Factors of Product Customization for the 1200cc Passenger Car Segment : An Empirical Study in Central India

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Abstract

Increasing competition in the automobile market has put a great challenge before car companies to cater to the specific needs of the customers in order to remain in business. The growing competition also requires frequent innovations in the industry. High cost associated with frequent innovations may cause big setbacks to these companies if any new launch of a passenger car model fails to attract the customers' attention. A precise model specification, catering to the needs and aspirations of the customers, is ,therefore, required. This paper is an effort to find out the factors that help the companies to customize their products as per varied customer needs, categorized on the basis of their socioeconomic classes such as age, city, occupation, income group, and their present car ownership status. The study investigated selected twenty variables as determinants of the customers' choice for the selection of a 1200cc car. Factor analysis (on the influencing variables) out of the said twenty variables was applied to the respective categories of customers. The analysis found varying factors that contributed differently in the customers' choice while selecting a 1200cc car. Considering these factors and their contribution, the passenger car companies, especially in the 1200cc segment, can incorporate appropriate specifications for innovation in their products.

Keywords: **passenger car segment, factor analysis, product customization, automobile industry**

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The Indian automobile industry has grown by leaps and bounds in the last decade. The annual projected growth rate is around 15%, and it is considered as a sunshine industry as far as India is concerned. The competition in this sector has also grown phenomenally, raising the expectations of the customers. This competition has resulted in shorter product life cycle and has increased the need for innovation, resulting in newer and newer models every year. This industry contributes 5.1% to India's GDP. Automobiles are available as products having various capacities in terms of power and torque along with other features. The range of power in terms of engine capacity is from 634cc to more than 3000cc. A 1200cc passenger car represents median of the available range of vehicles in the Indian market.

Thakar, Jain, and Singh (2012) identified factors that determine the selection of a passenger car in the 1200 cc car segment. These factors are of utmost importance for manufacturers to understand the consumer buying behavior. They, however, did not discuss the factors for distinguishing customers specifically. Since no manufacturer can incorporate all the attributes desired by the customers in a single model in this segment, one has to be specific about the target customers, according to which a manufacturer can customize its products. This needs appropriate customer segmentation according to the choice factors of the target market.

The present work is an extension of the work done by Thakar et al. (2012). This paper tries to identify the factors affecting the car selection choice of a particular segment of customers. The analysis will help in customizing the

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passenger car for specific customer classes. Today, the car market is characterized by customer segmentation that sometimes makes the demand analysis complex to catch a specific range of customers. An example of such analysis is Tata motors, which, for the first time, manufactured a car called Tata Nano, which is customized as per specific consumer requirements.

As far as the 1200cc passenger cars are concerned, almost all companies offer nearly the same configuration (displacement, cylinders, power, gears, layout) and features (power windows, leather seats, tachometer, climate control, remote locking, mp3/USB, sunroof, steering control, fog lamps, wash wipes) in their product offerings. However, no brand can incorporate all the attributes desired by the customers in a single model in this segment. For example, one brand may be good in styling and comfort, while another may be good in power and fuel economy. It is ,therefore, essential for the manufacturer to understand the factors that motivate a consumer in a particular segment to choose his brand over other brands. What are those factors which drive his decision? Is it just the price? Or something else? A set of most important factors for specific consumer segments are to be identified, which will compel a particular consumer to choose a brand over the other. For this, a manufacturer has first to stratify consumers in respective categories like income, age, occupational, or regional groups. A single car model (say 1200cc) may be opted by any of these categories of consumers, but the factors affecting their choice would be different. If these factors are known, a passenger car company can then customize its variants as per the choices of its target consumers.

➲ **The 1200 cc Passenger Car Segment :** There are many companies, which provide the 1200 cc car variants in the market. Maruti Suzuki dominates in this segment, Tata Motors is at the second place, while Hyundai and many other companies also provide their 1200cc car variants in the market, few of which are mentioned below:

(1) Maruti Suzuki: Eeco, Ritz, Swift, Swift Dzire, Stingrey,
(2) Tata Motors: Indica, Indica Vista, Indigo,
(3) Hyundai: i10, i20,
(4) Chevrolet: Beat, U-VA, Aveo,
(5) Fiat: Grande Punto,
(6) Honda: Jazz, Brio,
(7) Nissan: Micra,
(8) Skoda: Fabia,
(9) Volkswagen: Polo,
(10) Ford: Figo,
(11) Renault: Pulse.

