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A Study On Users Satisfaction About Electric Vehicle Of Two Wheeler With Reference To Chennai City

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ABSTRACT
Electric two-wheelers (e2Ws), including e-bikes and e-scooters, have emerged as a sustainable alternative to traditional petrol-powered vehicles, offering advantages such as lower emissions, reduced operating costs, and quieter operation. Driven by rising environmental concerns and fuel prices, both governments and consumers are increasingly turning to electric mobility solutions. However, the rapid growth of this sector has also introduced several challenges—particularly in terms of safety, regulatory oversight, and consumer perception. This study was conducted to assess the awareness and satisfaction levels of e2W users in Chennai city. Based on the findings, the researcher concludes that strengthening government initiatives and enhancing dealership engagement can play a vital role in accelerating EV adoption. While users value the cost-efficiency, performance, and environmental benefits of e2Ws, the sector must urgently address issues such as inadequate charging infrastructure and limited design options. Expanding the charging network and offering more customization choices should be prioritized to improve user satisfaction and drive broader acceptance.

Introduction

Electric two-wheelers (e2Ws), such as e-bikes and e-scooters, have become a promising and sustainable alternative to traditional petrol-powered vehicles. They offer key advantages including lower emissions, reduced operational costs, and quieter performance. As environmental concerns intensify and fuel prices continue to rise, both governments and consumers around the world are increasingly embracing electric mobility. Nevertheless, despite these advantages, the rapid growth of the e2W market has introduced notable challenges—particularly in areas related to safety standards, regulatory frameworks, and public perception

Statement of the Problem

Electric two-wheelers (e2Ws), particularly unregistered models, pose significant safety risks due to issues such as substandard battery quality, faulty battery management systems, and poorly executed electrical connections. The lack of essential safety features, combined with challenging road conditions, further increases the risk of accidents. Weak regulatory oversight and inadequate enforcement allow some manufacturers to compromise on safety standards, putting riders at greater risk.

On the consumer front, limited awareness about the benefits and limitations of electric two-wheelers contributes to hesitancy in adoption. Perceptions of e2Ws as underpowered or unreliable further dampen consumer confidence. Addressing these challenges requires the implementation of stricter safety regulations, effective enforcement mechanisms, and targeted awareness campaigns to build consumer trust and ensure safe adoption of electric mobility.

In this context, Chennai—a rapidly expanding metropolitan city—has seen a notable rise in electric two-wheeler usage, driven by escalating fuel costs, supportive government incentives, and growing environmental consciousness. Despite this upward trend, several barriers continue to impede widespread adoption. Therefore, the present study aims to assess user satisfaction with electric two-

wheelers in Chennai, with the goal of identifying key factors influencing adoption and areas requiring policy and industry intervention.

Objectives of Study

1. To study the level of satisfaction among the Electric Two wheeler users in Chennai city
2. To Assess the Negativity factors among the Electric Two wheeler users in Chennai city

Sample Size
The sample size for the present study has been considered as 385. The respondents have been identified by using Random Sampling Methods.

Collection of Data
The study consist of both primary and secondary data. The primary data have been collected from 385 sample respondents through Interview Schedule. The secondary data have been gathered from existing literature, newspapers, magazines and web site of the company.

Tools for Analysis
The collected data analysed and interpret by using appropriated statistical tools viz., simple percentage and factor analysis.

Hypothesis
The researcher has framed null hypothesis for testing the data with suitable tools
Analysis and Interpretation

Table 1 Opinion about Level of Satisfaction of the Respondents regarding Electric Bike

FACTORS	HS	S	NSNDS	DS	HDS
Price	197 (51.2)	132 (34.3)	56 (14.5)	0	0
Colours	32 (8.3)	64 (16.6)	59 (15.3)	184 (47.8)	46 (12)
Driving Smoothness	79 (20,5)	112 (29.1)	78 (20.3)	97 (25.2)	19 (4.9)
Maintenance	183 (47.5)	163 (42.3)	39 (10.1)	0	0
Availability of Brand	79 (20.5)	110 (28.6)	92 (23.9)	89 (23.1)	15 (3,9)
Charging Time	32 (8.3)	61 (15.8)	81 (21)	96 (24.9)	115 (29.9)
Availability of Charging Station	0	0	12 (3.1)	272 (70.6)	101 (26.2)
Resale value	0	0	62 (16.1)	142 (36.9)	181 (47)
Mileage	103 (26.8)	94 (24.4)	113 (29.4)	53 (13.8)	22 (5.7)
Space for Carrying Materials	189 (49.1)	123 (32)	73 (18.9)	0	0
Space for sitting	89 (23.1)	123 (31.9)	145 (37.7)	28 (7.3)	0

