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Factors influencing consumer decision to purchase a car

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FACTORS INFLUENCING CONSUMER DECISION TO PURCHASE A CAR

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Abstract: *This study is conducted to understand consumers' preferences with different demographic variables on their car purchase decision based on features the car offers and the cost consciousness variables considered mainly by consumers, as suggested by previous studies on this topic. The judgmental survey method was used for this research using a structured & non-disguised questionnaire to collect the responses. The pilot survey was used to understand the instrument's reliability and validity total of 200 respondents were contacted, but 143 responses were received. The response rate was almost 72% of the reached respondents. But, only 103 usable responses were considered for analysis as there were 40 responses found not to be a worthwhile while. 13 were inconsistent with their answers, 22 had missing values with essential questions, and the remaining 5 were outliers in their response. The shortlisted sample size (with almost 50% responses) is adequate for this type of research. Factor analysis with PCA is performed to group the variables and define the dependent variables for this study. The two dependent variables were defined from this. They are described as features of the cars and cost consciousness. Then ANOVA is used to get p-values for the regression scores of the independent demographic variables to understand the impact. The findings of this study show that none of the essential demographic variables of consumers (here gender, education, occupation and age) has shown a significant impact with features and cost consciousness as dependent variables in car purchase decisions. These findings contradict the studies done in the past. It is find from this study, that the consumers are more fashion-conscious and environmentally conscious than cost-conscious. This result may be because of the characteristics of the sample, which shows that there is no significant impact of any of the demographic variables on the car purchase decision based on the feature of the car as well as cost-consciousness factors like resale value, maintenance and fuel. The results of this study may change if the sample contains equal percentages of the consumers for all the demographic factors. The results may vary if the sample has more part-time employees and other types such as students, retired and unemployed.*

Keywords: automotive industry, car purchase decision, demographic variables of consumers, features of the car, cost consciousness of the consumer.

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Introduction. Indian auto sector contributes around 49 percent to India's Manufacturing GDP, as mentioned by all industry reports (Auto PunditZ, 2022). This sector has been one of the leading driving forces for the Indian Economy for the last 25 years. This sector contributes around 7.5 percent to the GDP, which is said to be a growth engine for the Economy. After two years of the pandemic, the Indian automotive industry has seen notable growth during the financial year 2021-22. The CAR sector in India has registered an increase of 26.4 percent in August 2022 as against August 2021 mentioned in automotive sales reports (Auto PunditZ, 2022). This growth will continue in festive seasons across India and will surely reach the highest towards this year-end. Indian consumers will continue to purchase cars despite the shift towards shared mobility worldwide. The car purchase decision of Indian people varies with demographic variables like gender, education, occupation, and age (Dhanabalan et al., 2018).

Two decades back, purchasing a car in India was considered a luxury. However, today car has become one of the essential family members and is almost a necessity for every family in tier 1, tier 2, and even tier 3 cities. The reasons are many, but the most important is the increasing salaries of young people. This young population prefers buying a car first rather than going home, which was not the situation a few decades back (Anable, 2005). The other most important reason is the availability of many easy loan options with affordable interest rates. The number of working females is also increasing in these cities, and they feel more secure and comfortable in their car than by public transport like City Bus, Metro, or OLA/UBER rental options (Koppel et.al. 2008; Wells et al. 2020) Their salaries are also at par with their male counterparts in most private jobs. Hence, they have the same buying power as males, which was not the case in India. The primary reason for buying a car for the older population in India is because their kids are in the IT industry, and they don't have any responsibility and expenses towards such kids. Another way the kids support and suggest going for sedan cars is for their parents. Another point of this increase in car purchases is that many options are available in the car segment based on the need of all category consumers (Lee et al., 2019; Gaofeng et al., 2021).

In India, the study shows that "Hatchbacks and Sedans" are general categories of cars among Indian buyers. Based on parameters like comfort you get in the vehicle during driving, the size of the car, technology to support in traffic and during parking, price of the car, and most common fuel economy, there are differences between these two types of cars available in the market. These factors play a decisive role in consumers' purchase of the car by different age groups. The research reports show that females and young consumers prefer the Hatchback while older ones like the sedan segment. But here, one should note that after exponential growth from 0 to 25% CAGR from the year 2000 to the year 2011, Indian luxury-sedan segment car sales are showing a sharp decrease from CAGR of 25% in 2011 to 14% in the year 2021 as reported by Auto PunditZ study (Punditz, 2018). The main reason may be decreasing Rupee value and hence are exposed to foreign billing currency fluctuations. These cars come either through the CKD (completely knocked down) or the CBU (entirely built unit) import route, which has complications.

What was mentioned as "Impossible" three years back is now happening in India. Electric car sales are rising fast than predicted in the Indian car market. The obstacles are slowly being removed, and owning and driving an EV is very practical now in the cities. A research study claims that these cars offer fuel efficiency and reduce pollution. In September 2022, the total electric car sales were 3,419 units per the report, indicating a YoY growth of 172 percent. If it is measured on a MoM basis, it's a growth of 5.62 percent, which is reasonably good as the EV is very new in the market. We can say that the increase in EV adoption is improving and cannot be labeled a failure.

But the situation across the world is not very promising. It is showing negative trends as supported by current industry and research studies. The McKinsey report on «Automotive revolution – perspective towards 2030» states that «Consumer Mobility Behavior (CMB)» is shifting very fast toward shared mobility. «Fit for the Purpose» agile mobility services are preferred by most consumers worldwide. Moody's Sept. 2022 report also has changed its rating for the global automotive industry from negative to stable due to the improving macroeconomic situations and increasing consumer demands worldwide. These outlooks and trends are creating many challenges for the automotive sector worldwide. Thus, even if the current situation in India promises good prospects, there is a need for research to study any silent shifts in consumer preferences. Any hidden patterns about choices of the age groups and find new variables, if any, coming out which are popping up to influence the Indian consumer car purchase decisions.

