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A STUDY ON CONSUMER AWARENESS AND PERCEPTION TOWARDS ELECTRIC BIKES

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Abstract

Natural resources are being rapidly exhausted due to industrialization and population growth, and our environment is being progressively damaged by human activity, thus we must protect it. Environmental protection is not just the responsibility of the government; it is also the responsibility of the general public. As a result, conserving our environment is more economically feasible than cleaning it up after it has been harmed since once it has been damaged, it cannot be repaired.

Electric motorcycles and scooters are plug-in electric vehicles with two or three wheels. The electricity is stored on board in a rechargeable battery, which drives one or more electric motors. Electric scooters (as distinct from motorcycles) have a step-through frame. The goal of the study is to identify consumer's awareness about the pros and cons of electric bikes and their perception towards electric bikes.

This study's main objective is to study the consumer awareness and perception towards the electric bikes. Secondary objectives are to understand an individual's intention and attitudes towards electric bikes, find out the reasons why people prefer electric bikes, to understand the most important benefit of owning an electric bike, know about the drawback of buying an electric bike and provide appropriate recommendations to change the consumer awareness and perception towards electric bikes.

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1.1 Introduction

There is mounting evidence that customers rate electric vehicles more favorably than traditional gasoline or diesel automobiles. The same research implies that owners who have come to believe in the notion of an electric automobile will remain customers for a long time. The Nissan LEAF, one of the most popular and popular models of the new generation of electric vehicles, was introduced in 2010. Many early users of electric vehicles are now on their second or third automobile because standard car leasing agreements last up to three years. With the use of this data and the increase in EV sales in 2014, researchers can now assess the effectiveness of EVs using a big pool of EV drivers with years of experience.

The study overwhelmingly suggests that if a driver switches to an EV, the likelihood that they will convert back to a conventional engine is quite low, which encourages more people to support electric vehicles. The wellbeing benefits, noise, pollution, and environmental impact, as well as the much lower maintenance and operating expenses, are all important considerations in the satisfaction ratings.

2020 saw a worldwide spike in the number of new electric automobiles, up 38 percent to a record high of 3.18 million, defying the general market trend of sharply dropping sales, a slump that

OBJECTIVES OF THE STUDY

PRIMARY OBJECTIVE

To study the consumer awareness and perception towards the electric bikes.

SECONDARY OBJECTIVES

- To understand an individual's intention and attitudes towards electric bikes.

- To find out the reasons why people prefer electric bikes.
- To understand the most important benefit of owning an electric bike.
- To know about the drawback of buying an electric bike.
- To provide appropriate recommendations to change the consumer awareness and perception towards electric bikes.

Review of Literature

- **Mr. A. Rakesh Kumar (2022)**, Global pollution is increasing, and every attempt is being made to reduce CO₂ emissions and rescue the planet. The introduction of EVs is one such initiative. Since the transportation industry is one of the biggest emitters of CO₂, it's crucial to cut back. The government has developed ambitious plans to introduce electric vehicles (EVs) to the Indian market and keep up with the global adoption of EVs. An extensive report on EVs is part of the National Electric Mobility Mission Plan 2020. India faces a significant obstacle in its transition to EVs from internal combustion engines (ICE). Along with extensive planning, this requires R&D. Range anxiety must be effectively managed via charging infrastructure Demand generation must be created by electrifying all public transportation and providing tax breaks to individuals who acquire EVs.

- **Pretty Bhalla (2021)**, Concerns about the environment, cost, comfort, reliability, technology, social acceptance, and the availability of infrastructure all influence car choice. These claims have been validated for both conventional and electric vehicles. They believe that these elements directly affect a person's choice of car. They discovered that EV producers and the government must make greater investments to increase public acceptance of the car by building more infrastructure and putting a greater emphasis on technology to foster

confidence. The investigation shows that the general public is aware of the advantages to the environment. In order to invest in the production of vehicles, both the government and manufacturers are accountable.

