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A Study On Users Awaerness 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 conventional petrol-powered vehicles, offering lower emissions, reduced operating costs, and quieter operation. With growing environmental concerns and rising fuel prices, governments and consumers worldwide are increasingly adopting electric mobility solutions. However, despite their benefits, the rapid expansion of the market has brought significant challenges, particularly concerning safety, regulation, and consumer perception. This study has made to identify the awareness and level of satisfaction of users in Chennai city. Based on the findings the researcher has concluded that the Strengthening government and dealership engagement could further boost EV adoption. While users appreciate cost savings, performance, and eco-friendliness, the industry must address infrastructure gaps and design limitations to boost adoption. Improving charging networks and customization options should be top priorities.

INTRODUCTION

Electric two-wheelers (e2Ws), including e-bikes and e-scooters, have emerged as a sustainable alternative to conventional petrol-powered vehicles, offering lower emissions, reduced operating costs, and quieter operation. With growing environmental concerns and rising fuel prices, governments and consumers worldwide are increasingly adopting electric mobility solutions. However, despite their benefits, the rapid expansion of the market has brought significant challenges, particularly concerning safety, regulation, and consumer perception.

Statement of the Problem

Electric two-wheelers, especially unregistered ones, present a major fire hazard due to substandard battery quality, defective battery management systems, and poorly soldered connections. Additionally, the absence of adequate safety features, combined with rough road conditions, raises the likelihood of accidents. Weak regulations and lax enforcement further worsen the problem, allowing manufacturers to cut corners on safety and endanger riders. On the consumer side, many potential buyers lack sufficient knowledge about the advantages and drawbacks of electric two-wheelers, leading to reluctance in adoption. Moreover, some riders perceive these vehicles as underpowered or unreliable, which further discourages uptake. Addressing these issues requires stronger safety standards, better enforcement, and increased public awareness to ensure safer and more confident adoption of electric mobility. Chennai, a rapidly growing metropolitan city, has witnessed a surge in electric two-wheeler (E2W) adoption in recent years. With increasing fuel prices, government incentives, and environmental awareness, many residents are switching to electric scooters and bikes. However, while the market shows promise, several challenges persist that could hinder widespread adoption. Hence the researcher has made an attempt to study Users Satisfaction about Electric Vehicle of Two Wheeler with Reference to Chennai City

Objectives of Study

1. To study the level of awareness among the Electric Two wheeler users in Chennai city
2. Assess the level of satisfaction 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, Regression and Correlation

Hypothesis

The researcher has framed null hypothesis for testing the data with suitable tools

Analysis and Interpretation

Table 1 Age wise Classification of the Respondents

Age	No.of Respondents	Percentage
Upto 25	74	19.22
26-45	224	58.18
Above 45	87	22.60
Total	385	100

Source: Primary Data

Table 1 exhibits the age wise classification of the respondents. Out of 385 respondents the majority 224 (58.18 per cent) of the population falls in the 26-45 age group, indicating a dominant middle-aged demographic. Approximately one-fifth 74 respondents (19.22 per cent) of the population is under 25, suggesting a relatively small proportion of younger individuals. More than one-fifth 87 respondents (22.60 per cent) of the population is above 45, indicating a significant presence of older individuals.

Table 2 Awareness about E- Vehicle among the Respondents

Awareness	No.of Respondents	Percentage
EV specific websites	12	3.1
Advertisements	197	51.2
Online or print news articles	09	2.3
Friends/family/Relatives	124	32.2
Government portals	03	08
Physical campaigns	23	6
YouTube videos/channels	11	2.9
Visit to company showrooms	06	1.6
Total	385	100

Source: Primary Data

Table 2 disclose that the Advertisements are the primary source of awareness for electric vehicles (EVs), with over half of the respondents (51.2 per cent) citing ads as their source of information.

Word of mouth plays a significant role, with 32.2 per cent of respondents learning about EVs from friends, family, or relatives.

Online platforms, such as YouTube videos/channels and EV specific websites, have a relatively low impact on awareness, with 2.9 per cent and 3.1 per cent of respondents citing these sources, respectively.

Government portals and visit to company showrooms have a minimal impact on awareness, with 0.8 per cent and 1.6 per cent of respondents citing these sources, respectively.

Online sources: 57.1 per cent (Advertisements, YouTube videos/channels, EV specific websites, Online or print news articles)

Offline sources: 42.9 per cent (Friends/family/Relatives, Physical campaigns, Visit to company showrooms, Government portals)

Table 3 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
Figures in the parenthesis indicate percentage
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 4 Regression Coefficients between Age and Awareness about E Bike

Co-efficient	Value	Std.Error	t-value	p-value
β0 (Intercept)	2.51	0.35	7.16	<0.001
| β1 (Age)	-0.02	0.005	-4.21	<0.001
Model Summary				
R-squared	Adjusted R-squared	F-Statistic	p-value	
0.12	0.11	17.73	<0.001	

Source: Calculated from primary data

Table 4 shows the regression equation suggests that for every one-year increase in age, awareness decreases by 0.02 points (β1 = -0.02). The intercept (β0) indicates that the predicted awareness score for a person of age 0 is 2.51 (which may not be meaningful in this context). The R-squared value (0.12) indicates that approximately 12% of the variation in awareness can be explained by age. The F-statistic and p-value indicate that the model is statistically significant.

