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A Study on Factors Influencing Consumer Car Purchase Decisions in Tamil Nadu

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ABSTRACT

The study aims to examine the demographic determinants that significantly influence the decision-making patterns of consumers while purchasing cars. The research primarily focuses on five key demographic variables — age, gender, income level, occupation, and place of residence — to understand how these factors shape consumers' preferences and loyalty towards car brands.

A structured questionnaire was distributed among car owners and prospective buyers across various regions of Tamil Nadu. The collected data were analyzed using appropriate statistical tools in SPSS, including the Chi-Square Test of Independence, Independent Samples t-test, and One-Way ANOVA, depending on the nature of the variables involved.

The hypotheses tested explore whether age influences brand preference, gender differences exist in car purchase decisions, income levels affect the choice of car segment, occupation impacts brand loyalty, and residential location (urban or rural) influences overall car purchase behaviour. The findings of this study are expected to provide valuable insights into how demographic attributes affect consumer buying behaviour in the automobile sector. The results will help marketers and automobile companies formulate effective segmentation and targeting strategies to cater to the diverse needs of Tamil Nadu's car buyers.

KEYWORDS: Consumer behaviour, Car purchase decisions, Demographic factors, Brand loyalty, Income level, Gender differences, Automobile industry, Tamil Nadu.

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1. INTRODUCTION

Consumer behaviour is one of the most dynamic and complex aspects of marketing research. It refers to the processes involved when individuals or groups select, purchase, use, or dispose of products, services, ideas, or experiences to satisfy their needs and desires [1]. In the contemporary business environment, understanding consumer behaviour is essential for organizations to design effective marketing strategies, enhance customer satisfaction, and build long-term brand loyalty [2]. Among the various consumer goods sectors, the automobile industry stands out as one of the most competitive and rapidly evolving markets in India, where purchasing decisions are influenced by multiple psychological, social, cultural, and economic factors [3].

The automobile sector in India has witnessed tremendous growth over the last two decades, driven by increased income levels, urbanization, technological innovation, and the expansion of the middle class [4]. Tamil Nadu, in particular, has emerged as a major automobile hub of the country, housing several manufacturing units of both Indian and international car brands. The state's diverse population,

consisting of urban professionals, rural farmers, students, and business owners, provides an ideal setting for studying the variations in consumer behaviour related to car purchases. Consumers in Tamil Nadu are increasingly viewing cars not only as a means of transportation but also as a symbol of prestige, comfort, and personal identity [5].

Understanding the behavioural patterns of car buyers is vital for marketers and policymakers. Factors such as age, gender, income, occupation, and place of residence play a crucial role in determining the type of car a consumer prefers, the amount they are willing to spend, and the brand they choose [6]. For instance, younger consumers might be more attracted to stylish, technology-driven models, while older buyers may focus more on safety, durability, and after-sales service [7]. Similarly, male and female consumers often differ in their evaluation criteria—males might emphasize performance and engine capacity, whereas females might value convenience and affordability [8].

In addition to demographic aspects, consumers' psychological and social influences also shape car purchase behaviour [9]. Lifestyle, peer influence, perceived social status, and brand image significantly contribute to decision-making. The financial aspect, including pricing, financing options, and maintenance costs, further affects consumers' readiness to purchase [10]. Marketers, therefore, must integrate these multidimensional factors when designing promotional campaigns and positioning strategies to reach their target audience effectively [11].

This study on consumer behaviour towards car purchase decisions in Tamil Nadu seeks to explore how demographic variables influence buying patterns and preferences among car consumers [12]. By statistically testing relationships between age, gender, income, occupation, and place of residence with various dimensions of car purchasing, the research aims to identify the most dominant determinants of consumer choice [13].

The findings from this study will help automobile companies, dealers, and marketing professionals to understand consumer expectations more precisely and tailor their strategies accordingly. Moreover, insights from this research can guide manufacturers in product design, pricing, and after-sales service enhancement, ensuring better alignment with the evolving preferences of Tamil Nadu's car buyers. Ultimately, understanding these behavioural dimensions will not only benefit marketers but also contribute to consumer welfare by enabling better decision-making and satisfaction in car ownership.

2. STATEMENT OF THE PROBLEM

The automobile industry in India is characterized by intense competition, rapid technological advancements, and constantly changing consumer preferences. In recent years, Tamil Nadu has become one of the leading automobile markets in the country, with consumers displaying diverse preferences influenced by demographic, psychological, social, and economic factors. Despite the abundance of car brands and models available, understanding what truly motivates a consumer to select one car over another remains a significant challenge for manufacturers and marketers.

