38. A Study on Gen-Z Preference and Adoption of Electric Vehicles Special Reference to Chennai City

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ABSTRACT:

This research delves into the preferences and adoption trends of electric vehicles (EVs) among Generation Z. Environmental consciousness emerges as a key driver, reflecting a commitment to sustainability. Technological advancements in EVs attract Gen Z, particularly features like autonomy and connectivity. Cost considerations, such as initial purchase price and operational expenses, significantly impact adoption rates. Infrastructure challenges, notably charging accessibility and range anxiety, hinder widespread adoption. Social factors, including peer influence and societal norms, also shape adoption behaviors among Gen Z. The findings underscore the importance of addressing cost barriers, improving charging infrastructure, and promoting environmental awareness to accelerate EV adoption in this demographic.

Introduction:

Throughout history, the need to travel for various purposes such as work, education, and leisure has been a common aspect of human life. Over the past centuries, the advancement of transportation modes has significantly accelerated the pace of life. In India, boasting the third-largest road network globally, traveling by road has been the preferred choice for over 50% of the population. However, the widespread use of different vehicles has resulted in the emission of toxic gases, dust, and contributed to global warming. In response to these environmental concerns, the Indian government has implemented several policies aimed at discouraging the use of polluting conventional cars. One such policy is the imposition of a green tax during the re-registration of vehicles after 15 years of use.

Additionally, the government has raised fuel taxes, which may incentivize consumers to opt for fuel-efficient or electric cars or even consider alternative modes of transportation.

To further promote the adoption of electric vehicles (EVs), awareness campaigns and promotional efforts must be intensified. This can be achieved through a combination of government policies, support from companies manufacturing EVs, and active engagement from the media. By fostering awareness and providing incentives, the transition towards cleaner and more sustainable transportation options can be accelerated, thereby mitigating the adverse environmental impacts associated with traditional vehicles.

Scheme for Electric Vehicles:

The National Electric Mobility Mission Plan (NEMMP) 2020 serves as a national vision aimed at expediting the adoption and production of electric vehicles (EVs) in our country. It has been crafted to enhance fuel security, promote environmentally friendly transportation, and strive for global manufacturing leadership in the electric vehicle sector.

The FAME India Scheme, which stands for Faster Adoption and Manufacturing of Electric Vehicles, was initiated by the Ministry of Heavy Industries and Public Enterprises in 2015. Its primary objective is to encourage the widespread adoption of electric vehicles by providing financial incentives for both the manufacturing of electric vehicles and the development of necessary infrastructure.

Review of Literature:

Kishore, Shweta & John Vieira, Dr & Tupe, Omkar (2021) In our nation, the auto industry views electric vehicles as a solution to the problems posed by the current fuel shortage and price increases. But as of right now, market penetration is lower than anticipated. This paper examines the potential applications of electric vehicles and analyzes consumer perception.

Ng, Tian. (2021), Fuel-powered vehicles cause the release of harmful gases into the atmosphere, contaminate fossil fuels, and raise global temperatures. All of these global issues can be resolved with an inexpensive, efficient transportation system. Humanity must take into account EVs as an alternative if it hopes to reduce gas pollution from cars, create a sustainable, green environment, and halt the depletion of energy resources.

Tu, Jui-Che & Yang, Chun (2019), China has become the global leader in the electric vehicle market thanks to its rapid growth in the EV sector. It is imperative to conduct research on all facets of electric vehicles. It serves as a benchmark for other nations looking to expand their markets for electric vehicles.

Need of the Study:

In an era marked by environmental apprehensions and fuel scarcity, electric vehicles emerge as pivotal players. Extensive market analyses consistently demonstrate a rising inclination towards and adoption of electric vehicles. This trend not only ensures fuel security but also propels us towards environmentally sustainable transportation solutions.

Furthermore, the burgeoning popularity of electric vehicles presents an opportunity to curtail the import of crude oil. Encouragingly, the younger generation holds the key to accelerating this transition by comprehending the benefits of electric vehicles and exhibiting a preference for them. Thus, studies aimed at discerning the preferences of young people regarding different vehicle types carry significant importance.

Objectives:

- To assess Gen-Z preferences across different vehicle types.
- To Analyzing the determinants influencing the choice of electric vehicles.
- To Identifying barriers hindering Gen-Z from purchasing electric vehicles.

Methodology and Tools:

The study adopts an analytical approach, gathering 100 samples from Gen-Z individuals currently utilizing electric vehicles. Stratified random sampling ensured representation across diverse professions, income brackets, living standards, and educational qualifications. A questionnaire was distributed among the respondents, and thorough data analysis ensued. Furthermore, secondary data was sourced from published journals, edited books, travel magazines, and online platforms.