Bikash, Pravat, and Sreekumar (2010) studied the factors which are important for choosing the revolutionary car 'Nano' launched by one of the leading Indian automobile manufacturers, Tata Motors. A total of 22 variables were identified in the study. The study used Grey relational analysis to rank the factors. The findings of the study showed that the price of the car is the most important variable for selecting a car model. The colour variant, style, fuel efficiency, and financing options offered by the company are other important variables which attract the customers to buy a car. Power, safety features, prestige involved, resale value of the car, and so forth are some of the features which rank low in the priority of the consumers. The authors studied the variables which influenced the purchase of Nano and their importance to the consumers.

Adetayo and Apollos (2013) conducted a study on the telecommunication industry in Nigeria and argued that service delivery upgradations in business operations are very important for customer satisfaction. The study also revealed that inclusion of service delivery by various companies in any sector, including the automobile industry, is reflected in their brand value. According to Ranawat and Tiwari (2009), in the post reform period (after the year 1991), liberalization with regard to foreign investment had a significant influence on the Indian automotive industry. Similarly, a study ("Over half of car buyers factor auto manufacturer's warranty into choice," (n.d.)

quoted reliability as the second most important variable for buyers after price. The car buyers rated reliability over fuel efficiency as a variable. Furthermore, fuel efficiency and safety were ranked as the third and fourth most important variables in terms of importance according to this study. Performance was not at the top priority for most car buyers.

Newstead, Cameron, Delaney, and Watson (2006) studied the quality criterion for the safety assessment of cars based on real world crashes. The findings of this research indicated that vehicle safety is the highest priority in the new vehicle purchase process. This study was done in Sweden and Spain. A number of variables were found to influence the purchasing decisions, including country of residence, age, driving distance, gender and education, reason for purchasing a new vehicle, and use of Euro NCAP ratings. The findings of this study indicated that vehicle safety is the primary consideration in the purchase process for private new vehicle consumers in both Sweden and Spain. The findings also highlighted the need to target particular consumer groups (such as younger consumer groups) in order to increase their knowledge regarding vehicle safety and to encourage them to place highest priority on safety in the new-vehicle purchase process.

The literature review presented above reveals the variables which influenced the customer decision making process. It is also evident from the reviewed literature that little attempt has been made to identify the variables which influence or affect the choice of a specific brand of car in the 1200 cc passenger car segment in the Indian scenario. The proposed research study, therefore, attempts to identify the variables and perceptions of customer categories and their relative importance in the consumer decision making process in the Indian context, with specific reference to central India.

Objectives of the Research

The broad objective of the study is to find out the variables and factors which influenced the purchase decision of distinguished customers, and the contribution these variables and factors had, towards the purchase of a 1200 cc car in Central India. The specific objectives are illustrated as under :

(1) To find out the influence of the selected 20 variables on the purchase behavior of the customers,

(2) To carry out a factor analysis of the selected variables to understand the perception of the different classes of customers towards purchase of 1200 cc cars,

(3) To conceptualize product segmentation for 1200 cc car purchases for a particular customer class by identifying the variables of the buyers' decision making,

(4) To determine the contribution of these factors obtained in the consumers' purchase decision.

Conceptual Framework

➲ **Understanding the Problem and Inter-Linkages Between Various Variables:** It is needless to say that the choice of any product among the customers is influenced by their age, income, and occupational groups. While deciding upon which automobile to buy, several factors contribute towards the selection of a particular type of vehicle. These variables, however, vary with customer segmentation based on certain socioeconomic factors arising from age, income, occupation, and so forth. The literature survey showed that irrespective of consumers' socioeconomic class, the main selection factors are reliability, fuel economy, price, safety features, warranty, and service facility. However, any addition in these features may create a significant utility in a specific car variant among the consumers.

