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UNDERSTANDING THE IMPACT OF CONSUMER MINDSET ON ELECTRIC TWO-WHEELER ADOPTION: AN ATTITUDINAL AND PERCEPTUAL ANALYSIS

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ABSTRACT
In light of the present rate of fossil fuel depletion and price spike, there is a pressing need for an alternative energy source to power automobiles as nations seek to become more environmentally conscious. Because electric two-wheelers consume a significant amount of energy, India must either reduce its energy consumption or find new energy sources. Consumer perception and attitude play a significant role in the success and adoption of electric two-wheelers (e-bikes, electric scooters, and so on). This study examined a wide range of factors influencing customer behaviour, including environmental, economic, performance, range, technological, cultural, and lifestyle. This research intends to assess how consumers feel about electric two-wheelers. A total of 185 respondents filled out the survey. Due to concerns about safety, cost savings, and environmental sustainability, consumers' perceptions of the adoption of electric two-wheelers are growing. According to the results, factors including price, speed, infrastructure, simplicity of driving, and safety are the most important to consumers when making a purchasing decision. The depletion of fossil fuels and the persistent hikes in petrol prices have led to an increase in the adoption rate of electric two-wheelers in India.

Keywords:
Adoption Factor, Electric Two-Wheeler, Attitude, Consumer Behaviour

INTRODUCTION

In FY2025, the electric two-wheeler (e2W) market in India experienced remarkable expansion, with a total of 1.14 million units sold. Compared to 9.48 lakh units in FY2024, this represents a 21% rise. The increase in sales indicates that more consumers are selecting electric bikes and scooters over gasoline-powered models (S,V. 2025). In fiscal year 2023, India produced 25.93 million vehicles. The percentage of GDP attributable to this industry has grown from 2.77 percent in 1992–1993 to over 7.1 percent now. Indirectly, it provides jobs for almost 19 million people. In FY22, the market share was 77% for two-wheelers and 18% for passenger automobiles.

The IBEF study from 2023 states that when it comes to E2W and E3W, India is the global leader. The current penetration rate of scooters is 10%-15%; a product in the mid-segment of electric vehicles would allow it to reach 50%+. The premium scooter segment has already seen 40% penetration of electric vehicles, but the mass/economic segment, which makes up about 75% of the market, is still mostly untapped. Currently, 2W EVs account for 85% to 90% of all EV units sold in India, with 4W EVs accounting for 7% to 9% and 3W EVs for 5% to 7% of sales (Mahadevan et al., 2023). By 2047, the anticipated segment-wise penetration for three-wheelers is 91%, for two-wheelers it is 90%, for passenger cars it is 79%, and for buses it is 67%, according to the FICCI analysis. The report highlighted opportunities presented by the worldwide trend towards electrification for India's domestic vehicle

