

## **Adoption of Green Initiatives: Consumer Perception towards Electric Vehicles, Tiruchirappalli city**

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### **Abstract**

The Researcher in his study aims to inspect about the consumer perceptions of e-vehicles in Tiruchirappalli City. Throughout the nations of the world are encouraging the use of e-vehicles to lessen dependency on oil, cut greenhouse gas emissions, and enhance air quality as a result of growing awareness of the detrimental effects of fossil fuels on the environment. Tiruchirappalli city, in particular, are major contributors to air pollution, making it crucial for city dwellers to play their part in reducing harmful emissions. This study intends to acquire insights into consumer awareness, attitudes, and the possibility of purchasing habits of e-vehicles to promote environmental sustainability. From the study the researcher can infer from the research that, in the chi-square test, we are unable to reject the null hypothesis. It implies that the null hypothesis must be accepted. The null hypothesis states that substantial others do not prefer e-vehicles. It indicates that consumers do not favor e-vehicles more.

**Keyword:** Consumer perception, E-Vehicle

## **I.INTRODUCTION**

Electric Vehicles have become more popular for its energy conservation and also more efficient alternatives to petroleum products. Nowadays, many drivers and common people throughout globe are considering EVs a best battery technology, charging infrastructure and market demand. India is one of the nations to promote EVs sale much better next to Germany and Japan. The automobile industry contributes 7.1% of India's GDP and provides employment opportunities. The Economy survey states that EVs sales expectation of India by 2030 is 10 million per year. It provides 50 million direct and indirect employment opportunities. Indian Government allocated INR 191 billion(2024) as Capital investments to achieve energy transition for the Ministry of New and Renewable Energy. The increasing apprehensions regarding environmental concerns are likely to concentrate on climate change and air pollution are the key factor contributing and influence the minds of consumer towards Electric Vehicles. However, Indian consumers face several obstacles when it comes to adopting Electric Vehicles. These obstacles include the high cost, limited availability and few varieties of models, lesser consumer awareness, limited charging station and lack of charging duration.

### **Review of Literature**

Amrit Kumar et. al. (2024). This study investigates the key factors influencing the consumer adoption of electric cars in Odisha. Based on the Theory of planned behavior, Value belief norm theory a conceptual framework is developed with 3 additional constructs namely: - Brand anthropomorphism, Brand love, and status motivation. Purposive sampling method is used to analysis. Data is collected from 12 districts of Odisha with the sample of 400 respondents. Data were analyzed using the structural equation modeling to test the hypothesis. The findings revealed Performance expectancy, Effort expectancy, Hedonic motivation, Price value, Facilitating condition, Attitude, Brand love, Brand anthropomorphism, Biospheric values and Status motivation positively influence consumer adoption.

FurqanBhatet. al. (2022) in their research study checked the adoption of Indian consumer's towards Electric Vehicles. In spite of financial and non-financial an incentive being provided to consumers and manufacturers in India, the acceptance and adoption of electric vehicles remains very low. The study examination is based on the data obtained from 273consumers in Tiruchirappalli, Tamil Nadu.

Out comes show that environmental and, technological enthusiasm, social image and its influence, perceived benefits, and performance expectancy are positively related to adoption of EVs and It have certain negative influence on a consumer's intention to adopt an EVs. The results from this study can be useful to business planners and policy makers to improve the adoption rate of electric vehicles.

Rekha Attri and Pooja (2021) states about the identification of consumers expectations and adoption best predictors in their study. In this study, we explored the factors affecting Indian consumers willingness to adopt electric vehicles. Data were gathered using a quantitative survey design from 518 prospective buyers of new four-wheelers, and SPSS was used for analysis. The study concluded that except for hedonic motivation and price value, all other determinants had an impact on the decision to purchase EVs.

Bansalet. al. (2021) states in their study about he estimation and attitudes impact on EVs adoption provide insights into EV design, marketing and pro-EV policies that identifies the willingness to pay and attitudinal preferences of Indian consumers for Electric Vehicles.