Since customer segmentation reduces the number of variables for specific segment of car consumers, the collusive behavior of an oligopolistic competitor increases. This needs a precise estimation of nature and degree of consumer's choice. Therefore, we have tried to cover all possible variables discussed in the literature review and those observed during snap studies conducted by various researchers. However, looking at the complexity of dealing with a large number of variables, their reduction in the form of few factors shall follow the analysis for data

Table 1. Group Variables and Individual Variables

Group variables	Individual variables
Economic issues	price and discounting policy, fuel efficiency, vehicle durability, warranty period, resale value and availability of spare parts, and maintenance of car
Comfort issues	passenger comfort, driving pleasure and ride quality, reliability, engine performance and stability at high speeds, boot space
Safety and additional features	Presence of safety features, additional features, styling and appearance.
Advertising and manufacturers' reputation	Advertising and manufacturers' reputation
Environment friendly	Environmental friendly
Self assessment issues	previous experience, opinion of family members, opinion of opinion leaders

Table 2. Sample Profile of the Respondents

City	Age		Occupation		Income		Car ownership		Total
	<35 yrs	>=35 yrs	Self employed	Employed	<=5 lac P.A.	>=15 lac P.A.	Already Owning	Not Owning	
Indore	100	100	134	66	154	46	167	33	200
Gwalior	100	100	118	82	135	65	137	63	200

summation. These factors may carry different weights, indicating customers' perception for acquiring an automobile. Twenty variables obtained from the previous study conducted by Thakar et al. (2012) have once again been considered for determining these factors. The variables considered for conducting the proposed study are styling and appearance, price and discounting policy, passenger comfort, driving pleasure and ride quality, reliability (car/model specific), manufacturers' reputation (brand specific), engine performance and its stability at high speeds, fuel efficiency, boot space, vehicle durability, presence of safety features, warranty period, resale value, additional features, previous experience, opinion of opinion leaders, opinion of family members, availability of spare parts, how economic it is to maintain the car, impact of advertising, and environment friendly.

Besides the precise estimation of factors of customers' choice, the equally important issue is to customize the product as per specific class of customers. This process leads to an increase in not only the number of variants (say LXI version of Maruti Wagon R) of a model (e.g. Wagon R of Maruti), but also leads to an increase in the number of car models. Any failure in the determination of the customers' needs requires early and frequent modification(s) in the variants or models.

➲ **Development of Hypotheses :** Considering the above conceptualization, the following two broad hypotheses were developed:

➲ **H1 :** All variables significantly influenced the purchase decision of the consumers.

➲ **H2 :** The influence of the variables does not vary across classes of consumers defined on the basis of age, income, occupation, and existing car ownership status.

The above hypotheses shall preliminarily be discussed in the context of the following variables presented in the Table 1.

Methodology

The survey covers two major cities of Madhya Pradesh - Indore and Gwalior - and the study was conducted during November 2010 to April 2011. Primary data were collected from the customers using the questionnaire developed for this purpose. A total of 400 respondents - 200 respondents in each city - were randomly selected for administering the questionnaire covering 28 questions.

➲ **Sample Profile :** A sample of 400 respondents covering different fractal groups comprising of age, income, occupation, and car ownership participated in the present study. Half of the sample respondents from each of the two cities were less than 35 years of age, and other half of the sample respondents were aged 35 years and above (Table 2). The income of about 72% of the sample respondents was less than ₹ 5 lacs per annum and the remaining 28% were earning ₹ 5 lacs or above. About 37% of the sampled respondents were employed and 63% were self-employed. Seventy six percent of the sampled respondents already owned a car, while 24% did not own any four wheeler, but were looking at purchasing the same.

➲ **Sampling Adequacy :** It was found that the sample is adequate at a 95% confidence level and 5% level of significance. The power of the test is more than 80% for an effect size of 0.35. The survey is completely qualitative in nature. The Likert scale (5-point scale) was adopted to quantify the responses of the sample respondents towards various variables. For the analysis, SPSS software was used. The internal consistency of the questionnaire was checked, and the value of Cronbach's alpha was found to be 0.630. The value was found to be more than 0.6; hence, the questionnaire was valid to be used for the purpose of analysis, as the research is an exploratory one (Hair, Black, Babin, Anderson, & Tatham, 2005).

Analysis and Results

The sample data collected for the above variables from the distinguishing groups of customers was analyzed in the following sequence:

(1) The variables influencing the purchase decision of the customers were identified from those discussed in the conceptual framework.

(2) The significantly influencing variables were tested for their impact difference on different socioeconomic classes of the sampled population.

(3) Factor reduction was applied on significant variables for different socioeconomic classes of the sampled population.

➲ **Identification of Variables Influencing the Selection Decision:** We developed the following hypotheses for determining the influence of the selected variables on the customers' choice of a 1200 cc passenger car.