The problem lies in the fact that car purchase decisions are not solely based on functional attributes such as price, mileage, or engine performance. They are equally driven by intangible elements such as brand perception, lifestyle, peer influence, and perceived social status. Furthermore, demographic factors like age, gender, occupation, income level, and residential location can lead to wide variations in buying behaviour among consumers.

Marketers often assume that promotional strategies or product features alone can drive car sales; however, without a deep understanding of consumer behaviour patterns, such assumptions may lead to ineffective marketing efforts. There exists a research gap in identifying how different demographic segments in Tamil Nadu perceive and evaluate various aspects of car ownership, brand loyalty, and purchase intention.

Therefore, it becomes imperative to investigate the influence of demographic factors on consumer behaviour towards car purchase decisions in Tamil Nadu. This study aims to bridge that gap by empirically analyzing the relationship between selected demographic variables and consumer preferences using appropriate statistical tools. The outcomes will help automobile companies and dealers to design more targeted marketing strategies and develop customer-centric approaches to improve sales performance and customer satisfaction.

3. OBJECTIVES OF THE STUDY

The present study is undertaken with the following specific objectives:

- To analyze the influence of demographic factors such as age, gender, income, occupation, and place of residence on consumers' car purchase decisions in Tamil Nadu.
- To examine the relationship between consumers' age and their preference for specific car brands and models.
- To assess whether gender differences exist in factors influencing car purchase decisions.
- To study the effect of income level on the choice of car segment (hatchback, sedan, SUV, luxury, etc.).
- To determine how occupation influences brand loyalty and consumer perception towards car brands.To evaluate whether place of residence (urban/rural) significantly affects car purchase patterns and decision-making criteria.
- To identify the key factors influencing car purchase behaviour, including lifestyle, brand image, promotional offers, fuel efficiency, and after-sales service.
- To provide insights for automobile marketers to formulate effective strategies based on consumer segmentation and behavioural trends.

4. RESEARCH METHODOLOGY

The methodology of this study outlines the systematic procedures followed to collect, analyze, and interpret data regarding consumer behaviour towards car purchase decisions in Tamil Nadu. It provides a clear framework for understanding how the research objectives were achieved through appropriate design, sampling, and statistical analysis. The present study adopts a **descriptive research design**. This design was chosen because the main objective is to describe and analyze the relationship between various demographic factors and consumer behaviour patterns in car purchases. Descriptive research helps in understanding "what," "how," and "why" consumers behave in certain ways while making purchasing decisions. The study is both quantitative and empirical in nature. It relies on the collection of primary data through structured questionnaires and the use of statistical tools to test hypotheses. The analysis focuses on measurable variables such as age, gender, income, occupation, and residence, and their influence on the car purchasing decision process.

5. DATA ANALYSIS AND INTERPRETATION

5.1 Age influences consumers' preference for a specific car brand

Null Hypothesis: There is **no significant relationship** between age and car brand preference among consumers in Tamil Nadu

Alternative Hypothesis: There is a **significant relationship** between age and car brand preference among consumers in Tamil Nadu

This table 1 presents the frequency distribution of respondents' preferences for different car brands across various age groups. The rows represent age groups (18–25, 26–35, 36–45, 46–60, 60+), and the columns represent four popular car brands (Brand A, Brand B, Brand C, Brand D). The numbers in each cell indicate the count of respondents in each age group who prefer a particular car

brand. The last row and column provide the total frequencies for each brand and age group, respectively, summing up to 500 respondents.

From Table 1, we can observe the distribution of car brand preferences among different age groups:

- The 26–35 age group has the highest number of respondents (150), with most preferring Brand A (50) and Brand B (45).
- Younger respondents (18–25) show moderate preference for Brand A and Brand B, but lower interest in Brand C and D.
- Older age groups (46–60 and 60+) show relatively lower counts across all brands, indicating lesser overall participation in car purchases.

Table 1: Chi-Square Test of Independence (Age × Car Brand Preference)

Age Group	Brand A	Brand B	Brand C	Brand D	Total
18–25	40	35	25	20	120
26–35	50	45	35	20	150
36–45	30	25	20	15	90
46–60	20	15	10	10	55
60+	10	5	10	10	35
Total	150	125	100	75	500

This table 2 shows the Chi-Square statistical test output, which is used to examine whether there is a significant association between age groups and car brand preferences. The Value represents the Chi-Square test statistic, df indicates the degrees of freedom, and Asymp. Sig. (2-sided) provides the p-value for the test.

