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Customer Perception towards Electric Vehicle with Special Reference to Erode District

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ABSTRACT: Electric vehicle, also known as EVs, are gaining more attention as eco-friendly alternatives to traditional gas-powered vehicles due to the shift towards sustainable transportation. The main goal is to understand better the factors influencing the choices and preferences of potential customers towards electric vehicles. This study used a combination of interviews with knowledgeable individuals in EV technology and a survey given to a broad sample of car owners. The findings reveal that although interest and knowledge about EVs are increasing, there are still significant hurdles to overcome, such as anxiety, charging infrastructure, and vehicle cost. Additionally, the desire to help the environment and save money in the long run were identified as key drivers for potential EV adoption. The study underscores the importance of targeted policies and educational initiatives to address consumer hesitations and promote the widespread adoption of electric vehicles in the automotive industry.

I. INTRODUCTION

Electric vehicles (EVs) operate using an electric motor powered by batteries that can be charged from an external source. They signify a transition towards utilizing electricity as the primary fuel source, or they enhance conventional vehicle designs for improved efficiency. EVs encompass both battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs). Although some models still use liquid fuels in addition to electricity, EVs are renowned for delivering instant torque and a quiet driving experience.

STATEMENT OF THE PROBLEM:

Understanding customer discernment is vital for the effective dissemination of electric vehicles in any advertise. It gives bits of knowledge into the demeanors, convictions, and concerns that impact acquiring choices. Within the setting of Disintegrate, a locale with one of a kind socio-economic and social flow, it is basic to explore how nearby customers see electric vehicles. Components such as the accessibility of charging framework, seen unwavering quality, fetched suggestions, and natural mindfulness are likely to play critical parts.

OBJECTIVES:

- Assess consumer awareness regarding EVs
- Identify motivators behind consumers choosing to buy electric vehicles
- Evaluate consumers' knowledge of different government e-transportation initiatives
- Determine whether consumers prefer electric or gas-powered vehicles

RESEARCH METHODOLOGY:

Research Methodology is defined as a highly intellectual human activity used in the investigation of nature and matter and deals especially with how data is collected, analyzed, and interpreted.

Research Design:

- A research design is a study's strategy and the plan that will be used to implement it. It outlines the steps and techniques for gathering, measuring, and analyzing data.
- When gathering data from respondents, the researcher employed a descriptive study design.



TYPE OF RESEARCH:

Descriptive Research

SAMPLE DESIGN:

Simple Random sampling

DATA COLLECTION:

Primary data:

1. Questionnaire method
2. Survey method

Secondary data:

- Literature review
- Company profile

STATISTICAL TOOLS USED:

1. Simple percentage Analysis.
2. Chi-Square method.
3. Correlation.
4. Factor Analysis.

II. REVIEW OF LITERATURE

Yogesh Aggarwal, Vivek Gedda, and Kushan Parikh, (2024) Clients of bikes who as it were got to travel brief separations may want to consider an EV, whereas those who got to travel longer separations and right now have cruisers just like the Legend Splendor may discover exchanging to an e-2W challenging. It is generally clear to improve the run of an vehicle by expanding the battery measure. In any case, with electric 2Ws, each increment in kWh may give an extra 30km of extend, but the weight pick up is generally the same. For electric 2Ws in spite of the fact that, every increase in kWh may give an additional 30km in run, but the increment in weight is around 10kg, roughly a 10% increment within the add up to weight of the bicycle. This weight issue is indeed more articulated in littler bicycles.

Bennett, R., & Vijay Gopal, R. (2018). Based on the set impacts of a particular generalization of EV proprietors conceivably held by individuals without involvement with EVs, and the latter's self-image consistency with respect to EV possession, this investigate created an coordinates demonstrate of potential determinants of customer demeanor toward electric vehicles. Both item client SIC and generalization cynicism were proposed as determinants of both item client SIC and generalization pessimism, as well as applying coordinate impacts on customer state of mind.

Lovely Bhalla, InassSalamah Ali, Afroze Nazneen,(2023) Natural concerns, taken a toll, consolation, believe, innovation, societal acknowledgment, and infrastructural accessibility all influence car determination. These contentions both ordinary cars and electric vehicles have been tried. They accept that these components have a coordinate affect on an individual's vehicle choice. They found that EV makers and governments must contribute more within the social adequacy of the car by growing framework and emphasizing innovation to construct believe.

III. PROFILE OF THE RESPONDENTS

Table 1: profile of the respondents

Details of the respondents		No. of Respondents	Percentage
Gender	Male	66	60
	Female	44	40
	Total	110	100
Age	20 – 30 years	25	22.73
	30 – 40 years	38	34.55
	40 – 50 years	25	22.73
	50 – 60 years	22	20
	Above 60 years	0	0
	Total	110	100



Education	Schooling	23	20.9
	Graduate	61	55.5
	Diploma	25	23.6
	Total	110	100

According to the above table, 40% of the people are men and 60% are women. The age distribution of the respondents is as follows: 34.55% are between 30 and 40 years old, 22.73% are between 20 and 30 years old, 22.73% are between 40 and 50 years old, 20% are between 50 and 60 years old, and 0% are beyond 60 years old. Of the responders, 20.9% are from schooling, 23.6% are from Diplamo, and 55.5% are graduates.