Driving Speed	74 (19.2)	176 (45.7)	124 (32.1)	11 (2.9)	0
Social Status	141 (36.6)	163 (42.3)	81 (21)	0	0
Availability of Subsidies	77 (15.4)	93 (18.6)	97 (19.4)	54 (10.8)	64 (12.8)
Noisy and Sounds	95 (24.7)	171 (44.4)	95 (24.7)	24 (6.2)	0
Night mode Driving	88 (20.5)	92 (21.5)	102 (23.8)	64 (14.9)	21 (4.9)
Weight of Bike	78 (19.5)	98 (24.5)	92 (23)	87 (21.8)	30 (7.5)
Space for Provisional Expendable	13 (3.3)	84 (21.4)	53 (13.5)	123 (31.3)	112 (28.5)
Guarantee / Warranty	94 (24.3)	102 (26.4)	113 (29.2)	76 (19.7)	0
Battery Duration	34 (8.4)	53 (13.1)	67 (16.6)	86 (21.3)	145 (35.9)

Source: Primary Data
HS: Highly Satisfied S: Satisfied NSNDS: Neither Satisfied Nor Dissatisfied
DS: Dissatisfied HDS: Highly Dissatisfied

The majority of respondents (51.2 per cent) are highly satisfied with the price of electric vehicles. About 34.3 per cent of respondents are satisfied with the price. A notable minority (14.5 per cent) are not satisfied with the price.

A significant majority of respondents (59.8 per cent) are dissatisfied (DS) or highly dissatisfied (HDS) with the colour options. Only 8.3 per cent of respondents are highly satisfied (HS) with the colour options.

About 49.6 per cent of respondents (HS+S) are satisfied with the driving smoothness. However, 30.1 per cent of respondents (DS+HDS) are dissatisfied.|

An overwhelming majority of respondents (89.8 per cent) are satisfied (HS+S) with the maintenance aspects of electric vehicles. Only 10.1 per cent of respondents are not satisfied (NS) with the maintenance.

About 49.1 per cent of respondents (HS+S) are satisfied with the availability of brands. However, 27.0 per cent of respondents (DS+HDS) are dissatisfied.

A significant majority of respondents (54.8 per cent) are dissatisfied (DS) or highly dissatisfied (HDS) with the charging time. Only 8.3 per cent of respondents are highly satisfied (HS) with the charging time.

Severe Dissatisfaction: An overwhelming majority of respondents (96.8 per cent) are dissatisfied (DS) or highly dissatisfied (HDS) with the availability of charging stations.

An overwhelming majority of respondents (83.9 per cent) are dissatisfied. 16.1 per cent are opined that neither satisfied Nor Dissatisfied

Out of total sample respondents 51.2 per cent of respondents (26.8 per cent + 24.4 per cent) are satisfied (Highly Satisfactory + Satisfactory) with the mileage of electric vehicles. Neutral Respondents: 29.4 per cent of respondents (Not Satisfactory) have neutral feelings about the mileage. Dissatisfied Respondents: 19.5 per cent of respondents (13.8 per cent + 5.7 per cent) are dissatisfied (Dissatisfactory + Highly Dissatisfactory) with the mileage.

49.1 per cent of respondents are highly satisfied with the space for carrying materials. 32 per cent of respondents are satisfied. 18.9 per cent of respondents are not satisfied.

Only 7.3 per cent (28 respondents) are highly dissatisfied with the space for sitting. A significant proportion (37.7 per cent or 145 respondents) are neutral about the space for sitting. More than half (55 per cent or 212 respondents) are either satisfied (31.9 per cent or 123 respondents) or highly satisfied (23.1 per cent or 89 respondents) with the space for sitting.

65 per cent (250 respondents) are either satisfied (45.7 per cent or 176 respondents) or highly satisfied (19.2 per cent or 74 respondents) with the driving speed. 32.1 per cent (124 respondents) have a neutral opinion about the driving speed. 2.9 per cent (11 respondents) are dissatisfied with the driving speed.

A significant majority (78.9 per cent) of respondents perceive Electric Vehicles (EVs) as enhancing their social status, with 36.6 per cent (141 respondents) strongly agreeing and 42.3 per cent (163 respondents) agreeing.. 21 per cent (81 respondents) have a neutral perception of EVs' impact on their social status.

A significant proportion (15.4 per cent or 77 respondents) are unaware of the availability of subsidies for Electric Vehicles (EVs). The largest group (19.4 per cent or 97 respondents) has a neutral opinion about the availability of subsidies. The remaining respondents are divided, with 18.6 per cent (93 respondents) believing subsidies are available, 10.8 per cent (54 respondents) disagreeing, and 12.8 per cent (64 respondents) strongly disagreeing.

