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DETERMINANTS OF CUSTOMER PURCHASE INTENTION TOWARDS HYBRID CARS: AN EMPIRICAL STUDY IN CHENNAI

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Abstract:
In the current scenario, the Indian automobile sector is undergoing a transition towards cleaner and more fuel-efficient mobility, leading to growing interest in hybrid cars as an alternative to conventional petrol and diesel vehicles. Hybrid cars combine an internal combustion engine with an electric motor, offering potential benefits such as improved fuel economy, lower emissions, and reduced dependence on external charging infrastructure. The present study examines the determinants influencing customers' purchase intentions towards hybrid cars in Chennai. Primary data were collected through a structured questionnaire using Google Forms, and 160 valid responses were obtained. The collected data were analysed using descriptive statistics, ANOVA, correlation analysis, and multiple regression analysis to test the hypotheses of the study. The findings reveal that product attributes, positive social influence, and external conditions significantly influence customers' purchase intentions towards hybrid cars.

Keywords: *Hybrid cars; purchase intention; purchase attributes; social influence.*

INTRODUCTION:

The Indian automobile industry is undergoing a significant transformation towards sustainable, cleaner, and fuel-efficient mobility. Increasing concerns regarding environmental pollution, climate change, fuel consumption, and energy security have encouraged consumers and automobile manufacturers to consider alternative vehicle technologies. **Shah *et al.* (2021)** observed that the adoption of cleaner vehicle technologies is increasingly influenced by environmental concerns, technological developments, and changing consumer preferences. In this context, hybrid vehicles have emerged as an important transition technology between conventional internal combustion engine vehicles and fully electric vehicles. **Hannan *et al.* (2014)** highlighted that hybrid electric vehicles can contribute to reductions in fuel consumption and emissions by combining an internal combustion engine with electric propulsion. Hybrid cars combine an internal combustion engine with one or more electric motors, thereby improving fuel efficiency and reducing emissions compared with conventional

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vehicles. They can also address some of the limitations associated with fully electric vehicles, particularly concerns regarding charging infrastructure and driving range. **Al-Alawi and Bradley (2013)** reported that hybrid vehicles provide an effective means of reducing fuel consumption and environmental impact while retaining the convenience associated with conventional automobiles. **Kumar and Alok (2020)** found that consumers' acceptance of environmentally sustainable automobile technologies is influenced by economic, technological, environmental, and social considerations.

Purchase intention represents the likelihood that a consumer will consider purchasing a particular product or technology. In the case of hybrid cars, purchase intention is influenced by consumers' perceptions of economic benefits, environmental advantages, product performance, and technological reliability. **Rezvani, Jansson and Bodin (2015)**, in their review of alternative fuel vehicles, identified attitudes, perceived benefits, environmental concerns, and social influences as important factors affecting consumers' intentions to adopt alternative-fuel vehicles. Similarly, **Wang *et al.* (2018)** found that consumers' purchase intentions towards new energy vehicles are affected by perceived usefulness, environmental concerns, social influence, and perceived behavioural control. **Degirmenci and Breitner (2017)** found that environmental performance, perceived usefulness, and other product-related perceptions significantly affect consumers' willingness to adopt electric vehicles. **Carley *et al.* (2013)** also reported that vehicle characteristics, financial considerations, and consumers' perceptions of vehicle technology influence the adoption of alternative-fuel vehicles. **Rezvani *et al.* (2015)** identified social norms and social influence as important factors in consumers' adoption of alternative-fuel vehicles. Likewise, **Jansson *et al.* (2017)** found that social influences and personal norms can contribute to consumers' adoption of environmentally sustainable vehicle technologies. there is a need for greater empirical understanding of these determinants specifically among automobile consumers in Chennai**,** an important automobile market in Tamil Nadu. The transition towards cleaner mobility makes it important to understand the factors that influence consumers' willingness to purchase hybrid cars in an urban market such as Chennai. Therefore, the present study examines the factors influencing customers' purchase intentions towards hybrid cars in Chennai**, with** particular emphasis on product attributes, positive social influence, and external conditions.