Data Analysis and Interpretations:

Age of The Respondent:

Age of the Respondent	No. of Respondents
Below 18	3
19-21	23
22-24	22
25-27	52
Total	**100**

Interpretation: The above table and chart showing the age group of the respondents that majority of the 52 respondents belong to age of below 25-27 years, 23 respondents belong to ageof 19 -21 years, 22 respondents belong to age of 22 to 24 years and 3 respondents belongs to age of below 18 years old.

Gen-Z Preference Among Vehicles:

Gen-Z Preference	No. of Respondents
Conventional Fuel Vehicle	40
Electric Vehicle	60
Total	**100**

Interpretation:

The above table and chart showing the preference among vehicles Electric Vehicle the respondent belong to 60, Conventional Fuel vehicle belong to 40.

Factor Influencing Gen-Z:

Factors Influencing Gen-Z	No. Of Respondents
Increasing Fuel Cost	43
High Performance	35
Concern For Environment	15
Low Service Expenses	5
Financial Incentives From Government	2
Total	**100**

Interpretation:

The above table and chart showing the factor influencing Increasing fuel cost 43, factor influencing High performance 35, factor influencing Concern for environment 15, factor influencing Concern for environment 5, factor influencing financial incentives from Government 2.

Gen-Z While Buying a Vehicle:

Showing Response of Gen-Z While Buying A vehicle

Particulars	Satisfaction Level					Total
	1	**2**	**3**	**4**	**5**	
Safety	11	17	25	20	27	100
Comfort Level	10	11	28	25	26	100
Cost Savings	10	13	23	29	25	100
Mileage	6	15	33	20	26	100
Vehicle Design	10	14	17	30	29	100
Total	47	70	126	124	133	500

Chi Square Test:

From the above table we can find the relationship between the satisfactory level and the GEN-Z whilebuying an e – vehicles with the usage of Chi – Square test.

Let us set the hypothesis that showing the relationship between the satisfactory level and the GEN-Z while buying an e – vehicles.

H0: There is no significant relationship between the satisfactory level and the GEN-Z whilebuying ane – vehicles.

H1: There is a significant relationship between the satisfactory level and the GEN-Z whilebuying ane – vehicles.

Let is take the level of significance as 5% for the test of Chi – Square.

Observed Frequency:

Showing The Observed Frequency:

	1	2	3	4	5	TOTAL
Safety	11	17	25	20	27	100
Comfort Level	10	11	28	25	26	100
Cost Savings	10	13	23	29	25	100
Mileage	6	15	33	20	26	100
Vehicle Design	10	14	17	30	29	100
Total	47	70	126	124	133	500

Expected Frequency:

Showing The Expected Frequency:

	1	2	3	4	5	Total
Safety	9.4	14	25.2	24.8	26.6	100
Comfort Level	9.4	14	25.2	24.8	26.6	100
Cost Savings	9.4	14	25.2	24.8	26.6	100
Mileage	9.4	14	25.2	24.8	26.6	100
Vehicle Design	9.4	14	25.2	24.8	26.6	100
Total	47	70	126	124	133	500

Therefore, the computed value of Chi – square is $\chi 2 = 12.64$.

The degree of freedom (v) is (r-1) (c-1) i.e., (5-1) * (5-1) which is 20 The table vale of $\chi 2$ at 5% level of significance and at v = 20 is 31.41.

We can conclude that the computed value of χ2 is less than that of the table value at degree of freedom.

= 20 and at 5% level of significance. The alternate hypothesis is rejected, and the null hypothesis is accepted. Therefore, there is no significant difference in the satisfactory level of the customers and the buying GEN-Z of the e – vehicles.

Finding:

According to the study, people's preferences for electric vehicles have increased over the last ten years. Electric cars are preferred over fuel cars by the majority of respondents. The majority of consumers now choose electric vehicles due to their superior performance and rising cost of gasoline. The majority of consumers are prevented from purchasing electric vehicles by a lack of charging stations and their high initial cost. Additionally, an analysis revealed a strong correlation between respondents' income and their preference for different car models.

Conclusions:

The use of electric vehicles can help combat the rising global temperature and growing fuel demand. Environmental issues are becoming more and more pressing. Electric cars can contribute to the development of a sustainable energy source. Additionally, governments ought to encourage the use of electric vehicles by setting up charging stations across the country and offering subsidies. This will lower the starting cost of electric cars and boost sales of them. The low cost of maintenance and operation for electric vehicles should also be made known to the public. More electric models should be available from companies so that consumers have more options.

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