A significant majority (69.1 per cent) of respondents are not bothered by the noise and sounds of Electric Vehicles (EVs), with 44.4 per cent (171 respondents) disagreeing and 24.7 per cent (95 respondents) strongly disagreeing that EVs are noisy.24.7 per cent (95 respondents) have a neutral opinion about the noise and sounds of EVs. 6.2 per cent (24 respondents) agree that EVs are noisy.

The largest group (23.8 per cent or 102 respondents) has a neutral opinion about their night mode driving experience. A significant proportion (20.5 per cent or 88 respondents and 21.5 per cent or 92 respondents) are slightly positive about their night mode driving experience. 14.9 per cent (64 respondents) are concerned, and 4.9 per cent (21 respondents) are highly concerned about their night mode driving experience.

A significant proportion (23 per cent or 92 respondents) has a neutral opinion about the weight of the bike.24.5 per cent (98 respondents) are slightly positive, and 19.5 per cent (78 respondents) are positive about the weight of the bike. 21.8 per cent (87 respondents) are concerned, and 7.5 per cent (30 respondents) are highly concerned about the weight of the bike.

A majority of respondents (59.8 per cent) are dissatisfied with the space for provisional expendables, with 31.3 per cent (123 respondents) disagreeing and 28.5 per cent (112 respondents) strongly disagreeing. 13.5 per cent (53 respondents) have a neutral opinion. Only 24.7 per cent (97 respondents) are satisfied, with 21.4 per cent (84 respondents) agreeing and 3.3 per cent (13 respondents) strongly agreeing.

The largest group (29.2 per cent or 113 respondents) has a neutral opinion about the guarantee/warranty. A significant proportion (26.4 per cent or 102 respondents) are slightly positive, and 24.3 per cent (94 respondents) are positive about the guarantee/warranty. 19.7 per cent (76 respondents) are concerned about the guarantee/warranty.

21.3 per cent (86 respondents) dissatisfied and 35.9 per cent (145 respondents) highly dissatisfied. 16.6 per cent (67 respondents) have a neutral opinion. Only 21.5 per cent (87 respondents) are satisfied

Table 2 Opinion about Negativities in Electric Bike

Factors	**HA**	**A**	**N**	**DA**	**HDA**
EVs are costly	89 (23.1)	128 (33.2)	131 (34)	37 (9.6)	0
Charging EVs are Hectic	72 (18.7)	147 (38.2)	183 (47.5)	17 (4.4)	0
Unable to Driving in Emergency	121 (31.4)	132 (34.3)	111 (28.8)	21 (5.4)	0
High Maintenance Cost	11 (2.8)	32 (8.2)	71 (18.3)	158 (40.7)	113 (29.1)
Low Durability of Battery	136 (35.1)	88 (22.7)	71 (18.3)	57 (14.7)	33 (8.5)

Poor Lighting	158 (40.7)	123 (31.7)	51 (13.1)	42 (10.8)	11 (2.8)
Not Attract the Appearances of the Bike Style	196 (50.6)	129 (33.3)	60 (15.5)	0	0
Uncomfortable sitting position	135 (35.1)	167 (43.4)	83 (21.6)	0	0
Limited Driving Range	131 (34.2)	152 (39.7)	84 (21.9)	18 (4.7)	0
Limited Consumer Choice	84 (22.1)	97 (25.5)	98 (25.8)	82 (21.6)	24 (6.3)
Low Trust over new technology	78 (20.3)	81 (21.1)	82 (21.4)	86 (22.4)	58 (15.1)
Less Reliable than conventional bike	94 (24.5)	109 (28.4)	89 (23.2)	52 (13.6)	41 (10.7)
Feel Unsafety	72 (18.8)	95 (24.7)	96 (25)	62 (16.1)	60 (15.6)
Unavailable of Credit Facilities	0	0	0	134 (33.5)	251 (66.5)
Less Promotional Activities	21 (5.5)	62 (16.2)	74 (19.3)	97 (25.3)	131 (34.2)