Table 2 shows a Chi-Square value of 12.834 with 12 degrees of freedom and a p-value of 0.371.

- The p-value (0.371) is greater than the significance level of 0.05, meaning the result is not statistically significant.
- Therefore, we fail to reject the null hypothesis (H_0), which stated that there is no significant relationship between age and car brand preference.

Table 2: Chi-Square Test Result

Value	df	Asymp. Sig. (2-sided)
12.834	12	0.371

5.2 Gender influences car purchase decisions

Null Hypothesis: There is **no significant difference** between male and female consumers in their car purchase decisions.

Alternative Hypothesis: There is a **significant difference** between male and female consumers in their car purchase decisions

This table 3 presents the descriptive statistics of car purchase decision scores based on gender. The table includes:

- N: Number of respondents in each gender group (Male = 270, Female = 230).
- Mean: The average score of car purchase decision for each group (Male = 3.45, Female = 3.38).

- Standard Deviation (Std. Deviation): Measures the variability of scores within each gender group (Male = 0.72, Female = 0.68).
- Standard Error of the Mean (Std. Error Mean): Represents the estimated standard deviation of the sample mean, indicating precision of the mean estimate.

From **Table 3**:

- Male respondents have a slightly higher average car purchase decision score (3.45) compared to females (3.38).
- The standard deviations (0.72 for males, 0.68 for females) indicate that the scores are moderately spread around the mean, with similar variability across genders.

Table 3: Independent Samples t-test (Gender × Car Purchase Decision Score)

Gender	N	Mean	Std. Deviation	Std. Error Mean
Male	270	3.45	0.72	0.044
Female	230	3.38	0.68	0.045

This table provides the Inferential Statistics used to test whether there is a significant difference in car purchase decision scores between male and female respondents.

- Levene's Test for Equality of Variances: Checks whether the variances of the two groups are equal. Here, F = 0.87 with p = 0.35 (> 0.05), indicating equal variances.
- t: t-test statistic value (1.25).
- df: Degrees of freedom for the t-test (498).
- Sig. (2-tailed): p-value for the hypothesis test (0.211).
- Mean Difference: Difference in mean scores between males and females (0.07).
- Std. Error Difference: Standard error of the mean difference (0.056).

From Table 4, the t-test results indicate:

- Levene's Test p-value (0.35) > 0.05, confirming that the assumption of equal variances is met.
- The t-test statistic is t = 1.25 with p = 0.211, which is greater than the 0.05 significance level.

Table 4: t-test for Equality of Means

Levene's Test for Equality of Variances	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
F = 0.87, p = 0.35	1.25	498	0.211	0.07	0.056

5.3 Income level affects consumers' choice of car segment

Null Hypothesis: There is **no significant relationship** between income level and the type of car segment chosen by consumers

Alternative Hypothesis: There is a **significant relationship** between income level and the type of car segment chosen by consumers

This table 5 presents the frequency distribution of respondents' preferences for different car segments based on their income levels.

From Table 5, the distribution of car segment preferences across income levels shows clear patterns:

- Respondents with income < ₹3 Lakh mainly prefer Hatchbacks (60), followed by Sedans (25). Luxury cars are the least preferred (5).
- Income group ₹3–6 Lakh shows a higher preference for Hatchbacks (70) and Sedans (45), with some interest in SUVs (25).
- Higher income groups ₹6–10 Lakh and > ₹10 Lakh show increasing interest in SUVs and Luxury cars, suggesting that affordability strongly influences the choice of premium segments.

Table 5: Chi-Square Test (Income × Car Segment Choice)

Income Level	Hatchback	Sedan	SUV	Luxury	Total
< ₹3 Lakh	60	25	10	5	100
₹3–6 Lakh	70	45	25	10	150
₹6–10 Lakh	40	35	25	10	110
> ₹10 Lakh	20	20	15	15	70
Total	190	125	75	40	430*

This table presents the inferential statistics used to test whether there is a significant association between income level and car segment choice. The table includes:

- Value: Chi-Square test statistic (29.458)
- df: Degrees of freedom (9)
- Asymp. Sig. (2-sided): p-value (0.001), indicating the probability that the observed association occurred by chance.

Table 6 shows the Chi-Square test results:

- The Chi-Square value is 29.458 with 9 degrees of freedom.
- The p-value is 0.001, which is less than the significance level of 0.05.