Hypothesis 1

➲ **H_0 (Null Hypothesis):** The customers have a neutral opinion towards the selected 20 variables related to the choice of 1200 cc passenger cars [when mean response, that is, test value : $\mu = 3$].

➲ **H_1 (First Alternative Hypothesis) :** The customers have a negative opinion towards the selected 20 variables related to the choice of 1200 cc passenger cars [when mean response, that is, test value : $\mu > 3$].

➲ **H_2 (Second Alternative Hypothesis) :** The customers have a positive opinion towards the selected 20 variables related to the choice of 1200 cc passenger cars [when mean response, that is, test value : $\mu < 3$].

Independent sample *t* - test was applied to the selected variables grouped as - economic issues, comfort issues, safety and additional features, advertising and manufacturers' reputation, environment friendly, and self assessment. It was designed to test whether the mean of a distribution differs significantly from our assumed test value (i.e. a test value of 3, which is the mid value of the 5 - point scale used in the questionnaire). The Table 3 depicts the results of this test for distinguishing the socioeconomic classes of the consumers.

Table 3. Mean Difference of Responses from Neutral Opinion (Test Value) on Selected Variables Across Different Socioeconomic Groups

Variables		City		Age		Income		Occupation		Car Ownership	
		Indore	Gwalior	Less than 35 yrs	More than 35 yrs	Less than ₹ 5 lakhs	More than ₹ 5 lakhs	Self Empl-oyed	Empl-oyed	Presently owning	Don't own presently
Economic issues	Price and discounting policy	-1.05	-1.48	-1.19	-1.34	-1.27	-1.25	-1.21	-1.42	-1.23	-1.31
	Fuel efficiency	-1.60	-1.36	-1.41	-1.55	-1.50	-1.41	-1.45	-1.56	-1.48	-1.48
	Vehicle durability	-1.90	-1.90	-1.90	-1.90	-1.89	-1.91	-1.88	-1.95	-1.92	-1.85
	Warranty period	-1.21	-0.70	-0.94	-0.97	-1.01	-0.79	-0.99	-0.82	-0.98	-0.91
	Resale value	-0.77	-0.53	-0.67	-0.64	-0.69	-0.56	-0.57	-0.91	-0.63	-0.68
	Availability of spare parts and maintenance of car	-1.90	-1.97	-1.92	-1.95	-1.96	-1.86	-1.92	-1.96	-1.94	-1.91
Comfort issues	Passenger comfort	-1.75	-1.89	-1.82	-1.82	-1.81	-1.85	-1.81	-1.84	-1.80	-1.84
	Driving pleasure and ride quality	-1.83	-1.87	-1.89	-1.81	-1.85	-1.85	-1.84	-1.89	-1.88	-1.78
	Reliability (car/model specific)	-1.72	-1.85	-1.78	-1.79	-1.79	-1.77	-1.75	-1.88	-1.78	-1.78
	Engine performance and its stability at high speeds	-1.87	-1.91	-1.91	-1.87	-1.89	-1.88	-1.88	-1.92	-1.91	-1.84
	Boot space	-1.22	-1.01	-1.04	-1.19	-1.12	-1.09	-1.08	-1.22	-1.12	-1.09
Safety and additional features	Presence of safety features	-1.56	-1.61	-1.54	-1.63	-1.55	-1.67	-1.57	-1.61	-1.60	-1.55
	Additional features	-1.11	-0.65	-0.88	-0.88	-0.90	-0.82	-0.89	-0.83	-0.85	-0.93
	Styling and appearance	-1.47	-1.59	-1.64	-1.42	-1.48	-1.65	-1.54	-1.47	-1.55	-1.48
Advertising & manufacturers' reputation	Advertising*	**0.65**	**0.80**	**0.74**	**0.71**	**0.74**	**0.67**	**0.72**	**0.73**	**0.79**	**0.61**
	Manufacturers' reputation	-1.35	-1.26	-1.23	-1.38	-1.29	-1.33	-1.35	-1.15	-1.27	-1.35
Environment friendly	**E**nvironment friendly	-1.80	-1.76	-1.73	-1.82	-1.77	-1.78	-1.77	-1.80	-1.75	-1.81
Self assessment	Previous experience	-1.39	-1.15	-1.33	-1.21	-1.20	-1.45	-1.62	-0.15	-1.37	-1.09
	Opinion of opinion leaders*	**0.54**	**0.10**	**0.23**	**0.41**	**0.36**	**0.21**	**0.34**	**0.25**	**0.39**	**0.19**
	Opinion of family members	-1.72	-1.58	-1.64	-1.67	-1.66	-1.61	-1.63	-1.72	-1.62	-1.70