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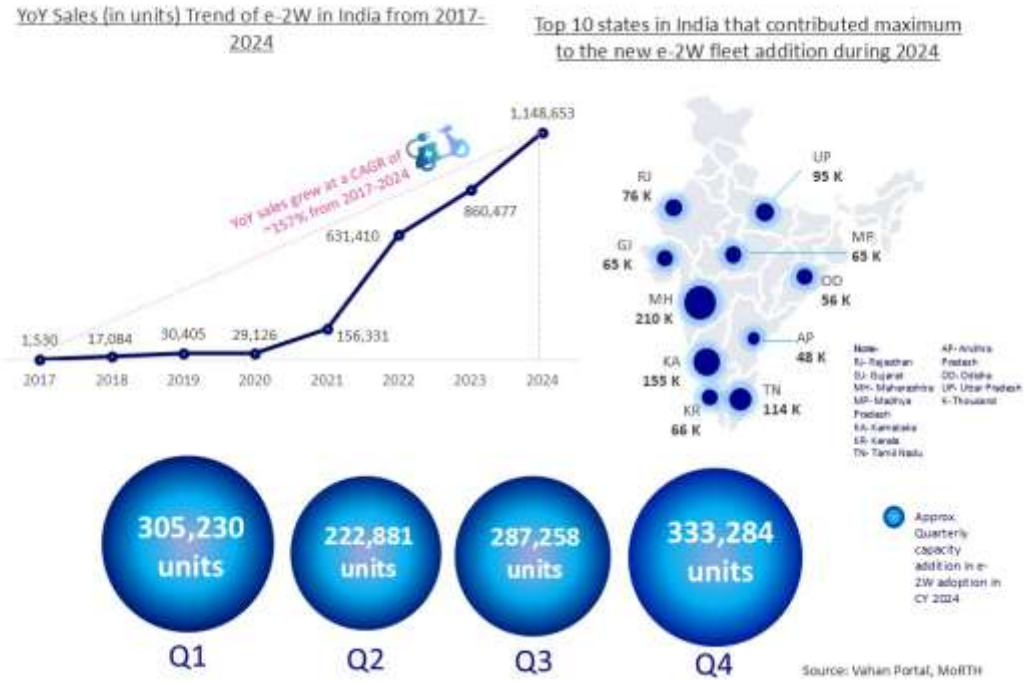
market, which currently stands at over 20 million units. However, it also highlighted challenges, such as high initial costs, restrictions on financing, safety concerns, emerging global trends, and a lack of access to essential raw materials, that hinder mobility in the country. According to this FICCI report, Mr. Kapoor went on to say that we should try to migrate to two-wheelers at least partially over the next five to seven years. He stressed that there's no reason we can't accomplish it. India is a price-sensitive market, so we had to bring the price down even lower. So, we did just that. "The industry must take it forward; the government's support, including subsidies, taxes, and policy reforms, will only take us to a certain point," he said (FICCI, 2023).

With 82 million units sold worldwide in 2021, two-wheeled vehicles such as mopeds, scooters, and motorcycles constitute the biggest subset of the road transport market. Electric vehicles are one of the most promising vehicle categories with the potential to reach zero tailpipe emissions by 2050, with less than 5% of global carbon dioxide emissions from road transport coming from this segment in the past decade (BloombergNEF's Electric Vehicle Outlook 2022).

Electric two-wheelers, like scooters and motorbikes, have a promising future in India. These vehicles, which make up over 70% of all automobiles in India, have long been essential to the country's transportation environment because of their accessibility and cost. And buyers are all set to go electric: according to McKinsey (2023), electric two-wheelers would make up 60 to 70 percent of new sales in India by 2030.

As of January 2025, India's total e-2W operational capacity was 29,99,570 units. Between December 23 and 24, the capacity grew by 33.49 percent, from 860,477 units to 1,148,729 units. Maharashtra accounts for around 18.29% of India's e-2W adoption, making it the state with the highest rate. The nation's greatest e-2W adoption was 333,238 units in Q4 of CY 2024.



Source: https://eninrac.com/horizon/new-energies-and-sustainability/electric-two-wheelers-growth-landscape-in-india/?utm_source=chatgpt.com.

Market research predicts that scooter sales will reach a whopping $9.40 billion in 2023. In the years between 2023 and 2028, analysts predict that this market will expand at a CAGR of 5.40 percent, reaching a value of $12.23 billion by the end of that year.