Shweta Kishore (2020)The Indian government's initiatives to promote the adoption of electric vehicles (EVs) and ease foreign direct investment norms toboost production The government and manufacturers need to work together to build infrastructure and create a positive environment forEVs. The respondents are aware of global climate conditions and willing to switch to eco-friendly vehicles, but cost remains a crucial factor in their purchasing decisions. Overall, the conclusion emphasizes the need for continued efforts to promote EVs in India to combat pollution and reduce dependence on fossil fuels.

### **Objectives of the Study**

- i. To study the consumer perception towards EVs different categories (environmental friendly, cost, power level, convenience, expensive and safety)
- ii. To test the relationship between Gender and consumer perception towards EVs.
- iii. To study the relationship between Age and consumer perception towards EVs.
- iv. To understand the relationship between Education and consumer perception towards EVs.
- v. To identify the relationship between Income and consumer perception towards EVs.

### **Scope of the Study**

The sample size covers 120 responses from the Tiruchirappalli area of Tamil Nadu. This research aims to analyze the perception of consumers in the Tiruchirappalli city regarding EVs. It focus the above said seven factors such as environmental friendly, cost, power level, convenience, expensive and safety.

### **Research Design**

Quantitative research involves gathering and evaluating numerical data. This tool may identify patterns, averages, predict, assess causal linkages, and apply conclusions to larger populations. The study follows a descriptive research approach to collect data through its structured questionnaire. Survey research is a descriptive research approach used to collect and analyze huge amounts of data for frequencies, averages, and patterns.

The primary objective of data collecting is to gather accurate and complete data for statistical analysis and informed research conclusions. Primary data is typically obtained directly from the source, where it originates, and is considered the most reliable type of data in research. Secondary data is defined as information that has been acquired by individuals other than the user. Additional sources of secondary data encompass censuses, statistics from government agencies, articles published on websites, and research papers published in diverse academic journals.

A structured questionnaire was directed randomly to 120 respondents residing in the Tiruchirappalli in order to obtain the data. The Google Form is utilized for the electronic collection of data from respondents. Convenience sampling is a non-probability sampling technique in which units are chosen for a sample based on their accessibility to the researcher. IBM SPSS is used for data analysis. Percentage analysis is used.

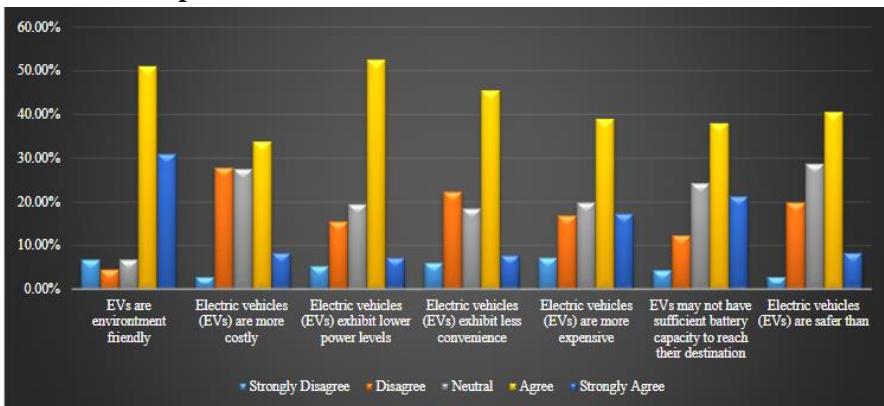
### **Limitations of the Study**

The study may have sample illustration issues which is limited by only including clients from a given demographic, geographic region, or industry. Few responses were identified for the study due to time constraints. The sample size of customers was insufficient to generalize the study's conclusions. The study focused on analyzing only seven factors such as environment friendly, cost, power levels, convenience, expensive and safety for gauging consumer perceptions towards Electric Vehicles in contrast to Traditional Vehicles.