The null hypothesis (H0) is rejected for all of the twenty variables, but the second alternative hypothesis (H2) is accepted for 18 variables namely, styling and appearance, price and discounting policy, passenger comfort, driving pleasure and ride quality, reliability (car/model specific), manufacturers' reputation (brand specific), engine performance and its stability at high speeds, fuel efficiency, boot space, vehicle durability, presence of safety features, warranty period, resale value, additional features, previous experience, opinion of family members, availability of spare parts, and how economic it is to maintain the car & environment friendly, which showed agreement in their influence on a customer while looking out for a car to buy among the models available under the 1200 cc car segment. For the case of the remaining two variables - namely, impact of advertising and opinion of opinion leaders, the alternative first hypothesis (H1) is accepted for all the customer classes. This shows that consumers of all classes did not consider these two variables as influencing variables while deciding upon which car to buy.

Table 4. Degree of Influence Through Mean Difference of Responses of Various Customer Classes w.r.t the Selected Variables

Variable Category	Variables ('Customer Class' Across Which Significantly Varying)	Degree of Influence
Economic Issues	Price and discounting policy ($)	High - Indore
		Low - Gwalior
	Fuel efficiency ($)	High - Gwalior
		Low - Indore
	Warranty period($#)	High - Gwalior, More than ₹ 35 lakhs
		Low - Indore, Up to ₹ 35 lakhs,
	Resale value (*)	High - existing owner,
		Low - don't own any car,
	Availability of spare parts and maintenance of car($#)	High - Indore, more than ₹ 35 lakhs,
		Low - Gwalior, Up to ₹ 35 lakhs,
Comfort Issues	Passenger comfort ($)	High - Indore
		Low - Gwalior
	Driving pleasure and ride quality (®)	High - employed
		Low - self employed
	Reliability(car/model specific) ($*)	High - Indore, existing owner,
		Low - Gwalior, don't own any car,
	Boot space ($)	High - Gwalior
		Low - Indore
Safety and Additional Features	Additional features ($)	High - Gwalior
		Low - Indore
	Styling and appearance (¥#)	High - More than 35 yrs, Up to ₹ 35 lakhs,
		Low - up to 35 yrs, More than ₹ 35 lakhs,
Self Assessment Issues	Previous experience ($*®#)	High - Gwalior, don't own any car, employed, Up to ₹ 35 lakhs,
		Low- Indore, existing owner, self employed, More than ₹ 35 lakhs,

$ indicates 'city'; # indicates 'income group'; * indicates 'ownership'; ® indicates 'occupational status'; ¥ indicates 'age group'. The variables not included in the table are not carrying significant mean difference.

➲ **Selection of Influencing Variables and their Impact Difference Across Distinguishing Socioeconomic Groups:** The 18 variables identified as influencing variables were investigated for their relative importance on different classes of customers in selection of 1200 cc cars. The following hypotheses were tested for the same:

Hypothesis 2

➲ **Null Hypothesis (H_0):** The impact (degree of influence) difference of all the influencing variables is zero among the consumers of all socioeconomic classes.

➲ **Alternative Hypothesis (H_1):** There is a significant impact (degree of influence) difference of all influencing variables among the consumers of all socioeconomic classes.

Two sample *t*- tests had been applied to the selected variables grouped as – economic issues, comfort issues, safety and additional features, advertising and manufacturers' reputation, environment friendly, and self-assessment. The tests were designed to ascertain whether the mean of the response value of one class of customers differed significantly from the mean of the response value of another class of customers.

The Table 4 shows the results of this test for distinguishing the socioeconomic classes of consumers. Only issues and variables differing significantly across various classes of different groups are shown in this table. City was found to be a factor which was most important for the difference in degree of influence of the highest (8) number of variables. The Table 4 indicates these eight variables namely, price and discounting policy, passenger comfort, reliability (car/model specific), fuel efficiency, boot space, warranty period, additional features, previous experience, and availability of spare parts. The said variables had a different degree of influence in Indore and Gwalior. The influence of four variables, that is, warranty period, availability of spare parts, styling and appearance, and previous experience was found to be different for respondents of different income groups . Three variables, that is, reliability (car/model specific), previous experience, and resale value differently influenced the choice of those respondents who owned a car (at the time the study was being conducted) and those who did not own any car. Two variables - namely, driving pleasure and ride quality - differently influenced the choice of those respondents who were employed and those who were self employed. Only one variable, that is, styling and appearance was found to have different levels on influence on respondents of different age groups.