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At that point, 5.67 million scooters will have been sold in India.
The predicted volume weighted average price of scooters in this segment in 2023 is $1.94k USD, which is worth mentioning as well. Interestingly, with a predicted revenue of US$9.40bn in 2023, India is expected to top this market sector in terms of revenue generation.
Customer tastes, new market trends, and regional factors have all contributed to scooters' meteoric rise in popularity in India in recent years. Scooters are becoming increasingly popular as a result of a change in consumer tastes in India towards cheaper and more environmentally friendly forms of transportation. Scooters are a great and inexpensive way to get around town, especially in crowded cities.Scooters powered by electric motors have recently hit store shelves, thanks to the government's push to promote EVs. People who are concerned about the environment are buying more and more of these scooters. As technology has progressed, scooters have been designed with enhanced connectivity possibilities, safety features, and performance. According to Statista, the demand for scooters in the country has grown as a result of these advancements, which have drawn in a broader range of customers. A notable increase in the use of electric two-wheelers. The number of electric two-wheelers sold in India increased from 156,199 in 2021 to 630,894 in 2022, as reported by the Vahan dashboard. The electric two-wheeler category is the one propelling the expansion of the electric vehicle market in India. In FY2022, these cars made up 63% of all electric vehicle sales, up from 50% in FY2021. Due to its advantages and low operating costs, electric two-wheelers are gaining popularity among Indian consumers, despite being more expensive than internal combustion engine (ICE) bikes. This trend is seen even in tier 3 and tier 4 towns. Ola, Bajaj, TVS, Ather, Hero Electric, Revolt, Okinawa, and PUREV are among the prominent names in the Indian two-wheeler market. Government initiatives that encourage the expansion. To encourage the rapid uptake of electric vehicles in India, the government has launched programs like the Production Linked Incentive Scheme (PLI) and the Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles (FAME) program. A total of INR 51.72 billion will go into its FAME-II program in the fiscal year 2023–24. Among the 36 states and territories that make up the United States, 26 have introduced EV policies in the past five years, with 16 of those states releasing their plans in 2020 and2022alone.

Electric Two-wheeler Year-on-Year Analysis

Manufacturer	January 2024	January 2023	Difference	Growth% YoY
Ola Electric	32,160	18,245	13,915	76.26
TVS	16,276	12,169	4107	33.74
Ather Energy	9209	12,149	-2940	-24.19
Bajaj	10,742	2629	8113	308.59
Ampere	15,181	4120	11,061	268.47
Okinawa Electric	683	4408	-3725	-84.5
Hero Electric	1488	157	1331	847.7
BGAUSS	1485	716	769	107.4

Source: Primary Data
In this table technological developments, rising environmental consciousness, and government incentives have all played a role in the electric two-wheeler market's meteoric rise and dramatic shift in the last year. To better understand how electric mobility is developing, this article compares and contrasts the performance of major

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manufacturers in January 2024 with January 2023, looking specifically at sales numbers and growth rates. Impressive year-on-year growth of 76.26% propels Ola Electric to the forefront of the market. Sales for TVS increased from 12,169 units to 16,276 units, a growth rate of 33.74 percent.

Electric Two-Wheeler Brands in March 2025

Rank	Manufacturer	Unit Sold
1	Bajaj Auto	34,863
2	TVS Motor co	30,453
3	Ola Electric	23,430
4	Ather Energy	15,446
5	Hero Motocorp	7,977
6	Greaves Electric	5,641
7	Bgauss Auto	2,591
8	Pure Energy	1,805
9	Revolt Motors	1,395
10	Kinetic Green	842

Source: https://electricvehicles.in/indias-electric-two-wheeler-sales-hit-record-high-in-fy2025/

LITERATURE REVIEW

Flores and Jansson (2021) studied about consumer innovations and green invention towards e-bikes and e-scooters. In this study used confirmed factor analysis and t test for compare the two groups mean. **Monika (2019)** examined the perception of consumer towards e-vehicles in Bangalore. Data was collected through 120 respondents from Bangalore city E-users. In this study correlation was used to analysis the relationship between consumer awareness level and buying intention of electric vehicle. This study concluded that 76% users agree that it will be useful to solve the environmental issues. **Eccarius and Lu (2020)** find out that adoption of electric two-wheeler consumers is increasing at exponential rate. This study focused on some attitudinal and social factors which impact the adoption of electric two-wheeler like technical, cost, contextual, social and demographic. **Ukesh et al (2022)** studied about satisfaction level of electric two-wheeler consumers in India. A sample of 200 respondents was taken through questionnaire and a convenient sampling was used to collect the data. **Ahlawat and Tanwar (2023)** analysed the challenges facing the electric scooter Industry. To address these issues, the market for electric scooters should prioritise enhancing battery life. The government should take use of this opportunity to address the concerns raised by the extensive use of electricity scooters. Due to the small sample size, conclusions cannot be extrapolated to the entire population as they are likely to change as the sample size increases.

