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A STUDY ON CONSUMER PREFERENCES TOWARDS ELECTRIC VEHICLES IN CHENNAI CITY

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Abstract
The rapid transition towards electric vehicles (EVs) is influenced by multiple factors, including environmental concerns, government policies, and technological advancements. This research seeks to explore consumer preferences regarding EV adoption by examining important factors like cost efficiency, availability of charging infrastructure, perceptions of performance, and awareness of environmental issues. A survey-based research approach was employed, along with statistical techniques such as correlation analysis, chi-square tests, and percentage analysis were used to evaluate consumer behavior patterns. The findings indicated that while environmental consciousness plays a significant role, financial incentives and charging infrastructure remain crucial in shaping consumer decisions. This study concludes that young urban consumers show a strong interest in EVs, but high costs, limited charging infrastructure, and low awareness of incentives remain barriers. Expanding charging networks, enhancing awareness, and improving financing options can drive EV adoption.

KEYWORDS: Consumer preferences, Electric Vehicles, Charging infrastructure, Sustainable transportation, Market Adoption.

INTRODUCTION

Marketing is crucial for recognizing consumer demands and providing products that meet these demands, leading to both satisfaction and loyalty. In the realm of electric vehicles (EVs), gaining insight into consumer preferences is essential for manufacturers and marketers to position their products in a swiftly changing market successfully. Marketing includes the process of innovative, communicating, delivering, and exchanging offerings that hold value for consumers, clients, partners, and the society at large. The American Marketing Association (AMA) describes marketing as "the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large". Marketing is crucial for recognizing consumer demands and providing products that meet these demands, leading to both satisfaction and loyalty. In the realm of electric vehicles (EVs), gaining insight into consumer preferences is essential for manufacturers and marketers to position their products in a swiftly changing market successfully.

SCOPEOFTHE STUDY

The scope of this study is to examine consumer preferences regarding electric vehicles (EVs) by pinpointing significant influencing factors such as price, upkeep, government incentives, environmental consciousness, battery longevity, charging facilities, and vehicle performance.

The research also looks into the impact of marketing strategies, brand image ,and governmental regulations on consumer decision-making.

REVIEW OF LITERATURE

AdityaKumar(2023)researched‘consumerperceptionsregardingelectricvehicles’.The study aimed to get insight into the attitudes of consumers toward buying EVs in India. The collection of 100 respondents was designed by way of an online questionnaire through Descriptive methodology techniques. Performance, fuel efficiency, price, technical features, and environmental friendliness are highly influential factors, while style, size, and brand were moderately influential factors..Hence the analysis concludes that automotive industries in India are searching for electric vehicles as a solution to pollution problems in both industry and the environment.

Sangeetha(2023)The Study on consumer satisfaction concerning electric bikes is aimed at uncovering broader insights into why people buy electric bikes. The Data from an acquired sample size of 150 customers in Chennai were collected and analyzed using Chi-square and One-wayANOVA.Thefindingsstatethatthemostimportantmotivationalfactorsresponsible forelectricbikebuyerswereidentified:cost-savingfeatures,easiercharging,lowernoise,and increasingdemandsregardingfutureserviceability.Further,theveryassuranceoftheabilityto purchase an electric bike has heightened competition in the electric bike industry.

Abishek Sumit Bhardwaj(2023) undertook a studyon" consumer perception and satisfaction towards e-vehicles." This research intends to observe the perception of e-vehicles among the consumers of Haryana State. All reliability test scores of the specified variables equal above 0.89, making the map for analysis. Chi-square and T-test analyses were performed. The hasty growthofelectricvehicleshasgivenrisetostiffcompetitioninthemarket,with the conclusion that the consumer attitude and satisfaction concerning e-vehicles in Haryana are increasing to a considerable degree due to the population of the country.

Jayasubramanian(2023)Theresearchexamined“CustomerperceptionsofE-Vehicles in Coimbatore city.” The basic objective of this study is to prove that E-Vehicles are environment-friendly and less harmful to the environment. A sample size of 100 respondents was collected using the snowball sampling technique, and percentage analysis methods were employed thereafter. Hence the study reveals that most of the customers are generally satisfied with the use of E-Vehicles, as they help to decrease pollution levels compared to other vehicle types.