REVIEW OF LITERATURE:

Anisur Rahman (2025) "Impact of environmental values, pro-environmental behaviour, and pricing on purchase intention of electric vehicles" the study examines that Indian consumers' electric vehicle purchase intentions (EVPI) by integrating the Theory of Reasoned Action (TRA) and Value-Belief Norm (VBN) theory. The study was conducted among 374 automobile drivers through online survey and analysed with PLS-SEM. The findings of the study reveal that environmental concern (EC) and environmental knowledge (EK) positively and significantly influence consumers' subjective norms and attitude towards electric vehicle. By combining TRA and VBN theory, the research contributes to understanding EV adoption in a developing economy and provides practical implications for marketers and policymakers, emphasizing the importance of strengthening environmental awareness, social influence,

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value-based communication, and targeted pricing strategies to promote electric vehicle adoption in India.

S Chatterjee, R Chaudhuri, D Vrontis, S Bresciani (2024) "Exploring the effect of government incentives on electric vehicle purchase intention in smart cities" explored that the policy makers and government in many countries are incentivising the manufacture, sale and purchase of low carbon-emitting vehicles such as electric vehicles. The study aims to understand how the moderator government incentives influence potential customers' intention to purchase electric vehicles for smart mobility in smart cities. The research has used theory of planned behaviour and which is later validated using CB_SEM technique considering responses from 415 customer of electric vehicles. This study has demonstrated that subjective norms and personal norms supported by users' attitude and behavioural control to use EVs could impact on the purchase intention of electric vehicles with active support of the government incentives. This study has proposed a pragmatic framework helpful for the policymakers to motivate the potential purchasers of the smart cities to purchase EVs.

Parul and Sweta (2024) studied the impact of government policies and incentives on EV preferences in India. Their findings showed that personal and social attitudes played an important role in consumers' EV preferences. The study also found that vehicle cost had a stronger influence on purchase decisions than anticipated annual savings, while social influence was more important than individual risk tolerance. This result reinforces the relevance of price and affordability under Purchase Attributes (X2) and family, peer, and social-image consideration.

Digalwar and Rastogi (2023) investigated Indian consumers' EV adoption intention through the Behavioural Reasoning Theory framework. The study found that personal and social values significantly influenced consumers' reasoning and attitude towards EV adoption. It further reported that environmental knowledge moderated the association between attitude and purchase intention. The study highlights that sustainable-vehicle purchase intention can be strengthened when consumers have adequate environmental awareness and form favourable attitudes toward the technology.

Goswami (2022) examined factors influencing electric-vehicle adoption in India and observed that consumers give substantial importance to price, vehicle performance, driving range, charging time, and charging infrastructure. The study also noted the role of environmental and social awareness in shaping adoption decisions. These findings indicate that consumers evaluate sustainable vehicles not only through ecological benefits but also through tangible product and ownership attributes. Therefore, price, performance, fuel-saving potential, maintenance cost, and convenience are relevant parameters. Finally, recent Indian EV research has shown that environmental responsibility, policy incentives, perceived value, performance expectancy, and price value can positively influence purchase intention. However, some studies found social influence to be non-significant, indicating that the role of social reasons can differ across locations and respondent profiles. This inconsistency justifies conducting a Chennai-specific study to test whether the selected factors significantly influence consumers' purchase intention towards hybrid cars.

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RESEARCH GAPS

The recent literature shows that consumer perception, behavioural control, product value, price, social influence, environmental concern, policy incentives, and infrastructure are commonly studied determinants of sustainable-vehicle purchase intention. However, three research gaps remain like: First one much of the recent Indian evidence focuses on battery-electric vehicles rather than hybrid cars. 2nd gap is the influence of factors differs across cities, income groups, awareness levels, and technology-readiness conditions. 3rd gap is there is limited Chennai-specific empirical evidence examining consumer perception, purchase attributes, social reasons, and external variables together in relation to purchase intention towards hybrid cars.

