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A study on customer preference towards electric vehicles with special reference to Coimbatore city

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Abstract
This study investigates customers' preferences for electric vehicles (EVs) in Coimbatore, India. With the increasing focus on sustainable transportation, understanding consumer preferences is crucial for the successful adoption of EVs. The research employs a mixed-method approach, incorporating both quantitative surveys and qualitative interviews. The quantitative survey assesses factors influencing EV adoption, such as cost, range, charging infrastructure, and environmental concerns. Meanwhile, qualitative interviews delve deeper into individual attitudes, perceptions, and barriers toward EV adoption. Findings reveal significant interest in EVs among Coimbatore residents, driven primarily by environmental consciousness and rising fuel costs. However, concerns regarding charging infrastructure, range anxiety, and initial purchase costs remain notable barriers. The study provides valuable insights for policymakers, manufacturers, and other stakeholders to promote EV adoption in Coimbatore city and beyond.

Keywords: Electric vehicles, customer preference, EV adoption

Introduction
The introduction of this study on customer preferences towards Electric vehicles (EVs) in Coimbatore city sets the stage by highlighting the increasing global focus on sustainable transportation and the pivotal role EVs play in this transition. It outlines the significance of understanding customer preferences in driving EV adoption and addresses the specific context of Coimbatore city, known for its burgeoning urbanization and growing environmental concerns. Additionally, it briefly introduces the methodology employed in the study, emphasizing the mixed-method approach combining quantitative surveys and qualitative interviews to provide comprehensive insights into the factors influencing EV preferences among Coimbatore residents.

Objective of the Study
1. To highlight major challenges hindering the widespread adoption of electric vehicles.
2. To identify key considerations for making a decision to purchase an electric vehicle.
3. To Compare the impact of electric vehicles versus traditional vehicles on resale value, environmental footprint, pricing, and additional factors.
4. To determine the availability of government incentives or subsidies for purchasing electric vehicles in the specified area.

Scope of the Study
The study investigates factors such as cost, range, charging infrastructure, and environmental concerns shaping EV preferences. It delves into how age, income, education, and occupation impact Coimbatore residents' EV preferences. Additionally, it evaluates residents' awareness of EV technology and explores perceived benefits, barriers, and unique local factors influencing EV adoption. Recommendations are provided for promoting EV adoption in Coimbatore and similar urban areas.

Limitations of the Study
1. Limited sample representativeness in Coimbatore may hinder the broad applicability of findings.
2. Time constraints may prevent capturing full longitudinal shifts in consumer EV preferences.
3. Sole focus on Coimbatore limits findings' transferability to areas with differing socio-economic factors.
4. Self-reported data reliance could introduce bias, skewing responses on preferences and behaviours.

Statement of the Problem
The problem addressed in this study is the limited adoption of electric vehicles (EVs) in Coimbatore, India, despite increasing environmental concerns and rising fuel costs. Understanding the factors influencing consumers' preferences and barriers to EV adoption is crucial for promoting sustainable transportation in the city.

Review of Literature
Mr. Omkar Tupe, Prof. Shweta Kishore and Dr. Arloph Johnvieira worked on topic of" consumer Perception OF Electric vehicles in India"(2021).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.

B. Pretty Bhalla, Inass Salamah Ali and Afroze Nazneen, worked on topic" (2022) 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 labour cost, has fascinated almost all global electric vehicle manufacturers and component suppliers, to start operations from India — Bosch, AVL and Cummins.

C. Fanchao Liao, Eric Molin & Bert van Wee, worked on topic "Consumer preferences for electric vehicles",(2023) 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.

Research Methodology

Research is a specific and systematic search for information on a specific topic. Research is an art of scientific investigation that comprises defining and redefining problem formulation suggestions (or), solutions, and data evaluation.

Method of Data Collection: The data collected for this study is.

Primary Data: The primary data are collected through structured questionnaires.

Secondary Data: Secondary data is data collected from websites and records.

Area of Study: This study was conducted in Coimbatore city.

Sample size: 150 respondents residing in Coimbatore city were selected for the study.

Tools used for Analysis: Data analysis tools are Simple percentages and Chi-square tests.

Data Analysis and Interpretation

Percentage analysis

Simple Percentage

Formula

$$\frac{number\ of\ respond}{total\ number\ of\ respondent} * 100$$

Demographic profile of the respondents

Table 1: Showing the demographic profile.

S.N	Demographic		No of respondent	Percentage
1	Gender	Male	82	54.7%
		Female	68	45.7%
2	Age	18-25	92	61.3%
		26-35	34	22.7%
		36-45	16	10.7%
		50-above	8	5.3%
3	Marital status	Married	90	40%
		Unmarried	60	60%

Chi-square analysis

Chi-square analysis formula:

$\chi 2 = \Sigma (Oi-Ei)2 / Ei.$

Degree of freedom: (r-1) (c-1).

H1: Age & Preferred available type of vehicle in an electric model.

Table 2: Chi-square

O	E	(O-E) ^2	(O-E) ^2/E
35	38.64	13.2496	0.342899
36	36.8	0.64	0.017391
21	16.56	19.7136	1.190435
16	14.28	2.9584	0.207171
14	13.6	0.16	0.011765
4	6.12	4.4944	0.734379
7	6.72	0.0784	0.011667
8	6.4	2.56	0.4
1	2.88	3.5344	1.227222
5	3.36	2.6896	0.800476
2	3.2	1.44	0.45
1	1.44	0.1936	0.134444
150	150	51.712	5.527849

Result: The calculated chi-square value is (5.52) less than the table value (12.592). Hence, the hypothesis is accepted. (H1).There is a significant relationship between Age & Preferred available type of vehicle in an electric model.

Findings

1. Majority (61.3%) of the respondents are in the age group of 18-25 years.
2. Majority (54.7%) of the respondents are male.
3. Majority (45-3%) of the respondents have Bachelor degree educational level is Bachelor degree
4. Majority (60%) of the respondents are unmarried.
5. Majority (39.3%) of the respondents are students
6. Majority (39.3%) of the respondent's monthly income is less than 25000.
7. Majority (64.7%) of the respondents are from rural areas.
8. Majority (80%) of the respondents own a Vehicle.
9. Majority (36.7%) of the respondentsstate very familiar with and somewhat familiar with electric Vehicle.
10. Majority Very like (44.7%) of the respondents are likely to vehicle to a recommended friend or family member.
11. Majority (13.3%) of the respondents are aware of government incentives 20 subsidies for purchasing electric vehicles in their area.
12. Majority (38.7%) of the respondents say charging infrastructure is the biggest barrier to widespread adoption of electric vehicles-
13. Majority (42%) of the respondents prefer a scooter, the most electric model available.
14. Majority (36%) of the respondents came to know about e-vehicles through social media.
15. Majority (81.3%) of the respondents have been using e-vehicles for more than 6 months
16. Majority (37.3%) of the respondents consider Environmental impacts as a factor while buying an e-vehicle.

Suggestions

It's evident that Coimbatore residents are interested in electric vehicles (EVs). To further promote EV adoption, policymakers should focus on improving charging infrastructure, increasing awareness of government incentives, and enhancing accessibility to EV models like scooters. Additionally, targeted campaigns through social

media can effectively disseminate information about EV benefits and overcome barriers to adoption.

Conclusion

The study sheds light on the preferences of Coimbatore residents towards electric vehicles (EVs). Despite significant interest driven by environmental concerns and rising fuel costs, challenges such as charging infrastructure and initial purchase costs hinder widespread adoption. Policymakers and manufacturers can utilize these insights to address barriers and promote EV adoption effectively.

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