➲ **Factor Analysis:** The above discussion explores the detailed behavior regarding the choice of a 1200cc car by the respondents on the basis of the variables taken into consideration (as discussed in the conceptual framework section of the present paper). The variable wise analysis of influence shows that only some selected individual variables made a difference in influencing the behavior of the respondents while deciding upon which car to buy. For example, only one variable, styling and appearance, was found to influence - differently- respondents of different age groups. For product customization, all the influencing variables were reduced to some factors, so that the product customization for different classes of customers becomes easier for the companies to interpret. Out of 20 variables, 18 were found to be the determinants of consumers' decision making on the basis of the analysis

Table 5. Factor Analysis and the Distinguishing Parameters

Consumer Class (KMO-MoA, % of explained Var.)		Variables parameters (value, variable loading in rows followed by head row of the concerned class of customers) attached with particular factor (factor information - Eigen value and factor loading in head row of particular class of customers)				
Age	≤35 yrs (0.679, 73/51%)	**Factor**	**F1 (2.76, 11.63) Ownership Satisfaction**	**F2 (1.15, 9.595) Appeal and Economy**	**F3 (1.12, 9.148) Warrantee with Uniqueness**	
		variables	opinion of family members, availability of spare parts and maintenance of car, environment friendly	fuel efficiency, boot space, styling and appearance	warranty period, additional features	
	>35 yrs (0.69, 78/60 %)	**Factor**	**F1 (2.44, 14.78) Comfort, Performance, and Safety**	**F2 (1.32, 10.43) Family Recognition and Durability**	**F3 (1.05, 7.87) Economy and Value**	**F4 (0.77,7.07) Value for Money**
		variables	styling and appearance, passenger comfort	vehicle durability, opinion of family members	fuel efficiency, additional features	boot space, resale value

			driving pleasure and ride quality, engine performance and its stability at high speeds, presence of safety features			
City	Indore (0.599, 71/55 %)	**Factor**	**F1 (1.84, 13.63) Ownership Satisfaction**	**F2 (1.04, 13.61) Performance and Style**	**F3 (0.82, 10.93) Value Delivery**	
		variables	availability of spare parts and maintenance of car, opinion of family members, environment friendly	styling and appearance, driving pleasure and ride quality, engine performance and its stability at high speeds	warranty period, boot space, fuel efficiency	
	Gwalior (0.679, 71/48 %)	**Factors**	**F1 (3.16, 12.44) Ownership Satisfaction and Family Recognition**	**F2 (1.31, 8.74) Value for Money**	**F3 (0.96, 7.83) Price and Assurance**	**F4 (0.93, 6.88) Brand and Economy**
		variables	environment friendly, availability of spare parts and maintenance of car, driving pleasure and ride quality, opinion of family members, vehicle durability	boot space, resale value	price and discounting policy, warranty period	manufacturers' reputation (brand specific), fuel efficiency
Occupation	Employed (0.67, 77/49%)	**Factor**	**F1 (2.08, 20.16) Ownership Satisfaction and Safety**			
		variables	availability of spare parts and maintenance of car, presence of safety features, environment friendly, opinion of family members, vehicle durability			
	Self employed (0.72, 71/55 %)	**Factors**	**F1 (2.59,13.92) Safety and Luxury**	**F2 (1.16, 10.24) Economy and Recognition**	**F3 (1.0, 8.23) Value for Money and Assurance**	
		variables	styling and appearance, driving pleasure and ride quality, passenger comfort, presence of safety features	environment friendly opinion of family members, Fuel efficiency	Boot space, warranty period	
Income	≤ ₹ 5 lakhs (0.671, 78/53 %)	**Factor**	**F1 (2.10, 15.52) Safety and Luxury**			
		variables	styling and appearance, passenger comfort, driving pleasure and ride quality, presence of safety features			