Source: Primary Data
Figures in the parenthesis indicate percentage
HA: Highly Agree A: Agree N: Neutral DA: Disagree
HAD: Highly Disagree

i. EVs are costly: 23.1 per cent agree, 33.2 per cent somewhat agree, 34 per cent neutral, 9.6 per cent disagree
ii. Charging EVs is hectic: 18.7 per cent agree, 38.2 per cent somewhat agree, 47.5 per cent neutral, 4.4 per cent disagree
iii. Unable to drive in emergency: 31.4 per cent agree, 34.3 per cent somewhat agree, 28.8 per cent neutral, 5.4 per cent disagree
iv. High maintenance cost: 2.8 per cent agree, 8.2 per cent somewhat agree, 18.3 per cent neutral, 70.8 per cent disagree
v. Low durability of battery: 35.1 per cent agree, 22.7 per cent somewhat agree, 18.3 per cent neutral, 23.2 per cent disagree
vi. Poor lighting: 40.7 per cent agree, 31.7 per cent somewhat agree, 13.1 per cent neutral, 14.6 per cent disagree
vii. Unattractive bike style: 50.6 per cent agree, 33.3 per cent somewhat agree, 15.5 per cent neutral
viii. Uncomfortable sitting position: 35.1 per cent agree, 43.4 per cent somewhat agree, 21.6 per cent neutral
ix. Limited driving range: 34.2 per cent agree, 39.7 per cent somewhat agree, 21.9 per cent neutral, 4.7 per cent disagree
x. Limited consumer choice: 22.1 per cent agree, 25.5 per cent somewhat agree, 25.8 per cent neutral, 26.6 per cent disagree
xi. Low trust in new technology: 20.3 per cent agree, 21.1 per cent somewhat agree, 21.4 per cent neutral, 37.2 per cent disagree
xii. Less reliable than conventional bikes: 24.5 per cent agree, 28.4 per cent somewhat agree, 23.2 per cent neutral, 23.9 per cent disagree
xiii. Feel unsafe: 18.8 per cent agree, 24.7 per cent somewhat agree, 25 per cent neutral, 31.5 per cent disagree
xiv. Unavailable credit facilities: 0 per cent agree, 0 per cent somewhat agree, 0 per cent neutral,

100 per cent disagree

xv. Less promotional activities: 5.5 per cent agree, 16.2 per cent somewhat agree, 19.3 per cent neutral, 59 per cent disagree

Table 3 Factor Analysis between Educational Qualification and Level of Satisfaction of Electric Vehicle (EV)

Factor Loading	Factor Loading	Loading Factor Value	Educational Qualification	Factor Scores
Factor 1: Practicality	Maintenance	0.83	Upto +2	-0.35
	Space for Carrying Materials	0.79	Under Graduate	0.12
	Mileage	0.76	Post Graduate	0.31
	Driving Smoothness	0.74	Others	0.36
Factor 2: Financial Consideration	Price	0.85	Upto +2	-0.27
	Resale Value	0.83	Under Graduate	0.06
	Availability of Subsidies	0.78	Post Graduate	0.23
Factor 3: Performance and Features	Driving Speed	0.84	Others	0.33
	Battery Duration	0.82	Upto +2	-0.23
	Charging Time	0.79	Under Graduate	0.03
Factor 4: Aesthetics and Comfort	Colours	0.81	Post Graduate	0.21
	Space for Sitting	0.79	Others	0.29
	Weight of Bike	0.76	Upto +2	-0.19
Factor 5: Safety and Reliability	Guarantee/Warranty	0.85	Under Graduate	0.01
	Availability of Charging Station	0.82	Post Graduate	0.18
	Noisy and Sounds	0.79	Others	0.24

Source: Computed from primary data

The factor analysis results indicate that the factors influencing EV adoption can be grouped into five categories: Practicality, Financial Considerations, Performance and Features, Aesthetics and Comfort, and Safety and Reliability. The factor scores indicate that Post Graduate and Others respondents tend to prioritize Practicality, Financial Considerations, and Performance and Features, while Upto +2 respondents tend to prioritize Aesthetics and Comfort and Safety and Reliability. The results suggest that Educational Qualification influences the factors that respondents consider when adopting EVs.

i. Practicality: Post Graduate and Others respondents prioritize practicality factors such as maintenance, space for carrying materials, mileage, and driving smoothness.
ii. Financial Considerations: Post Graduate and Others respondents also prioritize financial considerations such as price, resale value, and availability of subsidies.
iii. Performance and Features: Post Graduate and Others respondents prioritize performance and feature factors such as driving speed, battery duration, and charging time.
iv. Aesthetics and Comfort: Upto +2 respondents prioritize aesthetics and comfort factors such as colors, space for sitting, and weight of bike.
v. Safety and Reliability: Post Graduate and Others respondents prioritize safety and reliability factors such as guarantee/warranty, availability of charging station, and noisy and sounds.

Conclusion

While electric two-wheelers are increasingly popular in Chennai due to their cost-effectiveness, low maintenance, and environmental benefits, significant challenges remain. These include inadequate charging infrastructure, dissatisfaction with design options (such as color and storage), and weak post-

sales support. Additionally, limited awareness of subsidies hinders potential adoption. To accelerate EV adoption and improve user satisfaction, policymakers and manufacturers must address these pain points through stronger infrastructure development, consumer education, better design offerings, and robust customer service networks.

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