Buying a car was a family decision a few years back in India. However, studies show that it is now individual for unmarried and understand the life partner choice for married Indian consumers. The objective of this research is to comprehend such new trends from Indian consumers regarding car purchases and how the car's features and cost of ownership impact the choice of the car. This research compares features of the car using two factors derived after factor analysis. It compares them against the consumers' demographic

characteristics using ANOVA to understand the new segments or patterns in car purchase decisions. This study is a unique, original study conducted, which adds value to the topic as it disproves the existing theories, models, or results from the literature on factors influencing car purchase decisions which are mainly based on demographic variables and the decisions taken for a car purchase. The results of this study indicate that consumers' decision-making approach is changing in this technology-driven world. They are well-thought-off and fully planned when going for purchasing a new car for the family. The demographic factors are now less influencing or not influencing at all when selecting a car having many advanced and technological features. These consumers are now becoming more fashion-conscious and environmentally conscious than cost-conscious, as seen from this study.

Literature Review. Car purchase and car ownership are always a topic of attention for policymakers, manufacturers, dealers, and academic researchers. Lefebvre first mentions «CAR as a modern transport system» in his research article in 1971. He said that «cars have become the focus, and they are the leading entity of the modern transport system in all countries of the world». Thus, from 1971 till today, «CAR» has been the leading transport system in most developing and developed countries. Car ownership has become the status symbol linked to social prestige, rich and poor classification, and a better lifestyle (Chen et al., 2020; Prieto & Caemmerer, 2013). Also, the findings of all such studies are proved to be very helpful and relevant to the auto industry for establishing their growth strategies. These results are also fruitful for public administrators in planning the city traffic, controlling pollution, and other related issues impacting day-to-day human life (Koppel et al., 2008). Most studies focus exclusively on the factors influencing car purchase decisions (Nezakati et al., 2011; Lin and Wu, 2018; Lee et al., 2019). The factors are mainly social environment, lifestyle, family culture, festival time and mega-events, car use, and money availability. Some recent qualitative studies, like (Fronteli and Pacheco, 2022), have classified such factors into enablers or barriers. These classified factors can also be divided into personal, cultural, political, economic, technological, and environmental based on the attribute they are associated with for better insights and result. Along with the education level of the head of the family has significant effect on car purchase decision (Dong et al., 2020). The study by (Gaofeng et al., 2021) presents a model that observes the effect of "socio-demographics and life course events" on car purchase behavior. The car purchase decision-making process is always intricate and multi-layered and will remain the same hot in the future. Anable (2005), study the attitude and behavior of consumers while purchasing a car and find that the personal characteristics of the consumer have major influence. Trivedi and Kishore (2020) conducted a study on brand love and brand attitude and find that consumer purchase intention is significantly influenced by the brand of the car.

The popularity and sales of electric cars are also increasing with unexpected growth. The Battery electric vehicle (BEV) car sale in Norway reached 48% market segment of latest cars traded in the first quarter of 2019, per the Norwegian Electric Vehicle Association report. The overall market share of electric vehicles is less than 4% in 2020 (IEA report, 2020) across the world. However, all automotive OEMs' moves show that the powertrain technology shift is happening within the next decade. Policymakers and car manufacturers across the globe are interested to understand the «EV user group», which they call «early adopters», to push sales exponentially. The framework presented by (Fevang et al., 2021) from Norway shows that Battery electric vehicle (BEV) ownership is increasing based on factors like wealth, income, and education of the consumers. This study is important because Norway has the highest population of private car owners and the highest market segment of low-emission vehicles. This result shows that socio-economic characteristics are strong predictors of the car portfolio. Like Norway, the private BEV buyers in Germany are "middle-aged men with technical professions" living in rural or suburban "multi-person households", as explored by (Plotz et al., 2014). They possess an ample amount of vehicles in Germany. The reason behind buying is to profit from the economic benefits as their annual vehicle kilometers travelled or their inner-city driving is very high, and BEV cars are more economical than other types for them.

Schulz and Rode (2022) research study identifies that public charging infrastructure served as an impetus for improving the sales of battery electric vehicles in Norway. Today, Norway is a worldwide antecedent in the field of electromobility. The biggest motivation for pushing BEV cars into the markets is to reduce emissions from privately-owned cars, which is also a point of attraction for most countries to help achieve the targets set for global greenhouse gas emissions. Electrification has been one approach to meet this purpose, as the research done by (Ingeborgrud & Ryghaug, 2019) suggests. This research also argues that «the combination of the economic and symbolic value of incentives» and «the technical and practical dimensions» of BEVs are of the same importance as growing environmental concerns for the success of BEVs sales in Norway. Mukherjee and Ryan (2020) also conducted a study on Irish BEV owners and find a very low rate of adoption of BEV by the suburban part of people having higher income, age, educational level, social status,

and home ownership. William et al. (2022), conducted a study on different factors that influences customer purchase intention and find that environmental concern, customer knowledge, attitude, and government policy affect the customer purchasing decision. Xie et al. (2022), conducted a study on Beijing and find innovation effect the intention of consumer, environmental consciousness also has a significant effect on perceived risk and technology compatibility.

Wells et al. (2020), have examined the scope for network platform business models offering automobility-as-a-service (AAAS like OLA and UBER), which seems to sabotage the current automotive market, but the results were not favorable as per this study. It is suggested that consumers will be attracted to owning a car once in a lifetime rather than using the AAAS platforms. The consumer prefers AAAS platforms for some time/some events/some areas where there are issues like Traffic, Congested Geography, or Personal Health related problems. The developments referencing sustainable agile mobility services; new mobility models; personalized buyer comfort and effective-time integrated communication, efficient global traffic, and integrated inner-city travel arrangements may impact the trend of owning a car but cannot be termed disruptive soon.