	> ₹ 5 lac (0.611, 74/52%)	**Factor**	**F1 (2.81, 14.72) Price and Ownership Satisfaction**	**F2 (1.26, 13.23) Style and Experience**		
		variables	price and discounting policy, vehicle durability, opinion of family members, availability of spare parts and maintenance of car, environment friendly	previous experience, driving pleasure and ride quality, styling and experience, presence of safety features		
Ownership	No (0.608, 78/58 %)	**Factor**	**F1 (2.19, 13.51) Luxury and Performance with Safety**	**F2 (1.37, 13.17) Ownership Satisfaction**	**F3 (0.93, 8.93) Value of Money**	**F4 (0.73, 8.60) Brand and Economy**
		variables	driving pleasure and ride quality, passenger comfort, styling and appearance, presence of safety features, engine performance and its stability at high speeds	opinion of family members availability of spare parts and maintenance of car, vehicle durability, environment friendly	boot space, resale value	manufacturers' reputation (brand specific), fuel efficiency
	Yes (0.709, 68/49%)	**Factor**	**F1 (2.68, 13.96) Ownership Satisfaction and Luxury**	**F2 (1.27, 8.92) Style and Economy**	**F3 (1.1, 7.85) Warranty and Uniqueness**	
			driving pleasure and ride quality, passenger comfort, vehicle durability, presence of safety features, opinion of family members, environment friendly, previous experience	styling and appearance, boot space, fuel efficiency	additional features, warranty period	

already presented in the preceding discussion. However, the said variables are a large number to analyze consumer behavior. Hence, factor analysis was performed to reduce these variables to a manageable level for appropriate conclusion and interpretation. A factor analysis was conducted with 18 variables out of the 20 survey variables. Two variables were removed from the analysis on account of their rejection by the respondents as a selection criterion. During the factor analysis, the cross loading of variables were found in the concerned rotated component matrices, and respectively, the appropriate number of remaining variables were considered in the analysis.

The KMO and Bartlett's test for examining the sampling adequacy for each class was conducted, as shown in Table 5, to check the sampling adequacy, the value of which was found to be more than 0.5. This shows that the data set was appropriate to conduct the factor analysis. The Table 5 shows the results of the factor analysis for various

classes of customers grouped on the basis of age, city, occupation, income, and present ownership status of a car. Ten groups, two for each of the above socioeconomic criteria, were made. The decision variables were reduced to three and four factors for customers belonging to '≤ 35 years age group' and ' >35 years age group' respectively. Three and four factors were identified for the customers belonging to Indore and Gwalior city respectively. Between the two occupational classes, only one factor was identified for employed category, while for the self employed category, three factors were identified. Between the income classes, only one factor was identified for customers belonging to the income group of ≤ ₹ 5 lakhs pa, while two factors were identified for customers belonging to income > ₹ 5 lakhs pa. Four factors were identified for 'customers who did not own any car presently,' and three factors are identified for 'customers who presently owned a car'.

Managerial Implications

This paper will help the companies to customize their 1200cc car models for the customers on the basis of their class - specific distinguishing needs. The companies may plan their product-specific breakeven, profit viability, and market share with due consideration to their business certainties. Since the analysis found varying factors that contribute differently to the customers' choice of a 1200cc car, the passenger car companies in this category may use the results presented in this study for more reliable basis for segmentation that can incorporate appropriate specifications for innovation in their products.

Conclusion

In the present study, the authors have considered the influence of 20 variables on the purchase behavior of 1200 cc passenger cars. For this purpose, an empirical study has been carried out in two major cities of Central India, namely Indore and Gwalior. The study presents findings on the degree of influence of economic, comfort, safety, and additional features and self-assessment issues in these cities. The study reveals the influence of occupation, city, and age on the purchase behavior of the customers. Based on this, we have been able to empirically analyze product customization while targeting a particular class or segment of the customers.

Limitations of the Study and Scope for Future Research

One of the major limitations of this study is the varying sample sizes among the profiles of the customers. In order to analyze customer choice behavior for distinguishing groups/classes of people, one requires uniformity within the socioeconomic classes of respondents. This limitation is due to the fact that when this study was designed, the sample size for income, occupation, and ownership of car could not be controlled individually. However, KMO and Bartlett's test permitted us to use the samples to run factor analysis with sufficient viability.

Future studies can focus on consideration of these parameters as criterion to design the sample for getting more authentic analysis. Upcoming research on this theme can also investigate the impact of gender on distinguishing classes of customers of 1200 cc passenger car purchasing behavior, as this variable is not covered in the present analysis because of sampling inadequacy.

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