CHI-SQUARE ANALYSIS:

Chi-square test for Education and satisfaction toward e-vehicle features

Ho= There is no significant relationship between Education and satisfaction with e-vehicle features

H1= There are significant relationship between Education and satisfaction with e-vehicle features

2.1 Table from the Chi-square test for Education and satisfaction toward e-vehicle features

ACTUAL VALUE						
	A	B	C	D	E	TOTAL
EDUCATION	23	61	26	0	0	110
SATISFACTION TOWARD E-VEHICLE FEATURES	22	37	29	20	2	110
TOTAL	45	98	55	20	2	220
EXPECTED VALUE						
	A	B	C	D	E	TOTAL
EDUCATION	22.5	49	27.5	10	1	110
SATISFACTION TOWARD E-VEHICLE FEATURES	22.5	49	27.5	10	1	110
TOTAL	45	98	55	20	2	220
	CHI.SQ	0.00				

CHI SQUARE= $X^2=0.0$

Hence, from the analysis, it is calculated that there are significant relationship between Education and satisfaction with e-vehicle features

From the table, $X^2=0.00$ is, H1= There is no significant relationship between Education and satisfaction toward e-vehicle features.

3. CORRELATION

I LIVE IN	OFTEN USING ON DAILY BASIS	
17	38	
49	31	
27	26	
16	15	
1	0	
	I LIVE IN	OFTEN USING ON DAILY BASIS
I LIVE IN	1	0.651246
OFTEN USING ON DAILY BASIS	0.651246	1

I Live in and often used daily Correlation test for

X = I Live in

Y= Often using daily

I Live in and often use daily



Correlation co-efficient: 0.651246

The data implies that the frequency of instances in "I LIVE IN" is moderately positively correlated with the frequency of instances in "OFTEN USING ON DAILY BASIS." If one category sees an increase in frequency, the other tends to see an increase as well. This relationship is quantified by the correlation coefficient of 0.651246, indicating a moderate positive linear relationship.

FACTOR ANALYSIS:

Descriptive Statistics			
	Mean	Std. Deviation	Analysis N
Eco-friendly	4.33	1.220	110
reduced cost	3.69	.875	110
Environment concern	3.68	1.188	110
Technological Advancements	3.47	1.186	110
Government Incentives	2.94	1.127	110
Infrastructure Development	3.19	1.391	110
Regulatory Policies	2.65	1.207	110
Consumer Preferences and Awareness	3.15	1.322	110
Cost of Ownership	3.18	1.356	110
Urban Planning and Mobility Trends	3.17	1.394	110

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.599
Bartlett's Test of Sphericity	Approx. Chi-Square	270.203
	df	45
	Sig.	.000

SSThe sampling adequacy is considered appropriate for interpreting factor analysis results due to the Kaiser-Meyer-Olkin (KMO) measure exceeding 0.5. Bartlett's Test of Sphericity shows a significant Chi-square value of 0.000, indicating significance at a 5 percent level. The factors, obtained using the principal component method along with their squared loadings, are detailed in the table explaining the total variance.

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.814	28.137	28.137	2.814	28.137	28.137	2.23	22.296	22.296
2	1.665	16.65	44.786	1.665	16.65	44.786	1.769	17.688	39.983
3	1.338	13.382	58.168	1.338	13.382	58.168	1.487	14.866	54.849
4	1.096	10.961	69.129	1.096	10.961	69.129	1.428	14.28	69.129
5	0.918	9.18	78.309						
6	0.68	6.803	85.111						
7	0.464	4.643	89.754						



8	0.392	3.918	93.673					
9	0.369	3.69	97.363					
10	0.264	2.637	100					

Extraction Method: Principal Component Analysis.

The table of total variance indicates that four crucial factors have been identified out of ten variables. These factors have a combined explanatory power of 69.129 percent in understanding the positive workplace culture among the survey respondents. The Varimax rotation method was used to extract these factors, and their explanation was facilitated by a rotated component matrix. The variable "consumer perception in the electric vehicle" emerges as the primary factor for E-Vehicle in the affected district, ranking first, while the variable "encouragement for consumers" determines the effectiveness of the E-Vehicle.

Rotated Component Matrix				
	Component			
	1	2	3	4
Urban Planning and Mobility Trends	.830			
Consumer Preferences and Awareness	.779			
Cost of Ownership	.754			
reduced cost		.910		
Eco-friendly		.816		
Infrastructure Development			.847	
Regulatory Policies			.597	
Government Incentives			.589	.560
Technological Advancements				.715
Environment concern				.685

Analyzing principal components is the extraction method.

Varimax with Kaiser Normalization is the rotation method used. A a. In five iterations, the rotation converged. The factors that have been extracted are listed below in order of extraction and are recognized by loadings (above 0.8) regardless of sign.

Factor 1: Encouragement and recognition from outside sources.

Factor 2: Recognition from peers.

IV. CONCLUSION

Based on the think about of client recognition towards electric vehicles in Disintegrate, it is obvious that there's a developing intrigued and positive state of mind among customers. Numerous respondents are mindful of the natural benefits and taken a toll reserve funds related with electric vehicles. Be that as it may, concerns almost the accessibility of charging framework and the higher initial purchase fetched stay critical obstructions. By and large, whereas there's



eagerness for receiving electric vehicles, endeavors to improve infrastructure and reasonableness may assist upgrade customer acknowledgment and selection within the locale.

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