The results of a qualitative research study by (Koroth et al., 2019) from Poland university contradict the results of (Wells et al., 2020). Their research was done by interviewing eight top-level authorities from the automotive industry, and the study reveals three perspectives on this subject. First is the rising popularity of battery electric vehicles, second is the rising demand for autonomous cars, and the third is the increasing trend of service mobility which impacts the dealership model of retailing. This outcome shows that more innovative car subscription models and the need for lower maintenance for consumers will considerably reduce the importance of dealerships. But the limitation of this study is how eight people can decide the changing trends and preferences of consumers worldwide, even if they are the highest authorities from industries. These results may be valid for the specific geographies of these experts. Also, as Hopp et al. (2018), argued, most of this research primarily relies on the experts' predictions and not much on current consumer responses; hence there is always the possibility of failing such results in other contexts, regions, or situations. Westin et al. (2018), conducted a study on EV in Sweden and finds that age and educational level have a positive impact on EV ownership, and residential areas and neighbourhood also affect in adoption of EV.

Table 1 below imparts a brief summary of the CAR Purchase decisions and Influencing factors found in the other select research studies from 2005 to 2022.

Table 1. Influencing factors on car purchase

Year	Authors	Influencing Factors
2022	Williams et.al.	Environmental Concern, Consumer knowledge, attitude, purchase intentions and government policy
2022	Xie et.al.	Innovation characteristics like "Fashion consciousness, Environmental consciousness and Price consciousness" employ an evident effect on purchase objectives based on the intervening variable of perceived risk.
2020	Chen et.al.	Six aspects relating to socio-demographic, technology, economical, and behavioral factors
2020	Dong et.al.	Gender, age, education level of family and particularly education level of the Head of the family has significant influence on purchase decision.
2020	Mukherjee & Ryan	demographical and neighborhood features such as public charging infrastructure or dealers in the area are influencing factors for BEV cars adoption.
2020	Abu-Alkeir et. al.	Price, prominence of the manufacturer, Fuel economy on purchase intent.
2020	Trivedi & Kishore	Online reviews, vivacity, and accessibility are the top three factors that influence consumers' brand attitudes. This results in brand love and further car purchase intentions.
2019	Lee et.al.	Demographics include age, sex, educational status, and earnings; experiences with technology in general, as well as technology-driven current vehicles; and media coverage.
2019	Zhuge & Shao	Prices and usage of vehicles tend to be more influential among the six factors from socio-demographic features, such as individual earnings and educational level etc.

Continued Table 1

Year	Authors	Influencing Factors
2018	Lin, B., & Wu	Demographic variables such as sex, age, and marital level have a considerable impact, along with behavioral element such as reasonable price, public subsidies, vehicle performance, and environmental issues are also important for the decision.
2018	Darshan	Socio-demographic characteristics of the participants along with internet and social media resources are prominent factors in the purchasing decision.
2018	Westin et.al.	Social and economic features, attitudinal factors, and environmental issues.
2018	Kowang et.al.	Car Purchase Intention, Price, Aesthetic, Features of the car, Interpersonal Influences have significant effect.
2018	Dhanabalan et. al.	Customer perceived value was positively influenced by brand, price, quality, design, utility, technical consideration.
2017	Jansson et.al.	Personal norms, social norms, ecological attitudes, interpersonal influence and attitudinal factors as drivers for adoption.
2017	Egbue et.al.	Demographic determinants as well as behavioral and attitudinal measures that affect individual adoption
2016	Kiran, Prabha & Shanmugam	Social media information about Economical, Functional and Psychological factors have significant impact.
2015	Teoh & Mohd	Functional value, characteristic value, sentimental significance, novelty value and conditional value with consumers' intention to purchase a hybrid car.
2013	Nayum et. Al.	Social and demographic, and intellectual variants explain purchases of new cars.
2013	Prieto & Caemmerer	Economic, individual, household characteristics impact on car segment choice.
2013	Hong et.al.	Attitudinal factors and perceived behavioral control are important elements for the adoption of hybrid vehicles.
2011	Nezakati et.al.	Consumer based-factors like price, quality, value, risk, beliefs, and perception has significant impact on the decisions.
2011	Sung-Sheng & Wei-Hung	perceived value, purchase intention has significant impact on the decisions.
2011	Peters et.al.	Attitudinal aspects and behavioral control directly influence purchase behavior. Problem awareness, symbolic motives, and response potency are indirect predictors found in this study.
2008	Koppel et.al.	Age, gender, and country's road safety significantly influence the car type purchase decision.
2008	Potoglou & Kanaroglou	social, economic, and demographic features of households that effect the level of car ownership in a metropolitan area of Canada
2005	Anable	Socio-demographic factors had little bearing but personal characteristics play an influential role.

Sources: developed by the authors.

The following objectives are framed for the study from the above literature review and the need identified for further research about these universal issues.

1. To analyze the effects of the gender of the consumer on the car purchase decision.
2. To analyze any influence of education of the consumer on a car purchase decision.
3. To analyze the effect of occupational diversity on the car purchase decision.
4. To analyze the influence of the consumer's age on a car purchase.

Based on the objectives of the study, eight hypotheses were framed for this research study, which is as follows:

- Hypothesis 1a. There is a significant difference in the car purchase decision considering features the car offers based on the gender of the consumer.
- Hypothesis 1b. There is a significant difference in the car purchase decision considering cost consciousness based on the gender of the consumer.

- Hypothesis 2a. There is a significant difference in the car purchase decision considering the features the car offers based on the consumer's education.
- Hypothesis 2b. There is a significant difference in the car purchase decision considering cost consciousness based on the consumer's education.
- Hypothesis 3a. There is a significant difference in the car purchase decision considering features the car offers based on the consumer's occupation.
- Hypothesis 3b. There is a significant difference in the car purchase decision considering cost consciousness based on the consumer's occupation.
- Hypothesis 4a. There is a significant difference in the car purchase decision considering features the car offers based on the consumer's age.
- Hypothesis 4b. There is a significant difference in the car purchase decision considering cost consciousness based on the consumer's age.