RESEARCH OBJECTIVES

To determine the main behavioural and psychological elements that influence consumer mentality, such as price sensitivity, performance expectations, and environmental concerns.
To explore the demographic variables (e.g., age, gender, income, education) and consumer attitude towards electric two-wheelers.

RESEARCH METHODOLOGY

Primary research, in the form of an online survey or questionnaire, is what I use to learn about consumers' perspectives on E2W. Research entails systematically planning, gathering, analyzing, and reporting facts and findings that are relevant to a particular issue or potential shift in the market or business. The survey consists of two sections. Respondent demographics were presented in Part I. In Part II, we ask E2W users psychographic questions to learn more about their perspective, attitude, and plans regarding E2W use.

DATA COLLECTION

Regarding the uptake of electric two-wheelers, a quantitative study was conducted. Gender, age, income, and level of education were among the demographic details asked of respondents on the form. In the Delhi NCR area, data

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was gathered by means of a questionnaire. Out of a total of 210 responses, 185 were included in this study. 25 responses were eliminated because of legitimate reasons. In order to examine the information that was generated and to determine the results, SPSS was utilized to analyze the data that was gathered from the forms. The study considers the following factors: - Considerations such as cost, perceived monetary gain, social impact, charging infrastructure, and eco-friendliness

DATA ANALYSIS AND INTERPRETATION

Table 1: Demographic Profile

Serial No	Variable	Frequency	Percent
1.	Gender		
	Male	103	55.7%
	Female	82	44.3%
2.	Marital Status		
	Single	110	59.5%
	Married	75	40.5%
3.	Residence		
	Metro	80	43.2%
	Non Metro	105	56.8%
4.	Age(In Years)		
	< 20	30	16.2%
	≥ 20 < 30	99	53.5%
	≥ 30 < 40	38	20.5%
	≥ 40 < 50	13	7.0%
	≥ 50	5	2.7%
5.	Education		
	<10th	22	11.9%
	10+2	49	26.5%
	Graduate	65	35.1%
	Post Graduate	49	26.5%
6.	Occupation		
	Salaried	53	28.6%
	Self-Employed	44	23.8%
	Student	88	47.6%
7.	Monthly Family Income		
	< 50,000	56	30.3%
	≥ 50,000 < 1, 00,000	67	36.2%
	≥ 1, 00,000	62	33.5%
Total Respondents		**185**	

Table 1 describes the demographic profile of electric two-wheeler consumers. This indicates that the male respondent percentage was 55.7% and the female was 44.3%. 59.5% of respondents were single and 40.5% were

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married users. The residence status of metro respondents was less in comparison to non-metro which is 43.2% and 56.8%. The majority of respondents belonged to the 20 to 30 age group. The percentage of graduate respondents was 35.1% which is higher in comparison to 10th, 10+2, and Postgraduate users. The majority of participants were students 47.6% but Self-employed and Salaried participants were 23.8% and 28.6%.