**Analysis and Interpretation of the Study****Table 1: Demographic variable of the Electric Vehicle Users**

<b>Demographic Variables</b>	<b>Particulars</b>	<b>Frequency (120)</b>	<b>Percent (100)</b>
<b>Age</b>	18-24	46	38.33
	24-34	44	36.67
	34-44	18	15
	44-54	12	10
<b>Gender</b>	Male	64	53.33
	Female	56	46.67
<b>Education</b>	Illiterate	28	23.33
	HSC	42	35
	UG Degree	29	24.17
	Master Degree	21	17.5
<b>Occupation</b>	Government Employee	58	48.33
	Private Employee	32	26.67
	Self Employed	18	15
	Unemployed	12	10
<b>Income</b>	Less than 25000	21	17.5
	25000-50000	46	38.3
	50000-100000	34	28.6
	More than 100000	19	15.6
<b>Marital Status</b>	Unmarried	44	36.67
	Married	76	63.33
<b>Family Type</b>	Nuclear	56	46.67
	Joint	64	53.33

Based on the above Table, it is found that majority of the EVs Users age group belongs to 18-24 category with 38.33%. Male EVs users (53.33) are dominant variable. (35%) High School is completed by most of the EVs users (35%). Government Employee (48.33%) dominates the EVs users group under Occupation category. The income holder between 25000-50000 is 38.33%. Married responses are dominates in using the EVs with (63.33). The type of family structure among respondents is almost evenly split between nuclear families (47.3%).

**Table 2: Perception towards Electric Vehicles vs. Traditional Vehicles**

51% of the respondents agree that EVs are environment friendly when compared with traditional vehicles. 33.8% of the respondents agree that EVs are more costly in comparison to traditional automobiles. 2.5% of the respondents agree that EVs exhibit lower power level in comparison to traditional vehicles. 45.5% of the respondents agree EVs exhibit less convenience in comparison to traditional automobiles. 39% of the respondents agree that EVs are more expensive in comparison to conventional vehicles. 38% of the respondents agree that EVs may not have sufficient battery capacity to reach their destination in comparison to traditional vehicles. 40.5% of the respondents agree that EVs are safer than traditional automobiles.

### Findings of the Study

A considerable number of respondents (41.8%) believe that most EVs can travel between 100 and 200 kilometers during a single charge. Gender and overall perception of EV are strongly correlated, with a correlation coefficient of  $U=11268.500$ ,  $z=-5.973$ ,  $p<0.05$ .

With a correlation coefficient of  $U=11268.500$ ,  $z=-5.973$ ,  $p<0.05$ , there is a significant relationship between gender and overall perception of EV.

A Kruskal-Wallis H value of 17.086, with a p-value of 0.001, indicates that age features have a substantial impact on how people perceive electric cars (EVs).

The respondents' educational background has a significant impact on their perception of electric vehicles (EVs), as shown by a Kruskal-Wallis H value of 11.845 and a p-value of 0.008.

A Kruskal-Wallis H value of 13.372 and a p-value of 0.010, respondents' income has a substantial impact on their impression of electric vehicles (EVs).

### **Suggestions for Adoption**

Based on the findings of this research report, several suggestions can be made to address the identified perceptions and promote the adoption of electric vehicles (EVs) can be offered through advertising to the targeted group of EV consumers. Policy makers and planners who are in a position to expand their charging infrastructure can increase. Financial incentives and subsidies can be deployed so that the cost of purchasing EVs and adoption of low and moderate income households. Encourage the consumers to adopt the technological advancement capacities especially fast charging station and long live batteries. Clear and consistent policy frameworks can provide certainty for consumers and industry stakeholders, driving investment and innovation in the EV market.

## **II.CONCLUSION**

The researcher in their study offers a thorough framework for addressing attitudes toward electric vehicles (EVs) and promoting their broad adoption. Stakeholders may remove obstacles to EV adoption and quicken the shift to electric transportation by focusing education efforts, making infrastructural investments, encouraging technology advancements, passing laws that encourage them, and involving communities. These suggestions highlight the necessity of a multifaceted approach that takes into account the various concerns and preferences of consumers and acknowledges the importance of industry innovation, government restrictions, and community involvement in fostering meaningful change. Stakeholders can create a more resilient and sustainable transportation system by working together across sectors and utilizing their resources and expertise.

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