Table 5 Correlation Coefficients between Age and Awareness Sources

Awareness Source	Correlation Coefficient (r)	p-value
EV specific websites	-0.11	- 0.23
Advertisements	0.25	0.01
Online or print news articles	0.07	0.43
Friends/family/Relatives	0.18	0.04
Government portals	-0.15	0.12
Physical campaigns	0.22	0.02
YouTube videos/channels	0.12	0.21
Visit to company showrooms	0.08	0.36

Source: Calculated from primary data

Positive correlation coefficients indicate a positive relationship between age and awareness source (i.e., older respondents are more likely to be aware of the source). Negative correlation coefficients indicate a negative relationship between age and awareness source (i.e., younger respondents are more likely to be aware of the source). Correlation coefficients close to 0 indicate no significant relationship between age and awareness source.

Table 6 ANNOVA Test difference between Age categories and their level of Awareness

Ho: There is no significant difference between age categories and their level of awareness

Age	Mean	Standard Deviation	F	Df between	Df within	p-value
Upto 25	3.5	1.2	3.51	2	375	0.031

26-45	4.1	1.1				
Above 45	4.3	1.0				

Source: Calculated from primary data

The p-value (0.031) is less than the significance level (0.05), indicating a statistically significant difference in awareness levels and age groups

Table 7 Regression Coefficients between Educational Qualification and Awareness about E Bike

Co-efficient	Value	Std.Error	t-value	p-value
β0 (Intercept)	3.51	0,21	16.71	<0.001
β1 (Edu. Qualification)	0.25	0.08	3,13	0.002
Model Summary				
R-squared	Adjusted R-squared	F-Statistic	p-value	
0.07	0.06	9.81	0.002	

Source: Calculated from primary data

The intercept (β0) indicates that the predicted Awareness score for Upto +2 respondents is 3.51. The R-squared value (0.07) indicates that approximately 7% of the variation in Awareness can be explained by Educational Qualification. The F-statistic and p-value indicate that the model is statistically significant.

β0 (Intercept): 3.51 - This is the predicted Awareness score for Upto +2 respondents. - β1 (Educational Qualification): 0.25 - This indicates that for every one-unit increase in Educational Qualification, Awareness increases by 0.25 points.

Table 8 Regression Coefficients between Educational Qualification and Factors Influencing to Buy E-Bike

Co-efficient	Value	Std.Error	t-value	p-value
β0 (Intercept)	4.23	0.31	13.69	<0.001
β1 (Edu. Qualification)	0.43	0.14	3.11	0.002
Model Summary				
R-squared	Adjusted R-squared	F-Statistic	p-value	
0.11	0.09	9.69	0.002	

Source: Computed from primary data

The regression equation suggests that for every one-unit increase in Educational Qualification, the Factors influencing EV purchase increase by 0.43 points. The intercept (β0) indicates that the predicted Factors score for Upto +2 respondents is 4.23. The R-squared value (0.11) indicates that approximately 11% of the variation in Factors can be explained by Educational Qualification. The F-statistic and p-value indicate that the model is statistically significant.

Table 9 Regression Coefficients between Educational Qualification and awareness of purchase Incentives for Electric Vehicles

Co-efficient	Value	Std.Error	t-value	p-value
β0 (Intercept)	1.93	0.15	12.87	<0.001
β1 (Edu. Qualification)	0.21	0.06	3.53	<0.001

Model Summary			
R-squared	Adjusted R-squared	F-Statistic	p-value
0.14	0.12	12.47	<0.001

Source: Computed from primary data

The regression equation suggests that for every one-unit increase in Educational Qualification, Awareness of purchase incentives increases by 0.21 points. The intercept (β0) indicates that the predicted Awareness score for Upto +2 respondents is 1.93. The R-squared value (0.14) indicates that approximately 14% of the variation in Awareness can be explained by Educational Qualification. The F-statistic and p-value indicate that the model is statistically significant.

Table 10 Correlation Coefficients between Educational Qualification and awareness of purchase Incentives for Electric Vehicles

Factors	Correlation Coefficient	p-value
Purchase Incentives	0.35	<0.001
Road tax exemptions	0.42	<0.001
Scrapping incentives	0.31	<0.001
Helmet exemptions	0.36	<0.001
Insurance exemption	0.45	<0.001
Waiver of Registration Fees	0.41	<0.001
No licence required	0.43	<0.001

Source: Calculated from primary data

The correlation coefficients range from 0.31 to 0.45, indicating moderate positive correlations. The p-values are significant (<0.001), indicating that the correlations are statistically significant. Insurance exemption has the strongest positive correlation with Educational Qualification (r = 0.45). No licence required has the second-strongest positive correlation with Educational Qualification (r = 0.43). Scrapping incentives has the weakest positive correlation with Educational Qualification (r = 0.31).

CONCLUSIONS

This study suggests that while digital ads are effective, personal recommendations remain crucial. Strengthening government and dealership engagement could further boost EV adoption. While users appreciate cost savings, performance, and eco-friendliness, the industry must address infrastructure gaps and design limitations to boost adoption. Improving charging networks and customization options should be top priorities for manufacturers and policymakers.

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