Dintu Cleetus & Athulya Vinod (2023) conducted a study on “Consumer Preferences towards E-Vehicles” in Cochin, It aims at assessing consumer satisfaction levels regarding e-vehicles. The Data were collected through questionnaires method, with a sample size of 50 respondents. The analytical tools employed in this research include charts, graphs, percentages ,and tables. This study found that the majority of respondents were considering e- vehicles for purchase in the future. It provided a conclusion with information about the satisfaction levels of e-vehicle users and information about various government schemes and incentives for e-vehicles.

RichaTiwari (2023) conducted research titled ‘A Study on Perception of Consumers on E-Vehicles in Bengaluru’. The goal of this study is to provide consumers with a clear understanding of the emergence of electric vehicles. The research collected data from 123 respondents through snowball sampling via an online questionnaire. The positive relationships among various factors suggest a promising future for electric vehicles. The study concluded

that the electric vehicle sector in Bengaluru is expanding swiftly, generating employment opportunities, lowering operating expenses, and enhancing technological advancements over the years.

Kalimuthu (2023) conducted a study on 'Customer perception towards e-vehicles'. The main objective of this research was to investigate customer awareness about the impact of purchasing electric vehicles on the environment. The analysis was done on a sample of 120 individuals through convenient sampling and percentage and ranking analysis for data analysis. The
Study concluded that e-vehicles are assumed to become the most popular on the road in future times as consumers become more aware of the benefits of electric vehicles and the growth in battery technology.

Kumarasamy and Krishnamoorthi (2024) This research is focused on examining "consumer perceptions of electric vehicles," with the goal of identifying the factors that shape these perceptions. This study employs a descriptive research design and collects data from a sample of 120 participants, utilizing a straightforward sampling method. It also explores the barriers that hinder consumers from making this choice and concludes that consumers are motivated to transition from petrol vehicles to environmentally friendly electric vehicles in order to reduce expenses.

Vignesh, Abhishek & Leemon Johny (2024) researched 'consumer preferences regarding electric vehicles'. The objective of the study is to explore the trends and elements influencing the decision to purchase electric vehicles. The Data was collected from 100 respondents to perform the analysis, and methods such as mean calculation, percentage analysis, ranking techniques, and graphical representations were utilized.Thisstudyconcludedthatthegeneralperceptionofelectricvehiclesisfavorable among consumers, indicating significant potential for enhancement and expansion within the electric vehicle sector.

Research Gap

Although many studies investigated economic and environmental reasons that affect consumer preference for an electric vehicle (EV), there is limited research regarding the psychological, cultural, and post-purchase determinants of consumer choice. Additionally, the majority of studies are based in developed contexts, failing to consider emerging markets with diverse infrastructure and awareness. This study seeks to address these gaps by offering a wider analysis of different demographic groups and by exploring underdeveloped determinants of EV uptake.

OBJECTIVEOFTHESTUDY

- To identify the demographic characteristics of consumers of e-vehicles.
- To analyze the factors that influencing consumer preferences for electric vehicles in the selected market.
- To evaluate consumer perceptions about the cost, performance, and environmental benefits of e-vehicles.
- To assess the role of charging infrastructure in shaping consumer preferences for e-vehicles.

- To study the impact of government policies and incentives on consumer interest in e-vehicles.

RESEARCHMETHODOLOGY

It is the way to systematically solve a problem and understood as a science of study where research is done scientifically. It includes various ways that are generally adopted by a researcher in studying his research problem. Both primary and secondary data are based on this method.

RESEARCHDESIGN

Using empirical data, a research design is a strategy for answering the research question. Creating a research design means making decisions about our overall research objective and approach are the basis of Research Design. SPSS package was used in this study.

SAMPLEAREA

The sample was collected from the respondents in the state of Tamilnadu.

SAMPLINGUNIT

A sampling unit refers to each individual element chosen for the sample, treated as distinct and indivisible during the selection process. In this study, data was gathered from 100 respondents through the use of a questionnaire.

SAMPLINGMETHOD

This study employed a convenience sampling approach to collect data from consumers regarding their preferences for electric vehicles. Through various social media platforms online survey was distributed. Participants were selected based on their willingness and availability to complete the survey..

DATACOLLECTION

It is the process of gathering and analyzing the information on variables of interest. It was an established systematic fashion and to enables one to answer stated research questions, test hypotheses and outcomes to be evaluated. Regardless of the field of study or preference for defining data (quantitative or qualitative), accurate data collection is essential to maintain the integrity of the research. This analytical study is based on the details given by the consumer who preferred e-vehicles. Two types of data were used in this study.

