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A study on customer preference towards uses of electric cars and fuel cars in reference to Surat region

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ABSTRACT

The objective of the study is tofind the customer preference towards EVs cars and fuel cars, to find factors affecting consumer preference towards EVs cars and fuel cars, to compare the better price and milage of EVs cars and Fuel cars.The study reveals the problem relating to the sifting trends of uses of fuel cars from electronic car. so, this study will encounter that what Customers having preference towards electric and fuels cars. Also, it revels what motives or which factors affecting them to buying of cars. I have used descriptive design. In this design I have used cross sectional design. It involves the collection of information from any given samples of population elements only once. Cross sectional design is further divided in two type's single cross sectional and multiple cross sectionals. I have used multiple cross sectional design. I collect primary data during the course of doing experiments in experimental research but in case I do research of the descriptive type and perform survey whether sample survey of census survey. Then I obtain primary data either through a direct communication with respondent or questionnaire.

Introduction

Tata Motors Limited is an Indian multinational automotive manufacturing company, headquartered in the city of Mumbai, India which is part of Tata Group. The company produces passenger cars, trucks, vans, coaches, buses, luxury cars, sports cars, construction equipment.The study reveals the problem relating to the sifting trends of uses of fuel cars from electronic car. so, this study will encounter that what Customers having preference towards electric and fuels cars. Also, it revels what motives or which factors affecting them to buying of cars.

Literature Review

1.Mr. Omkar Tupe, Prof. Shweta Kishore and Dr.ArlophJohnvieiraworked on topic **of" CONSUMER PERCEPTION OF ELECTRIC VEHICLES IN INDIA"** With the current depletion of fossil fuels and its price hike, there is a need for another energy resource to run the vehicle. The automobile sector is considering Electric Vehicle as a solution to the industry and environment in India. However, the current market penetration of EV is relatively low despite governments implementing EV policies. Through this paper potential scope of Electric vehicle in India will be studied and Consumer perception for same will be analyzed.

2.Pretty Bhalla, InassSalamah Ali and Afroze Nazneen, worked on topic**" A Study of Consumer Perception and Purchase Intention of Electric Vehicles"**, Combination of Indian skilled and semiskilled technological base, a platform of large customer base, and relatively cheaper production and labor cost, has fascinated almost all global electric vehicle manufacturers and component suppliers, to start operations from India — Bosch, AVL and Cummins. To study Commercial success and purchase intention of electric vehicle by Indians, there is a need to study the factors influencing the consumer acceptance of these vehicles. Various factors that influence the purchase decision of car buyers are individual perception on dimensions like environmental issues, cost, trust, technology advancement, infrastructure, and society acceptance. The results shows that environmental concerns and consumer trust on technology are antecedent factor for perception about Electric vehicle purchase and the factors which give adoption blow back are cost, infrastructure, social acceptance. Thus, to promote sales of electric vehicle government has to play a leading role by creating environmental policy, infrastructure and subsidized cost of vehicle or lower the bank rate of interest rate.

3.Fanchao Liao, Eric Molin & Bert van Wee, worked on topic **"Consumerpreferences for electric vehicles",** a comprehensive review of studies on consumer preferences for EV, aiming to better inform policymakers and give direction to further research. First, we compare the economic and psychological approach towards this topic, followed by a conceptual framework of EV preferences which is then implemented to organize our review. We also briefly review the modelling techniques applied in the selected studies. Estimates of consumer preferences for financial, technical, infrastructure and policy attributes are then reviewed. A categorization of influential factors for consumer preferences into groups such as socioeconomic variables, psychological factors, mobility condition, social influence, etc. is then made and their effects are elaborated. Finally, we discuss a research agenda to improve EV consumer preference studies and give recommendations for further research.

4.**André Hackbarth and Reinhard Madlener,** Worked on topic**" Consumer preferences for alternative fuel vehicles"** This paper analyses the potential demand for privately used alternative fuel vehicles using German stated preference discrete choice data. By applying a mixed logit model, we find that the most sensitive group for the adoption of alternative fuel vehicles embraces younger, well educated, and environmentally aware car buyers, who have the possibility to plug-in their car at home and undertake numerous urban trips. Moreover, many households are willing to pay considerable amounts for greater fuel economy and emission reduction, improved driving range and charging infrastructure, as well as for enjoying vehicle tax exemptions and free parking or bus lane access. The scenario results suggest that conventional vehicles will maintain their dominance in the market. Finally, an increase in the battery electric vehicles' range to a level comparable with all other vehicles has the same impact as a multiple measures policy intervention package.