Methodology and research methods. For this research study, the judgemental sampling method was deemed fit. A survey was conducted using a structured & non-disguised questionnaire to obtain the responses. A filter question was used to find the appropriateness of the respondents. The survey instrument, a questionnaire, was used after checking the reliability and validity through a pilot survey (50 respondents). The pilot survey established that the reliability and validity were adequate. Post finalizing the survey instrument, 200 respondents were contacted, out of which 143 responses were received. After removing responses with too many missing values, multi-variate outliers, and too many consistent responses, 103 usable responses were available for analysis. Careful consideration was given to collecting responses from different sections of society, improving the generalizability of results, as shown in Table 3.

Structured equation modelling (SEM) does not have a set formula for selecting the ideal sample size. However, a number of studies provided a variety of recommendations, such as a sample size of 100 or 200 (Boomsma, 1985), 5 or 10 observations per estimated parameter (Bentler & Chou, 1987; Bollen, 1989), or 10 respondents per item (Nunnally & Bernstein, 1994). For this study, if we choose 10 respondents for each item, we would require a minimum of 80 replies because the scale had 8 variables. The sample size is kept above 100 in order to justify the requirement of EFA for an item to respondent ratio of a minimum of 10, as accepted in the existing literature.

The collected responses were checked for reliability using Cronbach's alpha, shown in Table 2. Initially, factor analysis, a dimension reduction technique, was used to understand the grouping of variables, and the groups formed were named accordingly. While running the factor analysis, the regression scores were saved. An attempt was made to understand the differences in preferences between different respondents for these regression scores obtained using factor analysis; therefore, an analysis of variance (ANOVA) was run.

Table 2. Reliability analysis

Cronbach's Alpha	No. of Items
0.886	16

Sources: developed by the authors.

The reliability is established for scale, as Cronbach's Alpha is above the threshold value of 0.7 (Nunnally and Bernstein, 1994). Additionally, the reliability of the scale items is also checked, which was found to be higher than the threshold value of 0.7 (Nunnally and Bernstein, 1994).

Demographic Characteristics. The following Table 3 exhibits the demographic characteristics of the sample.

Table 3. Demographic characteristics

		Frequency	Percent	Valid Percent	Cumulative Percent
Gender	Male	75	72.8	72.8	72.8
	Female	28	27.2	27.2	100.0
	Total	103	100.0	100.0	
Education	10 th /12 th (SSC/HSC)	1	1.0	1.0	1.0
	Graduate general like BA, BCom	29	28.2	28.2	29.1
	Post Graduate general like MA, M. Com	17	16.5	16.5	45.6

Continued Table 3

		Frequency	Percent	Valid Percent	Cumulative Percent
Education	Graduate Professional like B Tech, B Arch, BDS etc.	30	29.1	29.1	74.8
	Post graduate professional like M Tech M Arch, MBBS, CA etc	26	25.2	25.2	100.0
	Total	103	100.0	100.0	
Occupation	Full-time employee	45	43.7	43.7	43.7
	Part-time employee	7	6.8	6.8	50.5
	Unemployed	2	1.9	1.9	52.4
	Self-employed	39	37.9	37.9	90.3
	Student	8	7.8	7.8	98.1
	Retired	2	1.9	1.9	100.0
	Total	103	100.0	100.0	
Age	Less than 25 Years	8	7.8	7.8	7.8
	25-30 years	42	40.8	40.8	48.5
	31-35 years	22	21.4	21.4	69.9
	36-40 years	10	9.7	9.7	79.6
	41-45 years	7	6.8	6.8	86.4
	46-50 years	5	4.9	4.9	91.3
	Above 50 years	9	8.7	8.7	100.0
	Total	103	100.0	100.0	
Type Own	Hatchback	44	42.7	42.7	42.7
	Sedan	33	32.0	32.0	74.8
	SUV	24	23.3	23.3	98.1
	Van/ MUV	2	1.9	1.9	100.0
	Total	103	100.0	100.0	
Types Future	Hatchback	7	6.8	6.8	6.8
	Sedan	29	28.2	28.2	35.0
	SUV	62	60.2	60.2	95.1
	Sportscar/ Coupe	5	4.9	4.9	100.0
	Total	103	100.0	100.0	
Budget	Less than 10 Lacs	7	6.8	6.8	6.8
	10-15 Lacs	19	18.4	18.4	25.2
	15-20 Lacs	35	34.0	34.0	59.2
	20-25 Lacs	12	11.7	11.7	70.9
	25-30 Lacs	15	14.6	14.6	85.4
	30 Lacs and above	15	14.6	14.6	100.0
	Total	103	100.0	100.0	

Sources: developed by the authors.

The following section highlights the dimension reduction technique and factor analysis. In order to check whether data is fit for running the factor analysis, KMO and Bartlett's test of sphericity was assessed, which is depicted in Table 4.

Table 4. KMO and Bartlett's test

Parameters		Value
Kaiser-Meyer-Olkin		0.792
Measure of Central tendency		
Bartlett's Test of Sphericity	Approx. Chi-square	281.268
	Df	28
	Sig	0.00

Note: Df, sig signifies the Degree of freedom and significance p-value, respectively.

Sources: developed by the authors.

The value of KMO & Bartlett's test is following the threshold value of 0.6 and 0.05, respectively, establishing the sampling adequacy. The following Table 5 depicts the variance explained.