- Primary data
- Secondary data

RESEARCHHYPOTHESIS

H0:There is no relationship between the respondent's age and the factors influencing the decision to purchase an e-vehicle

H0:Thereis no relationship between the income of the respondents and the cost of e-vehicles

H0:There is no relationship between the place of residing of the consumer and their charging infrastructure

STATISTICAL TOOL

1. Percentage analysis
2. Chi-square test
3. Karl Pearson's Correlation

LIMITATIONSOFTHE STUDY

- The sample size is limited to 100 respondents only.
- The sample is taken from the state of Tamil Nadu only.
- The conclusion was drawn based on the information provided by the respondents who were interested to reveal true answers.

PERCENTAGE ANALYSIS

GENDER	**NOOFRESPONDENTS**	**PERCENTAGE**
MALE	30	30
FEMALE	70	70
TOTAL	**100**	**100**
AGE		
Under18	2	2
18 - 24	83	83
25 -34	9	9
35-44	2	2
45-54	3	3
Above55	1	1
TOTAL	**100**	**100**
QUALIFICATION		
High school or less	7	7

Some college	11	11
Bachelor' sdegree	73	73
Master's degree	8	8
Doctorate or higher	1	1
TOTAL	**100**	**100**
INCOME		
Lessthan20,000	11	11
20,000 – 40,000	15	15
40,000 – 60,000	16	16
60,000 – 80,000	22	22
Morethan80,000	36	36
TOTAL	**100**	**100**

Table4.1showsthat70%oftherespondentswere female, 83% of the respondentsfallwithinthe18–24agegroup, 73% of the respondents studied a bachelor's degree and 36% of the respondents belong to the income group of more than 80,000.

FACTORINFLUENCINGTHEDECISIONTOPURCHASEAN E- VEHICLE

HYPOTHESIS

H0: There is no relationship between the respondent's age and factors influencing the decision to purchase an e-vehicle

H1: There is a relationship between the respondent's age and factors influencing the decision to purchase an e-vehicle

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent

Age*Factor influencing	100	100.0%	0	.0%	100	100.0%

Age*Factor influencing Cross tabulation

ExpectedCount

		Factor influencing		
		Yes	**No**	**Total**
Age	Under18	.6	.4	1.0
	18 - 24	51.2	32.8	84.0
	25 - 34	5.5	3.5	9.0
	35 - 44	1.2	.8	2.0
	45 - 54	1.8	1.2	3.0
	Above55	.6	.4	1.0
Total		61.0	39.0	100.0

Chi-Square Tests

	Value	**DF**	**Asymp.Sig.(2-sided)**
Pearson Chi-Square	3.538(a)	5	.618
Likelihood Ratio	4.174	5	.525
Linear-by-Linear Association	2.969	1	.085
No of Valid Cases	100		

The above table shows that the value of the Chi-square is 3.538 and P = 0.61, which is more than 0.05.

Since P = 0.61 > 0.05, we reject H1 and accept H0.

Hence, there is no relationship between the respondent's age and the factors influencing the decision to purchase an e-vehicle.

RESPONDENTS' VIEW OF THE COST OF E-VEHICLES COMPARED TO GASOLINE-POWERED VEHICLES

Hypothesis:

- H0: There is no relationship between the income of the respondents and the cost of e-vehicles.
- H1: There is a relationship between the income of the respondents and the cost of e-vehicles.

Chi-SquareTestAnalysis:

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent

Income* cost	100	100.0%	0	.0%	100	100.0%

Income*Cost Cross tabulation

Expected Count

	Cost				Total
Income	**Much Higher**	**Higher**	**Both are same**	**Lower**	
lessthan20,000	1.4	4.0	3.7	1.9	11.0
20,000 - 40,000	2.0	5.4	5.1	2.6	15.0
40,000 - 60,000	2.1	5.8	5.4	2.7	16.0
60,000 - 80,000	2.9	7.9	7.5	3.7	22.0
Morethan80,000	4.7	13.0	12.2	6.1	36.0
Total	13.0	36.0	34.0	17.0	100.0

Chi-Square Tests

	Value	**DF**	**Asymp.Sig.(2-sided)**
Pearson Chi-Square	32.768(a)	12	.001
Likelihood Ratio	40.614	12	.000
Linear-by-Linear Association	1.890	1	.169
N of Valid Cases	100		

From the above table, it shows that the Chi-square value = 32.768 and P value = 0.001, which is less than 0.05.