Accordingly, the present study examines whether Perceived Intention/Consumer Perception (X1), Purchase Attributes (X2), Social Reasons (X3), and Other Variables (X4) significantly influence customers' purchase intention towards hybrid cars in Chennai.

RESEARCH QUESTIONS:

RQ1*:* What are the key determinants influencing customer purchase intention towards hybrid cars in Chennai?
RQ2: To what extent do the influencing factors significantly impact purchase intention towards hybrid cars?
RQ3: Does customer attitude towards hybrid cars mediate the relationship between influencing factors and purchase intention?

OBJECTIVES:

- To determine the relationship between the identified influencing factors and consumers' purchase intention towards hybrid cars.
- To identify whether purchase intention towards hybrid cars differs across selected demographic and consumer groups.
- To examine the impact of identified influencing factors and consumers' purchase intention towards hybrid cars.

HYPOTHESIS:

H_{01}: Determinants of Customer Purchase Intention towards Hybrid Cars: An Empirical Study in Chennai.

H_{02}: There is no significant relationship between factors influencing hybrid car purchase intention and the purchase intention.

H_{03}: There is no significant impact of factors influencing hybrid car purchase intention on purchase intention.

RESEARCH METHODOLOGY:

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The study is descriptive because its profiles respondents and identifies their preferences regarding hybrid-car type, budget, fuel type, transmission, and information-search behaviour among Chennai customers. A total of 160 respondents constituted the final sample for the study. The respondents were selected using a non-probability convenience sampling method, as data were collected from consumers who were accessible and willing to participate in the survey. The method was suitable for the exploratory nature of the study and the limited time and resource availability.

A structured questionnaire was used for data collection. The questionnaire was divided into the following sections: Part A: Demographic profile: gender, age, occupation, educational qualification, and monthly income. Part B: Consumer preference: preferred budget, hybrid-car type, fuel type, transmission type, and pre-purchase information-search period. Part C: Factors influencing hybrid-car purchase intention: perceived intention, purchase attributes, social reasons, and other variables. Part D: Purchase intention towards hybrid cars. The collected data were coded, classified, tabulated, and analysed using percentage analysis, mean, standard deviation, one-way ANOVA, Pearson correlation, and multiple linear regression using SPSS 22.0.

ANALYSIS AND INTERPRETATION:

(A) Descriptive Statistics

The first part of the analysis deals with descriptive analysis of the study using percentage analysis.

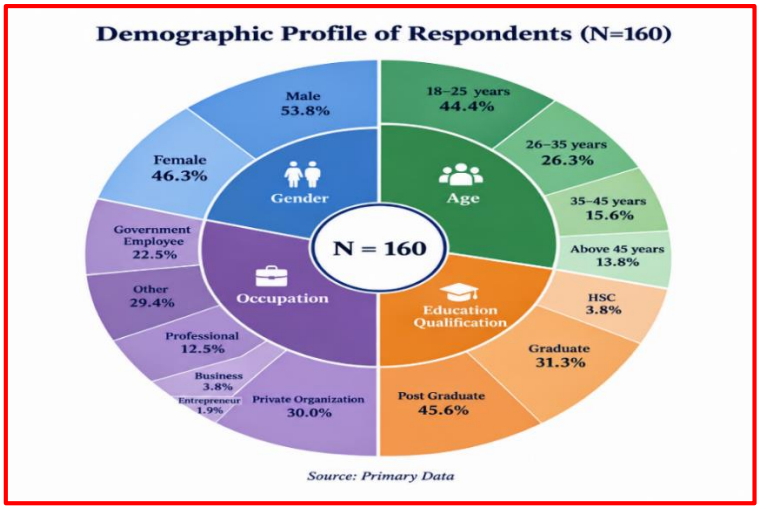
Table 1 Demographic profile of the respondents