Table 5. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Square Loadings			Rotation Sums of Squared Loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	3.52	43.95	43.95	3.52	43.95	43.95	2.73	34.09	34.09
2	1.55	19.41	63.37	1.55	19.41	63.37	2.34	29.28	63.37
3	0.71	8.84	72.21						
4	0.60	7.55	79.75						
5	0.47	5.94	85.69						
6	0.44	5.55	91.24						
7	0.43	5.33	96.57						
8	0.27	3.43	100.00						

Extraction Method: Principal Component Analysis.

Sources: developed by the authors.

The number of factors having eigenvalue greater than one is two, explaining a total of 63 percent of the variance. This explains that more than 63 percent of the variance in the data is explained by two factors (dimensions), meaning two factors sufficiently represent the variables.

Table 6. Rotated Component Matrix

	Component		Composite Reliability (CR)	Average Variance Extracted (AVE)
	1	2		
Compromise_5Star	0.806			
Driving	0.780			
Compromise_Engine	0.778		0.863	0.611
Safety	0.761			
Maintenance		0.837		
Resale		0.832		
Fuel		0.669	0.825	0.546
Low-Price		0.586		

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Sources: developed by the authors.

The above Table 6 depicts that components, i.e., Compromise_5Star, Driving, Compromise, Engine, and Safety, were loading on component 1. Whereas, Maintenance, Resale, Fuel, and Low-Price were loading on component 2. Depending on the variables loading on components 1 and 2, they can be labelled as «Features» and «Cost consciousness», respectively.

Composite Reliability (CR) and Average Variance Extracted (AVE). The composite reliability is a measure of how well latent variables mirror the component, and the average variance extracted is a measurement of the amount of variance captured by the construct in relation to the amount of variance originating from measurement error. Table 6 above depicts the values of CR and AVE for the factors, and the values follow current guidelines provided in the literature (Hair et al., 2014). The CR and AVE values, which are greater than threshold values of 0.7 and 0.5, respectively (Fornell and Larcker, 1981), denote that composite reliability for the factors, i.e., «Features» and «Cost Consciousness» are represented by the variables/items adequately.

ANOVA. The following section explains the multiple ANOVA test run with Reg. factor score (from factor analysis) as a dependent variable and demographic variables, i.e., Gender, Education, Occupation, and Age, as independent variables.

ANOVA with Features as dependent variable and gender as independent (grouping) variable. Table 7 and Table 8 show the result of the ANOVA test run with a regression score of factor no. 1, i.e., Features as a dependent variable and gender as a grouping variable.

Table 7. Test of Homogeneity of Variances

		Levene Statistics	Df1	Df2	Sig.
REGR factor score 1 for analysis 1	Based on Mean	0.004	1	101	0.951
	Based on Median	0.195	1	101	0.660
	Based on Median and with adjusted df	0.195	1	88.630	0.660
	Based on trimmed mean	0.000	1	101	1

Note: Df1, Df2, sig, and REGR signify the Degree of freedom 1, degree of freedom 2, significance p-value, and regression, respectively.

Sources: developed by the authors.

Table 8. ANOVA

REGR factor score 2 for analysis 1					
	Sum of Square	Df	Mean Square	F	Sig.
Between Groups	1.939	1	1.939	1.957	0.165
Within Groups	100.061	101	0.991		
Total	102.000	102			

Note: Df, F, Sig, REGR signifies the Degree of freedom, F-test, significance p-value, and regression respectively

Sources: developed by the authors.

As shown in Table 8, the p-value is $0.165 > 0.05$, explaining that there is not enough evidence to explain the differences, meaning there is no significant difference in the regression score for features among male and female respondents.

ANOVA with Cost Consciousness as dependent variable and gender as independent (grouping) variable. The following Table 9 and Table 10 exhibit the result of the ANOVA test run with a regression score of factor no. 2, i.e., Cost consciousness as a dependent variable and gender as a grouping variable.

Table 9. Test of Homogeneity of Variances

		Levene Statistics	Df1	Df2	Sig.
REGR factor score 2 for analysis 1	Based on Mean	0.080	1	101	0.778
	Based on Median	0.051	1	101	0.822
	Based on Median and with adjusted df	0.051	1	100.830	0.822
	Based on trimmed mean	0.070	1	101	0.791

Note: Df1, Df2, sig, and REGR signify the Degree of freedom 1, degree of freedom 2, significance p-value, and regression, respectively.

Sources: developed by the authors.

Table 10. ANOVA

REGR factor score 2 for analysis 1					
	Sum of Square	df	Mean Square	F	Sig.
Between Groups	.264	1	0.264	0.262	0.610
Within Groups	101.736	101	1.007		
Total	102.000	102			

Note: Df, F, Sig, REGR signifies the Degree of freedom, F-test, significance p-value, and regression respectively

Sources: developed by the authors.

As shown in Table 10, the p-value is $0.610 > 0.05$, explaining that there is not enough evidence to explain the differences, meaning there is no significant difference in the regression score for cost consciousness among male and female respondents.

ANOVA with Features as the dependent variable and education as the independent (grouping) variable. Table 11 and Table 12 show the result of the ANOVA test run with a regression score of factor no. 1, i.e., Features as a dependent variable and education as a grouping variable.

Table 11. Test of Homogeneity of Variances

		Levene Statistics	Df1	Df2	Sig.
REGR factor score 2 for analysis 1	Based on Mean	1.630	3	98	0.187
	Based on Median	0.709	3	98	0.549
	Based on Median and with adjusted df	0.709	3	91.900	0.549
	Based on trimmed mean	1.596	3	98	0.195

Note: Df1, Df2, sig, and REGR signify the Degree of freedom 1, degree of freedom 2, significance p-value, and regression, respectively.

Sources: developed by the authors.

Table 12. ANOVA

REGR factor score 2 for analysis 1					
	Sum of Square	Df	Mean Square	F	Sig.
Between Groups	.264	4	1.428	1.454	0.222
Within Groups	101.736	98	0.983		
Total	102.000	102			

Note: Df, F, Sig, REGR signifies the Degree of freedom, F-test, significance p-value, and regression respectively

Sources: developed by the authors.