- **Fanchao Liao, Eric Molin & Bert van Wee (2020)**, The widespread use of electric vehicles (EVs) could help reduce issues including pollution, global warming, and dependence on oil. Despite governments deploying aggressive promotion strategies, EV penetration is still quite low. They presented a thorough analysis of studies on consumer preferences for EV in an effort to inform policy-makers and provide guidance for future study. They compared the psychological and economic perspectives on why people prefer electric vehicles. According to most studies, an EV's purchase and running costs, driving range, charging time, vehicle performance, and brand variety on the market all have a substantial impact on how useful the vehicle is. The usefulness and promotion of EVs are also positively impacted by the density of charging stations. the results of incentive programmes,

- Torracco (2019), the author must adhere to a recognised technique, such as how literature is identified and reported, while structuring an integrative literature review.

First, it is important to explain the selection process for the articles and how they were

found, including the keywords and databases used. Second, a thorough search should be done of both recently released and older literature. Additionally, the calibre of articles will improve the results even more. Relevant articles were chosen for review from online journal databases using a combination of relevant keywords and the guidelines; the review protocol used is described in Ebsco Host, Science Direct (Elsevier), and Wiley Library, which were all thoroughly searched for relevant publications; after that, all duplicate publications were eliminated. From these datasets, the only high-quality papers are from Scimago Journal and Country Rank.

DATA ANALYSIS AND INTERPRETATION

CHI-SQUARE TEST I – (χ^2)

Chi-square is the sum of the squared difference observed (o) and the expected (e) data (or the deviation, d), divided by the expected data in all possible categories.

Null hypothesis (Ho):

There is no relationship between the gender and the preferred manufacturing company of electric 2-wheeler.

Alternate hypothesis (H1):

There is relationship between the gender and the preferred manufacturing company of electric 2-wheeler.

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Gender * Preferred manufacturing company of electric 2-wheeler	149	100.0%	0	0.0%	149	100.0%

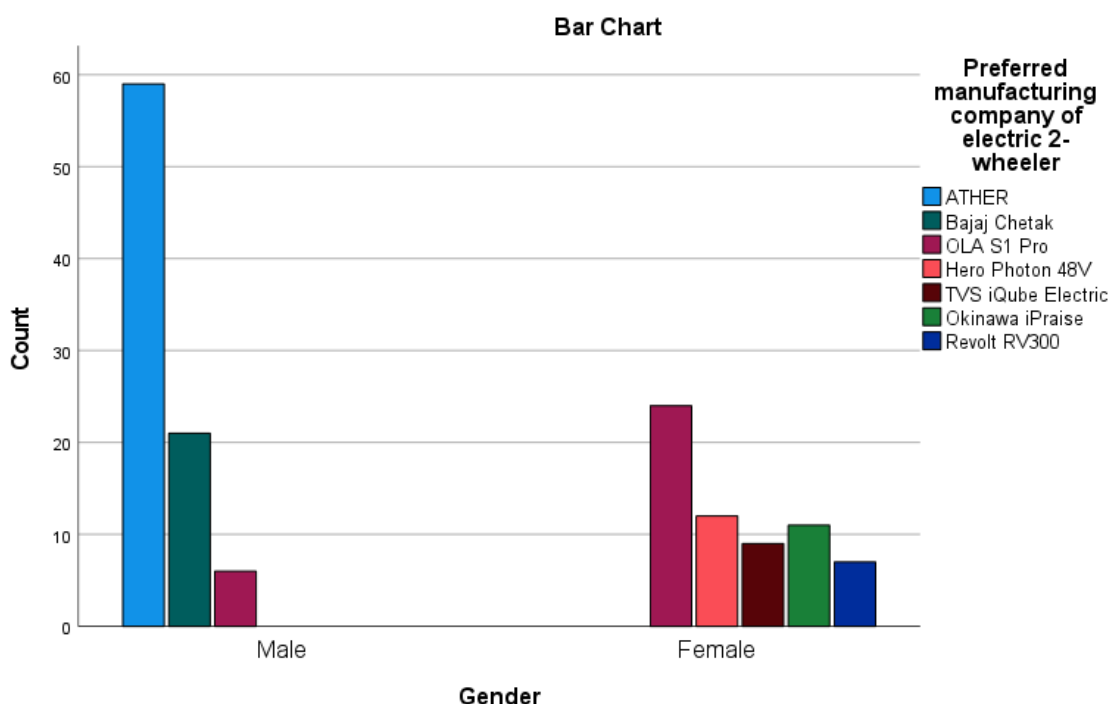
Gender * Preferred manufacturing company of electric 2-wheeler Crosstabulation

