swapping networks to increase accessibility.

- Reorient marketing strategy from demographics to value perception – Focus on long-term cost savings, maintenance advantages, and enhanced performance rather than by age group or income brackets.
- Reassure about price with value-based initiatives – Provide EMI schemes, subsidies, warranty initiatives, and cost-benefit analyses to increase affordability.
- Enhance consumer education and awareness – Launch awareness campaigns, dealership training, and test ride programs to educate consumers about EV benefits.

4.4 Conclusion

The automobile sector is undergoing rapid transformation as a result of technology innovation and the need to match customer expectations. The two-wheeler industry in India has significant potential due to population trends, a favourable environment, and easy organization. Two-wheeler producers are contending for a piece of this competitive business, and they are working very hard about it. Consumer attitudes toward goods and services are complex psychological responses. Customers' perception regarding electric two-wheelers are genuine by demographic variables are age, gender, occupation, and family income. Customers feel that electric two-wheelers can be a viable alternative to traditional two-wheelers since they provide additional benefits.

Customers desire electric two-wheelers with a range of features, such as more designs, higher speeds, longer range, quicker battery charging, more charging stations, better after-sale assistance, customer education, better performance, government subsidies, durability, and warranties. Electric two-wheelers are more expensive than regular two-wheelers, customers expect value for their money and price reductions. Electric two-wheeler manufacturers must consider that the market shifts and devise strategies to draw in customers as they change to electric vehicles. These strategies may include educating customers about the advantages of two-wheelers, expanding their features, improving their power, establishing more refuel areas, offering discounts without sacrificing profit margins, placing accessories in convenient locations, setting up service centers, and promoting the brand.

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