Gender	**Count**	**Percentage**
Male	86	53.8%
Female	74	46.3%
Total	**160**	**100.0%**
Age	**Count**	**Percentage**
18–25 years	71	44.4%
26–35 years	42	26.3%
35–45 years	25	15.6%
Above 45 years	22	13.8%
Total	**160**	**100.0%**
Occupation	**Count**	**Percentage**
Government Employee	36	22.5%
Private Organization	48	30.0%
Entrepreneur	3	1.9%
Business	6	3.8%
Professional	20	12.5%
Other	47	29.4%
Total	**160**	**100.0%**
Education Qualification	**Count**	**Percentage**
HSC	6	3.8%
Graduate	50	31.3%
Post Graduate	73	45.6%

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Doctorate	31	19.4%
Total	**160**	**100%**

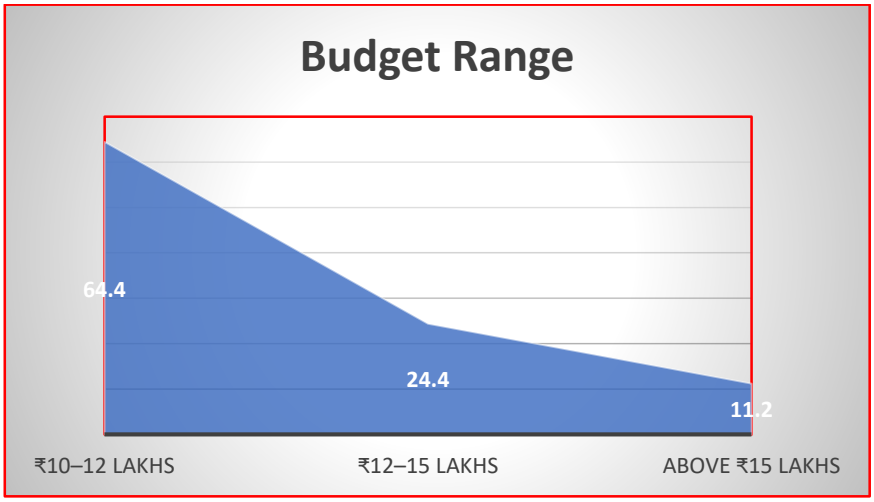
Source: Primary Data



The demographic profile indicates that the sample is predominantly composed of young respondents, with the 18–25 years age group accounting for 41.3% of the sample. In terms of education, Post Graduates represent the largest proportion (41.3%). With regard to occupation, respondents employed in private organizations constitute the largest group (30.0%), while 46.3% of the respondents report a monthly income below Rs.50,000.

The next part of the analysis deals with the inferential analysis to examine the cause-and-effect relationship, association and regression using various statistical tools like ANOVA, Regression and Correlation Analysis.

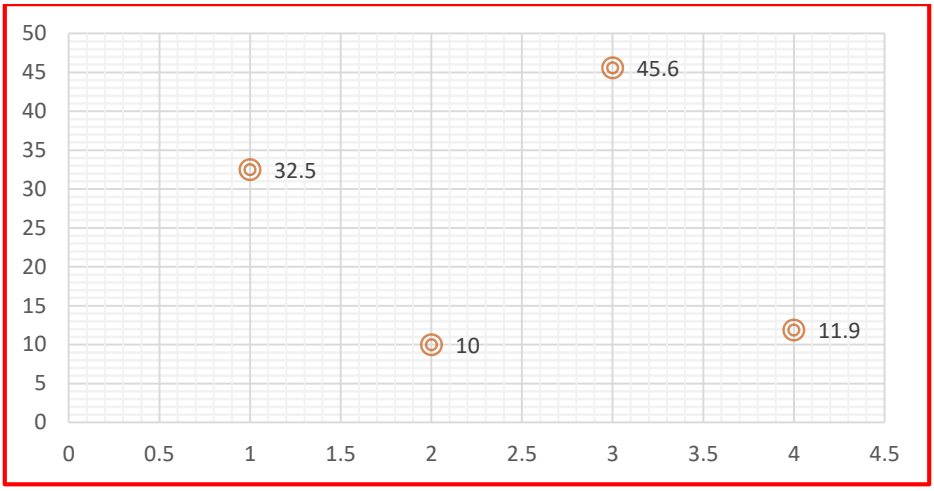
Percentage Analysis of Consumer's Preference in Purchase Decision