Table 2: Descriptive Statistics

Demographic Cum Psychographic Profile of Electric Two-Wheeler Consumers	Mean	S.D.	Variance
Indians (across rural/urban divide) primarily depend upon two-wheelers for their regular/routine transportation needs (esp. for small-distance trips/chores)	3.99	.837	.701
Indians (across rural/urban divide) prefer two-wheelers to four-wheelers because of easy/convenient use and low(er) cost-of-ownership	4.09	.785	.617
Motorcycles are the primary-choice of two-wheeler consumers in India owing to its higher-reliability and unmatched-ruggedness in rough-and-tough Indian terrain	3.79	1.022	1.045
Indians prefer motorcycles to scooters owing to its higher-performance in terms of speed, mileage and frame-durability (besides better power, torque and acceleration)	4.19	.777	.603
Scooters are primarily-preferred by urban-consumers because of its ease-of-driving (esp. for women, youngsters and the aged) for short-distance needs/requirements	3.99	.882	.777
Indians primarily rely upon two-wheelers (available with the household) due to ease-of-driving and convenient-parking in highly/congested Indians streets/markets	4.22	.757	.573
Indians generally prefer two-wheelers to cars, in case the number of commuters are minimal (driver and pillion-rider alongside) due to convenience/cost considerations	3.97	.932	.869
Upper/middle-class Indians primarily prefer cars to two-wheelers primarily in big/urban areas with long-commute distance (and esp. amidst smoky/slow-commute roads)	4.11	.803	.645
Upper/middle-class Indians primarily prefer cars to two-wheelers primarily due to safety-considerations (amidst high-traffic and unsafe/dangerous Indian highways)	3.82	.987	.973
Market for both two-wheelers and passenger-cars are growing at an exponential-rate, owing to higher-lifestyle needs and rising disposable-incomes of Indians	3.82	1.068	1.140

According to the above table, Mean value lies between 3.79 and 4.22 which indicates that the majority of the respondents are in agreement with these all statements and S.D.(Standard Deviation) lies between .777 to 1.068 which means responses are near to mean value and signifies the normal distribution curve. So these all statements are going to be in favor of agreement. Due to their reduced cost of ownership, ease of parking, and adaptability in crowded areas, two-wheelers are favoured over cars. Due to their affordability and practicality, particularly over short distances, two-wheelers are widely used for daily commuting by both rural and urban Indians.

SUGGESTIONS

It is necessary to dispel myths and misconceptions about battery life, charging duration, and upkeep. Incentives and subsidies ought to be maintained and increased, particularly for households with lower incomes. For those who

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purchase electric two-wheelers, banks and NBFCs ought to be encouraged to provide low-interest financing and EMI plans. In Tier-II and Tier-III cities, where adoption is still low, the government should expedite the building of charging infrastructure. EV manufacturers ought to create and promote goods that are suited to various customer segments, such as: (1) Light scooters for older people and urban ladies. (2) High-performance bicycles for long-distance or rural riders. (3) Connected and intelligent automobiles for youthful, tech-savvy buyers.

FUTURE SCOPE

To examine geographical differences in consumer attitude, future research can expand the current study to Tier-III and Tier IV cities or isolated rural areas. Future studies can examine the attitudes of consumers towards electric scooters and motorcycles, or more specifically, electric versus conventional (ICE) two-wheelers. Further research can examine real consumer behaviour, such as purchase decisions, post-purchase satisfaction, or brand-switching behaviour, in addition to attitudes and views. The study should assess how consumer views and adoption rates are affected by government subsidies, incentives, and infrastructure measures (such as charging stations and battery swapping). To develop focused marketing or product strategies, separate studies can be conducted with a focus on urban working-class communities, women consumers, or young shoppers. To determine how they affect adoption behaviour, future research can include social norms, eco-consciousness, and carbon footprint awareness in the analysis.

CONCLUSION

Because of the product's characteristics, this is an extremely difficult task for the industry and governments to do. It is a game-changing invention that necessitates new ways of driving. On the other hand, adoption is gradually increasing on a global scale. The acceptability and performance of electric two-wheelers (e-bikes, e-scooters, etc.) are heavily influenced by how consumers feel about them. Due to the depletion of fossil fuels and the frequent hikes in petrol costs, electric two-wheelers are becoming more popular in India. Another key factor that impacts people's decisions and views is the cost of owning an electric two-wheeler. This study looked at the gender, age, income, education, and knowledge-based aspects as well as the latent factors that influence the intention to adopt electric two-wheelers. The probability of embracing electric mobility is positively correlated with a positive attitude that is influenced by cost savings, environmental awareness, and an openness to innovation. Purchase decisions are also greatly influenced by consumer perception, specifically with relation to performance, convenience, risk, and brand trust. To speed up the shift to environmentally friendly transportation via electric two-wheelers, it is ultimately important to improve both the cognitive (attitude) and affective (perception) aspects of consumer behaviour.

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