As shown in Table 12, the p-value is $0.222 > 0.05$, explaining that there is not enough evidence to explain the differences, meaning there is no significant difference in the regression score for Features among respondents with different educational backgrounds.

ANOVA with Cost Consciousness as the dependent variable and education as the independent (grouping) variable. Table 13 and Table 14 show the result of the ANOVA test run with a regression score of factor 2, i.e., Cost consciousness as a dependent variable and education as a grouping variable.

Table 13. Test of Homogeneity of Variances

		Levene Statistics	Df1	Df2	Sig.
REGR factor score 2 for analysis 1	Based on Mean	0.522	3	98	0.668
	Based on Median	0.362	3	98	0.781
	Based on Median and with adjusted df	0.362	3	97.048	0.781
	Based on trimmed mean	0.495	3	98	0.687

Note: Df1, Df2, sig, and REGR signify the Degree of freedom 1, degree of freedom 2, significance p-value, and regression, respectively.

Sources: developed by the authors.

Table 14. ANOVA

REGR factor score 2 for analysis 1					
	Sum of Square	Df	Mean Square	F	Sig.
Between Groups	4.104	4	1.026	1.027	.397
Within Groups	97.896	98	.999		
Total	102.000	102			

Note: Df, F, Sig, REGR signifies the Degree of freedom, F-test, significance p-value, and regression respectively

Sources: developed by the authors.

As shown in Table 14 the p-value is $0.397 > 0.05$, explaining that there is not enough evidence to explain the differences, meaning there is no significant difference in the regression score for cost consciousness among respondents with different educational backgrounds.

ANOVA with Features as the dependent variable and occupation as an independent (grouping) variable. Table 15 and Table 16 show the result of the ANOVA test run with a regression score of factor no. 1, i.e., Features as a dependent variable and occupation as a grouping variable.

Table 15. Test of Homogeneity of Variances

		Levene Statistics	Df1	Df2	Sig.
REGR factor score 1 for analysis 1	Based on Mean	0.255	5	97	0.937
	Based on Median	0.216	5	97	0.955
	Based on the Median and with adjusted df	0.216	5	84.539	0.955
	Based on trimmed mean	0.243	5	97	0.942

Note: Df1, Df2, sig, and REGR signify the Degree of freedom 1, degree of freedom 2, significance p-value, and regression, respectively

Sources: developed by the authors.

Table 16. ANOVA

REGR factor score 1 for analysis 1					
	Sum of Square	Df	Mean Square	F	Sig.
Between Groups	3.248	5	.65	.638	0.671
Within Groups	98.752	97	1.018		
Total	102.000	102			

Note: Df, F, Sig, REGR signifies the Degree of freedom, F-test, significance p-value, and regression respectively

Sources: developed by the authors.

As shown in Table 16, the p-value is $0.671 > 0.05$, explaining that there is not enough evidence to explain the differences, meaning there is no significant difference in the regression score for Features among respondents with occupations.

ANOVA with Cost Consciousness as the dependent variable and occupation as the independent (grouping) variable. Table 17 and Table 18 show the result of the ANOVA test run with a regression score of factor no. 2, i.e., Cost consciousness as a dependent variable and occupation as a grouping variable.

Table 17. Test of Homogeneity of Variances

		Levene Statistics	Df1	Df2	Sig.
REGR factor score 2 for analysis 1	Based on Mean	2.594	5	97	0.030
	Based on Median	2.240	5	97	0.056
	Based on the Median and with adjusted df	2.240	5	81.196	0.058
	Based on trimmed mean	2.533	5	97	0.034

Note: Df1, Df2, sig, and REGR signify the Degree of freedom 1, degree of freedom 2, significance p-value, and regression, respectively.

Sources: developed by the authors.

Table 18. ANOVA

REGR factor score 2 for analysis 1					
	Sum of Square	Df	Mean	F	Sig.
Between Groups	10.177	5	2.035	2.150	0.066
Within Groups	91.823	97	0.947		
Total	102.000	102			

Note: Df, F, Sig, REGR signifies the Degree of freedom, F-test, significance p-value, and regression respectively

Sources: developed by the authors.

As shown in Table 18, the p-value is $0.066 > 0.05$, explaining that there is not enough evidence to explain the differences, meaning there is no significant difference in the regression score for cost consciousness among respondents with different occupations.

ANOVA with Features as the dependent variable and age as an independent (grouping) variable. Table 19 and Table 20 show the result of the ANOVA test run with a regression score of factor no. 1, i.e., Features as a dependent variable and age as a grouping variable.

Table 19. Test of Homogeneity of Variances

		Levene Statistics	Df1	Df2	Sig.
REGR factor score 1 for analysis 1	Based on Mean	2.598	6	96	0.022
	Based on Median	2.534	6	96	0.025
	Based on the Median and with adjusted df	2.534	6	87.894	0.026
	Based on trimmed mean	2.690	6	96	0.019

Note: Df1, Df2, sig, and REGR signify the Degree of freedom 1, degree of freedom 2, significance p-value, and regression, respectively

Sources: developed by the authors based on studies

Table 20. ANOVA

REGR factor score 1 for analysis 1					
	Sum of Square	Df	Mean	F	Sig.
Between Groups	10.946	6	1.824	1.923	0.085
Within Groups	91.054	96	.948		
Total	102.000	102			

Note: Df, F, Sig, REGR signifies the Degree of freedom, F-test, significance p-value, and regression respectively Sources: developed by the authors.

As shown in Table 20, the p-value is $0.085 > 0.05$, explaining that there is not enough evidence to explain the differences, meaning there is no significant difference in the regression score for Features among respondents with different age groups.