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The below chart presents the budget consumer's prefer for hybrid car purchase. The study shows that a majority of respondents (**64.4%**) indicated a budget of ₹10–12 lakhs for purchasing a hybrid car.

Percentage Analysis of Type of Hybrid Car Preferred



The above chart depicts the type of hybrid car preferred. SUV is the most preferred type of hybrid car, selected by 46% of respondents.

Table 2- Distribution of Respondents According to Preferred Fuel Type and Transmission

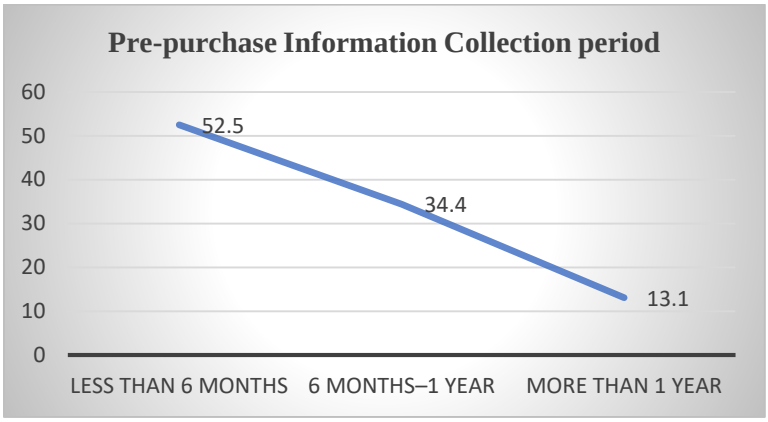
Preferred Fuel Type	Percentage	Preferred Transmission	Percentage
Petrol-Hybrid	50.0%	Automatic	45.6%
Diesel-Hybrid	21.9%	Manual	41.2%
Electric-Hybrid	25.6%	Semi-Automatic	13.1%
Others	2.5%	Others	0.0%
Total	**100.0%**	**Total**	**100.0%**

(Source: Computed Data)

The table shows that Petrol-Hybrid was the most preferred fuel type among respondents, accounting for 50.0%, followed by Electric-Hybrid (25.6%) and Diesel-Hybrid (21.9%). With regard to transmission, Automatic transmission was the most preferred option at 45.6%, followed closely by Manual transmission at 41.2%. Semi-Automatic transmission was preferred by 13.1% of respondents.

Pre-purchase Information Collection Period of Respondents

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The majority of respondents (52.5%) collect pre-purchase information within less than six months. This is followed by 34.4% of respondents who collect information over a period of six months to one year. Only 13.1% of respondents collect information for more than one year. The findings indicate that most respondents undertake their information search within a relatively shorter period before making a purchase decision.

The next part of the analysis deals with the inferential analysis to examine the cause-and-effect relationship, association and regression using various statistical tools like Chi-Square, Regression and Correlation Analysis.

(B) Age Group and Purchase Intention– ANOVA

This part attempts to examine whether consumers' purchase intention towards hybrid cars differs across different age groups.

Null Hypothesis 1: There exists no significant difference in Purchase Intention among different age groups.