		Preferred manufacturing company of electric 2-wheeler							Total
		ATHER	Bajaj Chetak	OLA S1 Pro	Hero Photon 48V	TVS iQube Electric	Okinawa iPraise	Revolt RV300	
Gender Male	Count	59	21	6	0	0	0	0	86
	% within Gender	68.6%	24.4%	7.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	% within Preferred manufacturing company of electric 2-wheeler	100.0%	100.0%	20.0%	0.0%	0.0%	0.0%	0.0%	57.7%
	% of Total	39.6%	14.1%	4.0%	0.0%	0.0%	0.0%	0.0%	57.7%
Female	Count	0	0	24	12	9	11	7	63
	% within Gender	0.0%	0.0%	38.1%	19.0%	14.3%	17.5%	11.1%	100.0%
	% within Preferred manufacturing company of electric 2-wheeler	0.0%	0.0%	80.0%	100.0%	100.0%	100.0%	100.0%	42.3%
	% of Total	0.0%	0.0%	16.1%	8.1%	6.0%	7.4%	4.7%	42.3%
Total	Count	59	21	30	12	9	11	7	149
	% within Gender	39.6%	14.1%	20.1%	8.1%	6.0%	7.4%	4.7%	100.0%
	% within Preferred manufacturing company of electric 2-wheeler	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	39.6%	14.1%	20.1%	8.1%	6.0%	7.4%	4.7%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	129.331 ^a	6	<.001
Likelihood Ratio	172.969	6	<.001
Linear-by-Linear Association	92.724	1	<.001
N of Valid Cases	149		

a. 4 cells (28.6%) have expected count less than 5. The minimum expected count is 2.96.



Degree of Freedom= (2-1) *(8-1)

$$= 1*7= 7$$

Calculated value = 129.331

Tabulated value = 14.067

$$Z = Z_{cal} > Z_{tab}$$

$$Z = 129.331 > 14.067$$

Hence, the Alternate hypothesis [H1] is accepted

INFERENCE: Since the calculated value is greater than the tabulated value, we accept the alternate hypothesis and hence there is a relationship between the gender and the preferred manufacturing company of electric 2-wheeler.

ONE-WAY ANOVA CLASSIFICATION

Null hypothesis (H₀):

There is a significance difference between age and the most

important factor that prevents them from making the decision of purchasing the electric bike.

Alternate hypothesis (H₁):

There is no significance difference between age and the most important factor that prevents them from making the decision of purchasing the electric bike.

Descriptives

Age group

	N	Mean	Std. Deviation	Std. Error	95% Interval for Mean Lower Bound Upper Bound	Confidence Upper Bound	Minimum	Maximum
The initial investment is steep	31	1.29	.461	.083	1.12	1.46	1	2
Limited recharge points	61	2.00	.000	.000	2.00	2.00	2	2
Short driving Range and speed	30	2.90	.305	.056	2.79	3.01	2	3
Longer recharge time	27	3.26	.447	.086	3.08	3.44	3	4
Total	149	2.26	.766	.063	2.14	2.39	1	4

Tests of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Age group Based on Mean	56.649	3	145	<.001
Based on Median	7.806	3	145	<.001
Based on Median and with adjusted df	7.806	3	77.004	<.001
Based on trimmed mean	43.788	3	145	<.001

ANOVA

Age group

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	72.520	3	24.173	245.589	<.001
Within Groups	14.272	145	.098		
Total	86.792	148			

Tabulated value = 2.70

Calculated value = 245.589

F = F cal > F tab

F = 245.589 > 2.70

Hence, the alternative hypothesis [H1] is accepted.

INFERENCE:

Since the calculated value is greater than the tabulated value, we accept the alternate hypothesis and hence there is no significance difference between age and the most important factor that prevents them from making the decision of purchasing the electric bike.