ANOVA with Cost Consciousness as the dependent variable and age as the independent (grouping) variable. Table 21 and Table 22 show the result of the ANOVA test run with a regression score of factor no. 2, i.e., Cost consciousness as a dependent variable and age as a grouping variable.

Table 21. Test of Homogeneity of Variances

		Levene Statistics	Df1	Df2	Sig.
REGR factor score 2 for analysis 1	Based on Mean	1.687	6	96	0.132
	Based on Median	1.238	6	96	0.294
	Based on the Median and with adjusted df	1.238	6	83.125	0.295
	Based on trimmed mean	1.695	6	96	0.131

Note: Df1, Df2, sig, and REGR signify the Degree of freedom 1, degree of freedom 2, significance p-value, and regression, respectively

Sources: developed by the authors.

Table 22. Anova

REGR factor score 2 for analysis 1					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	10.648	6	1.775	1.865	0.095
Within Groups	91.352	96	.952		
Total	102.00	102			

Note: Df, F, Sig, REGR signifies the Degree of freedom, F-test, significance p-value, and regression respectively

Sources: developed by the authors.

As shown in Table 22 the p-value is $0.095 > 0.05$, explaining that there is not enough evidence to explain the differences, meaning there is no significant difference in the regression score for cost consciousness among respondents with different age groups.

Discussion. This study aimed to examine the car purchase decision considering two dependent variables: 1) features the car offers; and 2) cost-consciousness based on four demographic independent/grouping variables such as gender, education, occupation, and age. Many research studies argue that these demographic factors are crucial for purchase decisions across the globe.

Hypothesis 1a for this study was about the impact on the car purchase decision considering features the car offers based on the gender of the consumer. The percentage contribution of males and females for this

study was 73:27, respectively. From Table 7 and Table 8 of the results section above, the result of the ANOVA test run with a regression score of the first dependent variable named features and a grouping variable named gender shows that the p-value is 0.165, which is greater than 0.05. There is no significant difference in the regression score for making car purchase decisions based on car features among male and female respondents. This result shows that there is not enough evidence to show the impact of gender differences on the car purchase decision basis on the car's features. This result is very contradicting to the previous studies. This situation may be because most cars offer all the important and minimum basic features today. Features have become hygiene factors; hence, males and females have not shown significant differences in this variable. Thus, this study rejects the H1a hypothesis and claims that today there is no significant difference in the car purchase decision based on the car's features with gender as the independent variable.

Hypothesis 1b for this study was about the impact on the car purchase decision considering cost consciousness and the gender of the consumer. The ANOVA result from Table 10, with cost consciousness as the dependent variable and gender as the independent (grouping) variable, shows the p-value is 0.610, far more significant than 0.05. This situation means there is no significant difference in the regression score for car purchase decisions based on Cost Consciousness Factor among male and female respondents. Both have the same cost consciousness level, which was not the case earlier, as shown by many studies. This situation may be because the earning power and spending power of the male and females are becoming at par, as seen in many studies. Thus, cost-consciousness females may have reduced to the levels of their male counterparts, making no significant differences in car purchase decisions. Therefore, this study rejects the H1b hypothesis about gender and claims that today there is no significant difference in the car purchase decision based on cost consciousness based on gender as the independent variable. This result contradicts the results of (Dong et al., 2020), which indicate that age, gender, and education affect the car purchase decision.

Hypothesis 2a for this study was about the impact on the car purchase decision considering the cars' features and the consumer's education level. ANOVA results shown in Table 12 of the results section with features as the dependent variable and education as the independent (grouping) variable show a value of p as 0.222, which is greater than 0.05, which explains that there is not enough evidence to explain the differences using education of the consumers. This situation means there is no significant difference in the regression score for features among the respondents with different educational backgrounds. This study's people with all educational backgrounds prefer most of the features mentioned. Thus, this study rejects hypothesis H2a also about education and claims that today there is no significant difference in car purchase decisions based on characteristics the car offers among people of different educational backgrounds. Everyone, irrespective of education level, prefers all the important features mentioned in the study when deciding to purchase a car. This result contradicts the (Williams et al., 2022) study, which says the knowledge of the consumer concerning features affects the car purchase decision.

Hypothesis 2b was about the impact on the car purchase decision considering cost consciousness and the consumer's education level. ANOVA results with cost consciousness as a dependent variable and education as an independent (grouping) variable from Table 14 of the result section show the p-value as 0.397, which is greater than 0.05. There is no significant difference in the regression score for the cost consciousness factor among the respondents in this study with different educational backgrounds. This study rejects hypothesis H2b. This result means that consumers of all academic backgrounds have similar cost-consciousness behavior when deciding on a car purchase. This result contradicts the previous studies, which say that based on educational levels, people are cost-conscious when purchasing cars like high-cost items. This result also suggests that cost consciousness has become less critical than Fashion consciousness, Environmental consciousness, and Price consciousness, as (Ruyu et al., 2022) argued in their study. This situation may be because of government policies to push EV cars/ EV bikes, and subsidies are readily available for all levels of people. Private large corporates are also suggesting going for green to reduce their carbon footprints, which also promotes people to become more environmentally conscious than cost-conscious. All governments also have targets w.r.t. SDGs and reduction in the greenhouse gases (also known as GHGs) and carbon footprints.

Hypothesis 3a for this study was about the impact on the car purchase decision considering the cars' features and the consumer's occupation. Table 16 of ANOVA results shows that features are the dependent variable, and occupation is an independent (grouping) variable. It has a p-value of 0.671, which is more than 0.05. It suggests no significant difference in the regression score for features among respondents from this study with different occupation types seen in the sample. Thus, this study rejects hypothesis H3a about the consumer's occupation and claims that today there is no significant difference in the car purchase decision based on features the car offers among people of different occupational backgrounds.