Table 3 - Age Group and Purchase Intention– ANOVA

S. No	Factor	Age (in years)								F value	P value
		18-25 years		26-34 years		36-45 years		Above 45 years			
		Mean	SD	Mean	SD	Mean	SD	Mean	SD		
1.	Purchase Intention	3.19	0.586	3.14	0.651	3.37	0.600	3.02	0.622	1.34	0.269

Source: Computed Data

The results revealed that there was no statistically significant difference in Purchase Intention among the four age groups, Welch's $F(3, 59.8) = 1.34$, $p = 0.269$. Since the p-value is greater than 0.05, the null hypothesis is not rejected. Although respondents belonging to the 35–45 years age group recorded the highest mean score (3.37), followed by the 18–25 years age group (3.19), the differences in purchase intention across age groups were not statistically significant. Therefore, age does not significantly differentiate respondents' purchase intention towards hybrid cars in this sample.

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(C) Factors Influencing Hybrid Car Purchase Intention and the Purchase Intention – Correlation

This part of the analysis examines the relationship of the identified factors influencing hybrid car purchase intention and the purchase intention of respondents which are depicted in the following table.

Null hypothesis 2: There is no significant relationship between factors influencing hybrid car purchase intention.

Table 4 – Relationships of factors with Hybrid Car Purchase Intention – Correlation

S.No	Independent Variable	Purchase Intention	
		r value	p-value
1.	Perceived Intention	0.473	< .001
2.	Purchase Attributes	0.392	< .001
3.	Social Reasons	0.211	0.007
4.	Other Variables	0.191	0.015

(Source: Computed Data)

Pearson's correlation analysis was conducted to examine the relationship between the identified independent variables and purchase intention towards hybrid cars. The results indicate that all four factors—Perceived Intention, Purchase Attributes, Social Reasons, and Other Variables—show statistically significant positive partial correlations with Purchase Intention. Among the four factors, Perceived Intention exhibited the strongest partial relationship with Purchase Intention, followed by Purchase Attributes, Social Reasons, and Other Variables. This suggests that higher levels of perceived intention are associated with higher purchase intention towards hybrid cars, even after controlling for the other variables included in the analysis.

(D) Determining Factors Influencing Hybrid Car Purchase Intention – Regression Analysis:

This part of the analysis examines the impact of the identified factors influencing hybrid car purchase intention of respondents which are depicted in the following table.

Null Hypothesis 3: There is no significant impact of factors influencing hybrid car purchase intention and the purchase intention

Table No.5.Model Fit Measures

Model Fit Measures		
R	**R^2**	**Adjusted R^2**

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0.204	0.0415	-0.0111

Source: Computed Data

Table No.6 - Factors influencing purchase intention– Regression

S.No	Factors	Purchase Intention				
		Unstandardized coefficients		Standardized coefficients	t	p
		Beta Value	Std. Error	Beta		
	Constant	0.292	0.3409		0.857	0.393
	X1	0.376	0.0624	0.405	6.024	< .001
	X2	0.222	0.0598	0.251	3.711	< .001
	X3	0.181	0.0616	0.191	2.937	.004
	X4	0.120	0.0571	0.136	2.096	.038

Source: Computed Data

Multiple linear regression analysis was employed to examine the combined influence of the identified factors with Purchase Intention towards hybrid cars. The predicted values of factors are Perceived Intention (X1), Purchase Attributes (X2), Social Reasons (X3), and Other Variables (X4) on Purchase Intention towards hybrid cars.