5.**KENNETH S. KURANI AND DANIEL SPERLING,** worked on topic**" Rise and Fall of Diesel Cars: A Consumer Choice Analysis",** The search for alternative transportation fuels must be undertaken with an understanding of the retail markets for vehicles and fuels. The authors examine the history of the diesel car, as the only Important alternative to gasoline in the U.S. household vehicle market, with the specific Intent of exploring the conditions under which individuals would purchase a nongasolinevehicle. Diesel car sales rose from less than 1 percent of new car sales in 1976 to 6 percent by 1981, and then collapsed toles than 1 percent by 1985. A survey of diesel car owners was conducted in California to determine why diesel car sales rose and fell so sharply. The rise of diesel car sales was fueled by expected fuel cost savings. However, it was found that consumers relied on per gallon fuel prices, not per mile fuel costs or fully allocated total costs as the indicator of whether diesel cars were economically superior. The fall of diesel car sales was fueled by the declining per gallon price advantage of diesel fuel and specific perceived and actual problems with General Motor's (GM's) early 5.7-llter diesel engine. It was found that nongame diesel car owners were no less likely to buy another diesel car of any make because of the public perception of the 5.7-liter GM engine, but that GM diesel owners and the general car-buying public believed diesel cars to be of lower quality than gasoline cars. It is concluded that fuel price and vehicle quality will be important determinants of the success of alternative transportation fuels and vehicles in the marketplace.

Objectives of the study

- To find the customer preference towards EVs cars and fuel cars.
- To find factors affecting consumer preference towards EVs cars and fuel cars.
- To compare the better price and milage of EVs cars and Fuel cars.

Research Methodology

I collect primary data during the course of doing experiments in experimental research but in case I do research of the descriptive type and perform survey whether sample survey of census survey. Then I obtain primary data either through a direct communication with respondent or questionnaire.

T-TEST

One-SampleStatistics

	N	Mean	Std. Deviation	Std. Error Mean
6. Which is the factor you prefer while purchasing electric cars and fuel car ? [Price of Cars]	100	1.710	.7823	.0782
6. Which is the factor you prefer while purchasing electric cars and fuel car ? [Brand of Company]	100	1.690	.7205	.0720
6. Which is the factor you prefer while purchasing electric cars and fuel car ? [Comfort / Facilities]	100	1.650	.6723	.0672
6. Which is the factor you prefer while purchasing electric cars and fuel car ? [Safety Standard]	100	1.620	.7075	.0708

6. Which is the factor you prefer while purchasing electric cars and fuel car ? [Design or Mode]	100	1.620	.6479	.0648
6. Which are the factor you prefer while purchasing electric cars and fuel car ? [SUV/ Sidon]	100	1.750	.7703	.0770
6. Which are the factor you prefer while purchasing electric cars and fuel car ? [Mileage]	100	1.680	.7898	.0790
6. Which are the factor you prefer while purchasing electric cars and fuel car ? [Maintained]	100	1.680	.7090	.0709
6. Which is the factor you prefer while purchasing electric cars and fuel car ? [Interior / Exterior]	100	1.720	.7396	.0740

One-SampleTest

	Test Value = 1.5					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-+tailed)	Mean Difference	Lower	Upper
6.Which are the factor you prefer while purchasing electric cars and fuel car ? [Price of Cars]	2.684	99	.009	.2100	.055	.365
6.Which are the factor you prefer while purchasing electric cars and fuel car ? [Brand of Company]	2.637	99	.010	.1900	.047	.333

6.Which are the factor you prefer while purchasing electric cars and fuel car ? [Comfort / Facilities]	2.231	99	.028	.1500	.017	.283
6.Which are the factor you prefer while purchasing electric cars and fuel car ? [Safety Standard]	1.696	99	.093	.1200	-.020	.260
6.Which are the factor you prefer while purchasing electric cars and fuel car ? [Design or Mode]	1.852	99	.067	.1200	-.009	.249
6.Which are the factor you prefer while purchasing electric cars and fuel car ? [SUV/ Sidon]	3.245	99	.002	.2500	.097	.403
6.Which are the factor you prefer while purchasing electric cars and fuel car ? [Mileage]	2.279	99	.025	.1800	.023	.337
6.Which are the factor you prefer while purchasing electric cars and fuel car ? [Maintained]	2.539	99	.013	.1800	.039	.321
6.Which are the factor you prefer while purchasing electric cars and fuel car ? [Interior / Exterior]	2.974	99	.004	.2200	.073	.367

Hypothesis

H0: there is impact of Fuel cars and EVs cars . H1: there is no impact of Fuel cars and EVs cars . H0: there is impact of Fuel cars and EVs cars . H1: there is no impact of Fuel cars and EVs cars .