Hypothesis 3b for this study was about the impact on the car purchase decision considering cost

consciousness and consumer occupation. Table 18 exhibits the result of the ANOVA test run with a regression score of cost consciousness as a dependent variable and occupation as a grouping variable. The resultant p-value for this is 0.066, which is greater than 0.05, rejecting this hypothesis. There is not enough evidence to explain the differences in occupation levels as there is no significant difference in the regression score for cost consciousness among the respondents of this survey with different occupations.

Hypotheses 3a and 3b are associated with occupation and its impact, and both are rejected in this research study. The consumer taste with different occupational backgrounds does not differ and shows no significant effect concerning features and cost consciousness factors for this study. This situation may be because 80% of sample responses collected here were contributed by self-employed and full-time employees who responded to the survey.

Hypothesis 4a for this study was about the impact on the car purchase decision considering the cars' features and the consumer's age. Table 20 with ANOVA results shows the p-value 0.085, which is more than 0.05. Hence, there is no significant difference in the regression score for features among respondents from this study with different age groups. Thus, this study rejects hypothesis H4a and claims that today there is no significant difference in car purchase decisions based on features the car offers among people of different age groups.

Hypothesis 4b for this study was also rejected (as seen p-value of $0.095 > 0.05$; Table 22). The regression score of cost consciousness as a dependent variable and age as a grouping variable shows not enough evidence as the p-value is more significant than 0.05 to explain the differences of age levels with the seen regression scores for the cost consciousness factor.

From the sample, it can be seen that 70% of samples are below the age of 35, and hence hypotheses 4a and 4b may be rejected in this study, which contradicts the existing studies (Koppel et al., 2008; Nayum et al., 2013; Lin and Wu, 2018; Dong et al., 2020). The higher the age, the more cost-conscious the consumer is about purchasing products with high value. There may be one more fact that old parents are getting support from working children to buy high-cost, high-feature cars. This result is increasing in families with single kids with IT industry jobs. So, it is surprising and can be explored by companies to target such consumers to grow the business.

Conclusions. Based on the study's objectives and the outcome and analysis of this paper, the following are the general observations and trends that can help the automotive sectors understand the prospects and define growth strategies for considering these four demographic variables- gender, education, occupation, and age. According to the findings, gender does not influence car purchase decisions. The results are the same across all the age groups. The education and occupational levels are also not shown significant differences in the decision-making of car purchases. This result also indicates that consumers are well-planned when purchasing a car, and the demographic factor is now less affected or not affected when selecting a car with various features. This study provides theoretical background that becomes a literature review for further study as we studied the age, gender, occupation, and age on cost consciousness and features of car basis, respectively. These consumers are more fashion-conscious and environmentally conscious than cost-conscious, as seen from this study. The consumer is changing, and not showing too much difference with any demographic variable is a good sign for businesses to increase sales. Companies need not focus much on consumer demographics. However, they can focus more on the new features and green initiatives with digitization, which supports global SDG goals to attract consumers of all types. Table 23 below summarizes this study's results showing that all the hypotheses are rejected in this study.

Table 23. Conclusion

	Feature	Cost Consciousness
Gender	for all demographic variables with both dependent variables, the p-value is greater than 0.05. This shows that there are no differences in reg. scores among these grouping variables for all FOUR demographic independent variables of this study.	
Education		
Occupation		
Age		

Sources: developed by the authors.

The results of this study may change if the sample contains equal percentages of the consumers for all the demographic factors. This study shows that the male percentage is more than double that of female responses. For education, less than 12th education responses are almost nil. However, there are people in society who dominates the purchase of a car (mainly Mahindra Cars by Uneducated Farmers from some geographic regions in India). If such samples are available in the study, the results may vary. Regarding the occupational variable,

this research is dominated by 82% full-time employees and Self-Employed people. The results may vary if the sample contains more part-time employees and other types such as students, retired and unemployed due to some reasons like a pandemic.

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Фактори впливу на купівельну поведінку споживачів автомобілів

Ця стаття узагальнює аргументи та контраргументи в межах наукової дискусії з питання визначення факторів впливу на купівельну поведінку споживачів автомобілів. Основною метою проведеного дослідження є визначення факторів впливу споживачів з різними демографічними характеристиками на їх рішення про купівлю автомобіля з відмінними характеристиками, вартістю та терміном експлуатації. В рамках даного дослідження було опитано 200 респондентів, з яких лише 103 анкети були використані для подальшого аналізу. Розмір вибірки описує майже 50% дисперсії та є придатним для такого типу дослідження. Методичним інструментарієм проведеного дослідження стали методи: факторного аналізу – для групування і визначення залежних змінних які описують функціональні та цінові особливості автомобілів; ANOVA модель – для визначення факторів впливу на купівельну поведінку споживачів автомобілів. В статті представлено результати емпіричного аналізу, який засвідчив, що жодна з важливих демографічних змінних споживачів (стать, освіта, професія та вік) не виявила значного впливу на рішення про купівлю автомобіля з урахуванням його функціональних та цінових відмінностей. Дослідження емпірично підтверджує та теоретично доводить, що на купівельну поведінку споживачів більшою мірою впливають екологічні показники експлуатації автомобілів ніж цінові. Цей результат може бути пов'язаний з характеристиками вибірки, яка показала, що немає значного впливу будь-яких демографічних змінних споживачів на прийняття рішення про покупку автомобіля на основі його особливостей, а також факторів цінової свідомості, таких як вартість перепродажу, утримання та паливо. В статті обґрунтовано наведено ряд обмежень використання отриманих результатів пов'язаних із вибіркою дослідження. Результати проведеного дослідження можуть бути корисними для маркетологів, дилерів автомобільних компаній з метою побудови стратегії просування та продажів автомобілів.

Ключові слова: автомобільна промисловість, демографічні характеристики споживачів, особливості автомобіля, витрати.