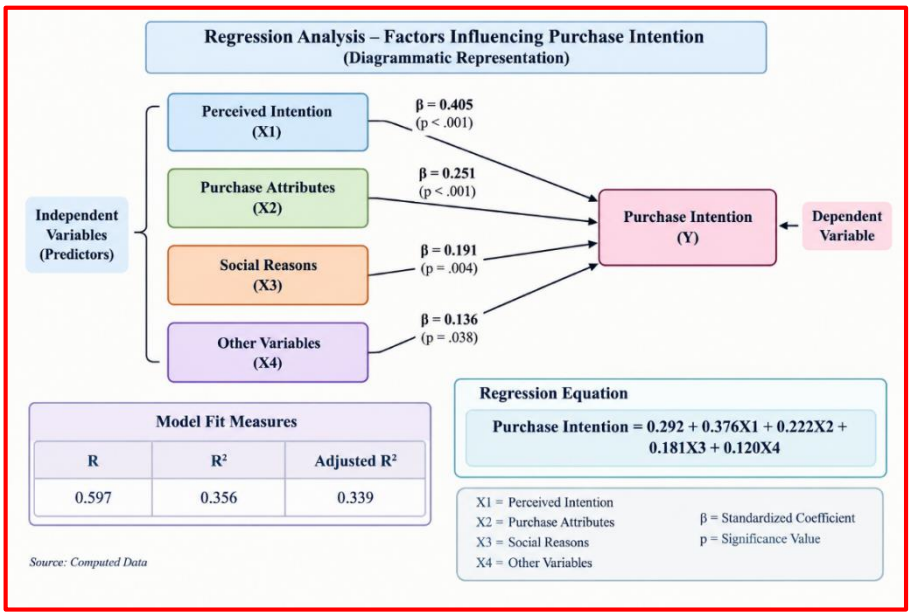
The model yielded an R value of 0.597 and an R^2 value of 0.356, indicating that the four predictors collectively explain 35.6% of the variance in Purchase Intention. The adjusted R^2 was 0.339, indicating that 33.9% of the variance in Purchase Intention is explained after adjustment for the predictors.

Perceived Intention significantly and positively predicted Purchase Intention ($\beta = 0.405$, $p < .001$). Purchase Attributes also had a significant positive influence ($\beta = 0.251$, $p < .001$). Similarly, Social Reasons significantly and positively predicted Purchase Intention ($\beta = 0.191$, $p = .004$), while Other Variables had a positive and statistically significant influence ($\beta = 0.136$, $p = .038$). Among the four predictors, Perceived Intention was the strongest predictor of Purchase Intention, followed by Purchase Attributes, Social Reasons, and Other Variables.

The multiple regression equation is

Purchase Intention = 0.292+0.376X1 +0.222X2 +0.181X3 +0.120X4

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FINDINGS:

The findings show that respondents have a favourable preference towards hybrid cars, with a majority preferring a purchase budget of ₹10–12 lakhs, SUV models, petrol-hybrid fuel types, and automatic transmission. The study also indicates that most consumers undertake their pre-purchase information search within six months, reflecting the importance of timely and accessible information in the hybrid car purchase decision.

The demographic analysis reveals that the sample is largely represented by younger respondents, particularly those in the 18–25 years age group, while postgraduates and private-sector employees constitute significant respondent groups. However, the ANOVA results indicate that purchase intention does not differ significantly across age groups, suggesting that age is not a major differentiating factor in consumers' intention to purchase hybrid cars.

The correlation analysis establishes a significant positive relationship between all the identified factors and purchase intention. Among these factors, perceived intention has the strongest relationship with purchase intention, followed by purchase attributes, social reasons, and other variables. The regression analysis further confirms that all four factors have a significant positive influence on purchase intention. Perceived intention emerges as the strongest predictor, followed by purchase attributes, social reasons, and other variables. Collectively, these factors explain a substantial proportion of the variation in consumers' purchase intention towards hybrid cars.

CONCLUSION

The study concludes that consumers' intention to purchase hybrid cars is shaped more by their perceptions, product-related attributes, and social influences. The findings highlight the need for manufacturers and marketers to strengthen positive consumer perceptions, communicate the functional and economic benefits of hybrid vehicles, and address relevant social and purchase-related considerations. A better understanding of these factors can support effective

marketing strategies and encourage greater consumer acceptance and purchase intention towards hybrid cars.

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