Since P = 0.001 < 0.05, we reject H0 and accept H1.Therefore, there is a relationship between the income of the respondents and the cost of e-vehicles.

INFRASTRUCTURE

HYPOTHESIS:

- H0: There is no relationship between the place of residing of the consumer and their charging infrastructure.
- H1: There is a relationship between the place of residing of the consumer and their charging infrastructure.

Correlation Test Analysis (Pearson's)

	Charging infrastructure	**Place of residing**

Charging infrastructure	Pearson Correlation	1	-.007
	Sig.(2-tailed)		.946
	N	100	100
Place of residing	Pearson Correlation	-.007	1
	Sig.(2-tailed)	.946	
	N	100	100

The result shows that Pearson correlation value of -007. Hence, there is an inverse relationship between the two variables (i.e., the availability of charging infrastructure and the consumer's place of residence). Therefore, the null hypothesis is rejected.

CONCLUSION

The result shows a favorable inclination towards electric vehicles (EVs) by young urban consumers, who indicate a strong potential for growth in the EV market. However, there are some perceived barriers, such as: High sticker price, Insufficient charging infrastructure and Lack of knowledge about available government incentives. Despite these barriers, there is a clear willingness from young urban consumers to consider EVs, particularly when they have the opportunity to trial the vehicles are informed about performance or environmental benefits through smart initiatives, such as Expansion of charging networks
increased awareness of charging and financial incentives and extension of financing options. The obstacles to purchasing an EV can be reduced, resulting in substantial market growth. Furthermore, since this demographic is more likely to embrace technology in personal travel and transportation, strategies like digital/social media engagement and experiential activities such as test drives may significantly increase both interest and sales, thereby accelerating the shift towards sustainable transportation.

References

1. Aditya Kumar. (2023). The study on consumer perceptions regarding electric vehicles. International Journal for Multidisciplinary Research (IJFMR), 1–7.
2. Bhardwaj, A. S. (2023). The study on consumer perception and satisfaction towards e-vehicles. Universal Research Reports, 267–274.

3. Dalvi, M. A., Bhuvaneswari, K., & Singh, S. (2022). A study on electric vehicles and the sustainable supply chain highlighted the low levels of consumer awareness of electric vehicles in India. South Asian Journal of Management, 110–147.
4. Ahmed, I. (2022). The influence of service quality on customer satisfaction of electric vehicles. UGC Care Group I Journal, 191–198.
5. Jayasubramanian. (2023). The study on customer perceptions of e-vehicles in Coimbatore city. International Journal for Multidisciplinary Research (IJFMR), 657–668.
6. Kalimuthu. (2023). The study on customer perception towards e-vehicles with special reference to Coimbatore city. International Research Journal of Modernization in Engineering Technology and Science (IRJMETS), 2230–2236.
7. Kumarasamy, & Krishnamoorthi. (2024). Consumer perceptions of electric vehicles. Springer Nature, 43–55.
8. Swaroop, K. R., Someswararao, M., Naidu, G., & Nagaraj. (2022). The study on factors influencing the purchase of e-vehicles in South India. Journal of Positive School Psychology, 200–208.
9. Ansar, M. (2018). The study on customer perception towards e-vehicles in Bangalore. Journal of Emerging Technologies and Innovative Research (JETIR), 1–11.
10. Tiwari, R. (2023). A study on perception of consumers on e-vehicles in Bengaluru. International Journal for Research in Applied Science & Engineering Technology (IJRASET), 2497–2510.
11. Alamelu, R. (2016). Consumer preferences & awareness and level of satisfaction of e-bikes among women. Business Theory and Practice, 25–30.
12. Sangeetha. (2023). The study on consumer satisfaction concerning electric bike. Dogo Rangsang Research Journal, 241–250.
13. Selva, & Arunmozhi. (2020). A study on consumer preferences for electric vehicles. Journal of Critical Review, 1468–1474.
14. Jayasingh, S. (2021). Factors affecting consumer purchase intentions for electric two-wheelers. Sustainability, 1–20.
15. Sakthivel, & Senthil Kumar. (2016). A study to analyze user attitudes and satisfaction towards e-bikes in Erode. International Journal of Research in Humanities and Social Sciences, 9.