H0: there is impact of Fuel cars and EVs cars . H1: there is no impact of Fuel cars and EVs cars . H0: there is impact of Fuel cars and EVs cars . H1: there is no impact of Fuel cars and EVs cars ..

Interpretation:

From the above hypothesis of T-Test indicates various table and barcharts that the factor you prefer while purchasing electric cars and fuel cars are on Safety Standard and Design or Mode which means lots of people want Safety Standard and Design or Mode which is 0.93 and 0.67

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ANOVA-TEST

ANOVA

		Sum of Squares	Df	Mean Square	F	Sig.
7. What things effecting to the most to shifting uses towards Fuel and Electric cars ? [High Mileage]	Between Groups	.509	1	.509	1.368	.245
	Within Groups	36.451	98	.372		
	Total	36.960	99			
7. What things effecting to the most to shifting uses towards Fuel and Electric cars ? [Pollution free for society]	Between Groups	3.237	1	3.237	4.334	.040
	Within Groups	73.203	98	.747		
	Total	76.440	99			
7. What things effecting to the most to shifting uses towards Fuel and Electric cars ? [Easy to Recharged]	Between Groups	.096	1	.096	.187	.667
	Within Groups	50.654	98	.517		
	Total	50.750	99			
7. What things effecting to the most to shifting uses towards Fuel and Electric cars ? [Safety of burning cars]	Between Groups	.000	1	.000	.001	.980
	Within Groups	65.000	98	.663		
	Total	65.000	99			
7. What things effecting to the most to shifting uses towards Fuel and Electric cars ? [For Long-term saving of money]	Between Groups	.001	1	.001	.002	.968
	Within Groups	47.559	98	.485		
	Total	47.560	99			

Hypothesis:

H0: there is significance difference between uses of cars feature and gender. H1: there is no significance difference between uses of cars feature and gender. H0: there is significance difference between uses of cars feature and gender.
H1: there is no significance difference between uses of cars feature and gender.
H0: there is significance difference between mean uses of cars feature and gender.
H1: there is no significance difference between uses of cars feature and gender. H0: there is significance difference between uses of cars feature and gender.
H1: there is no significance difference between uses of cars feature and gender. H0: there is significance difference between uses of cars feature and gender.
H1: there is no significance difference between uses of cars feature and gender

Interpretation:

The result of one-way ANOVA indicates that at five percentage significance level there is significance difference between gender and uses of cars feature. And the result of one-way ANOVA indicates that at five percentage significant level there is significant affect High Mileage (.245) and Easy to recharge (.667), Safety of burning cars (.980), For long term money saving (.968), Pollution free for society(.040).

*Gender * 2. What type of four-wheeler your family have or prefer to buy in future?*

Crosstabulation

Count

		2. What type of four-wheeler your family have or prefer to buy in future?			Total
		Fuelcars	EVS cars	Gascars	
Gender	Male	32	9	6	47
	Female	31	12	10	53
Total		63	21	16	100

Chi-SquareTests

	Value	df	Amp.Sig.(2-sided)
PearsonChi-Square	1.088[a]	2	.580
LikelihoodRatio	1.096	2	.578
Linear-by-LinearAssociation	1.068	1	.301
NofValidCases	100		

Hypothesis:

H0: there is no significant relationship betweenfour-wheeler your family have or prefer tobuy in future and Gender.

H1: there is significant relationship between four-wheeler your family have or prefer to buy in future and Gender.

Interpretation:

The above table is showing relationship between priority towards four-wheeler and Gender. Where themajority of respondent ofboth Male and Femalehaveselected Eco – Friendly fuel cars which is 53 out of 100. The second most preferred EVs cars is Attractive packaging which is 47 out of 100. Thesignificant value of chi-squaretest is respectively0.580 it means null hypothesis is rejected.And alternative is accepted. It means that there is significance relationship between priority towards EVs cars and Gender.

Finding&Conclusion

- In my research where to purchase an electric car if it is available on the same price fuel cars 88.00% people have given Yes and only 12.00% are having No.
- In my research of challenges, you will face will using EVs cars on {Time consumable while charging}41.00% are very dissatisfied and 32.00% are satisfied , 17.00% are neutral and 7.00% and 3.00% are very satisfied and dissatisfied .
- In my research were the most shifting uses towards fuel and EVs cars on preferring {For long-term saving of money}where 49.00% people are very satisfied , 41.00% people are satisfied , 9.00% were neutral and 1.00% are dissatisfied .
- In my research where the factor you prefer while purchasing EVs cars and fuel cars on the preferring{SUV/Sidon} where 43.00% people are very satisfied , 41.00% are satisfied . 14.00% were neutral and 2.00% were Dissatisfied .

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