ANALYSIS USING KARL PEARSON'S CORRELATION

Correlation analysis is the statistical tool used to measure the degree to which two variables are linearly related to each other. Correlation measures the degree of association between two variables.

Null hypothesis (H0):

There is positive relationship between advertisements influences your buying decision and electric bikes can save a lot of money to the buyer.

Alternate hypothesis (H1):

There is negative relationship between advertisements influences your buying decision and electric bikes can save a lot of money to the buyer.

Correlations

	Advertisement influence your decision	Electric bikes can save a lot of money to the buyer
Advertisement influence your decision	Pearson Correlation1 .860**	
	Sig. (2-tailed)	<.001
	N	149
Electric bikes can save a lot of money to the buyer	Pearson Correlation .860**	1
	Sig. (2-tailed)	<.001
	N	149

** . Correlation is significant at the 0.01 level (2-tailed).

$$r = \frac{N\sum XY - \sum X\sum Y}{\sqrt{N\sum X^2 - (\sum X)^2} \sqrt{N\sum Y^2 - (\sum Y)^2}}$$

$$r = 0.860$$

INFERENCE:

Since r is positive, there is positive relationship between advertisements influences your buying decision and electric bikes can save a lot of money to the buyer.

SUMMARY OF FINDINGS, SUGGESTIONS & COMCLUTION**FINDINGS**

- Most of the respondents are belonging to the age group of 30-39 years.
- Most of the respondents are male.
- Most of the respondents have Post graduate qualification.
- Most of the respondents are students.
- Most of the respondents are not having any income.
- Most of the respondents answered that they currently own 1 two wheeler.
- Most of the respondents are aware of electric bikes.
- Most of the respondents know about electric bikes through Internet.
- Most of the respondents strongly agree that the advertisement influence their buying decision.
- Most of the respondents prefer Ather as their desired electric two-wheeler.
- Most of the respondents prefer a price range of Rs. 70001 –Rs.90000 to purchase an electric bike
- Most of the respondents feel that environmental friendly is the most important benefit of owning an electric bike.
- Most of the respondents agreed that electric bikes can save a lot of money to the buyer.
- Most of the respondents say that price of electric bike is high.
- Most of the respondents say that present promotional activity about electric bike is not enough sufficient enough to make the purchasing decision.
- Most of the respondents agreed that electric vehicle technology has improved and they now have a much better range.
- Most of the respondents are willing to purchase electric bike in future after knowing its benefits.
- Most of the respondents agreed that the most important factor prevents them from making the decision of purchasing the electric bike is limited recharge points.
- Most of the respondents agreed that electric bikes are not convenient for long travel.
- Most of the respondents agreed that the cost of setting up charging station in home is expensive.

SUGGESTIONS

- Battery charging time has to be reduced through more Research & Development. This alone would increase the sales of electric two wheelers in India.
- Cost of electric two wheelers has to be reduced through mass production of electric two wheelers.
- Hybrid electric two wheelers are definitely more environmentally friendly than internal- combustion electric two wheelers. Companies can focus on developing more hybrid electric two wheelers to gradually transform the customers to electric vehicles.
- Company should increase the promotions to create more awareness about the benefits of electric two wheelers.

- Technological advancements have to be done in electric bikes to increase its speed.
- Charging stations has to be installed in all the existing petrol bunks.

CONCLUSION

The world is heavily reliant on other countries for petroleum imports, but the electric two wheelers are helping to reduce reliance on other countries. Electric vehicles are simple to power with local and renewable energy, reducing our reliance on foreign oil. EVs will be unaffected if fuel supplies are disrupted or fuel prices skyrocket. In India, the e-bike market is still in its infancy, with several local firms offering a diverse variety of devices. The expensive cost of e-bikes on the market, however, may hinder market expansion. Customers choose scooters over e-bikes since the average price of an e-bike in India is the same as a basic scooter.

This study was conducted to study the consumer awareness and perception towards the electric bikes. Responses from electric two wheeler aspirants have been collected and analyzed for this purpose. Based on the research findings, a few valuable suggestions have been made to electric two wheeler manufacturing companies in India to improve the overall efficiency and consumer awareness towards the electric two wheelers.

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