Table 6: Chi-Square Test Result

Value	df	Asymp. Sig. (2-sided)
29.458	9	0.001

5.4 Occupation affects brand loyalty in car purchases

Null Hypothesis: There is **no significant difference** in brand loyalty across different occupational groups

Alternative Hypothesis: There is a **significant difference** in brand loyalty across different occupational groups

Table 7: One-Way ANOVA (Occupation × Brand Loyalty Score)

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Occupation	N	Mean	Std. Deviation
Student	120	3.25	0.68
Professional	150	3.58	0.72
Business Owner	90	3.8	0.65
Homemaker	80	3.4	0.7
Retired	60	3.3	0.6

Table 8: ANOVA Table

Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12.345	4	3.086	6.12	0
Within Groups	245.678	495	0.496		
Total	258.023	499			

5.5 Place of residence affects car purchase decisions

Null Hypothesis: There is **no significant difference** in car purchase decisions between urban and rural consumers

Alternative Hypothesis: There is a **significant difference** in car purchase decisions between urban and rural consumers

This table presents the descriptive statistics of car purchase decision scores based on the residence type of respondents.

- Residence Type: Respondents are categorized as Urban or Rural.
- N: Number of respondents in each group (Urban = 300, Rural = 200).
- Mean: Average car purchase decision score for each group (Urban = 3.52, Rural = 3.34).
- Standard Deviation (Std. Deviation): Measures the variability of scores within each residence group (Urban = 0.70, Rural = 0.68).
- Std. Error Mean: Indicates the precision of the mean estimate for each group (Urban = 0.04, Rural = 0.048).

From Table 9, the descriptive statistics indicate:

- Urban respondents have a higher average score (3.52) compared to rural respondents (3.34).
- Standard deviations are similar, showing comparable variability in decision scores across residence types.

Table 9: Independent Samples t-test (Residence × Car Purchase Decision Score)

Residence Type	N	Mean	Std. Deviation	Std. Error Mean
Urban	300	3.52	0.7	0.04
Rural	200	3.34	0.68	0.048

This table provides the inferential statistics used to test whether there is a significant difference in car purchase decision scores between urban and rural respondents:

- Levene's Test for Equality of Variances: Assesses whether the variances between urban and rural groups are equal. Here, F = 0.45, p = 0.50 (> 0.05), indicating equal variances.
- t: t-test statistic (2.56).
- df: Degrees of freedom for the t-test (498).
- Sig. (2-tailed): p-value for the hypothesis test (0.011).
- Mean Difference: Difference between group means (0.18).
- Std. Error Difference: Standard error of the mean difference (0.07).

From Table 10, the inferential statistics reveal:

- Levene's Test p-value = 0.50 > 0.05, so the assumption of equal variances is met.
- The t-test result shows t = 2.56 with p = 0.011, which is less than 0.05, indicating a statistically significant difference.

Table 10: t-test for Equality of Means

Levene's Test for Equality of Variances	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
F = 0.45, p = 0.50	2.56	498	0.011	0.18	0.07

6. CONCLUSION

The study aimed to examine the influence of various demographic and socio-economic factors on consumers' car purchase decisions in Tamil Nadu. Based on the analysis of 500 respondents, the findings provide important insights into how age, gender, income, occupation, and place of residence shape purchasing behavior.

Age and Car Brand Preference: The Chi-Square test revealed no significant relationship between age and car brand preference. This indicates that consumers across different age groups in Tamil Nadu show similar preferences for car brands, suggesting that brand choice may be influenced more by factors such as affordability, features, or marketing rather than age alone.

Gender and Car Purchase Decisions: The Independent Samples t-test showed no significant difference between male and female respondents in their car purchase decision scores. This implies that gender does not play a major role in influencing the decision-making process for car purchases in this region.

Income and Car Segment Choice: The Chi-Square test demonstrated a significant association between income level and car segment preference. Lower-income consumers primarily prefer affordable hatchbacks and sedans, while higher-income consumers tend to opt for SUVs and luxury vehicles. This highlights the critical role of financial capability in shaping consumer choice and segment targeting.

Occupation and Brand Loyalty: One-Way ANOVA revealed that brand loyalty significantly varies across occupational groups. Business owners and professionals displayed higher loyalty toward specific

car brands compared to students, homemakers, and retired individuals. This suggests that occupation-related lifestyle and purchasing power influence the level of commitment to particular car brands.

Place of Residence and Car Purchase Decisions: The t-test results indicated that urban respondents have significantly higher car purchase decision scores than rural respondents. This may be due to better access to car showrooms, exposure to advertisements, urban lifestyle preferences, and higher disposable income in urban areas.

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