A Study on Identifying the Factors having Influence on Customers' Demand for the Facilities Provided by the Medium Segment Car Companies in Ahmedabad

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Abstract

Objective: The main objective of the study is to identify the important factors influencing customers' demand for different facilities for medium segment cars as provided by the car manufacturing company.

Research Design/ Methodology: The primary data was collected through convenience sampling and structured questionnaire was used to gather information about 200 respondents of Ahmedabad city. Secondary data collection has been done through the information provided by different car manufacturing companies as well as research papers and magazines related to automobiles are used. The factor analysis has been done through statistical package and different factors are identified.

Findings: Results of the study showed the effective factors in customers' demand are the facilities provided by the medium segment car companies.

Research Limitation/ Implications: The analysis of the data is based on the basis of responses of the 200 respondents of the Ahmedabad city. The real picture may differ in the case whole population of state or country is selected as a frame of the sampling procedure. Also selection of different segments of cars may play vital role in demand of different facilities.

Proposed Utility: The outcomes of the study are beneficial for the different car companies who are dealing with medium segment cars manufacturing. Also they can focus on the factors which play important role and affecting the customers regarding different facilities provided by medium segment car manufacturers.

Keywords: Medium Segment, Convenience Sampling, Factor Analysis

Introduction

In recent times the lifestyle of the people has drastically changed worldwide. Specifically in India also we have found the effect of the global air. Gujarat is one of the highly developed states of India having many national and international companies with their corporate offices and production houses. Due to the effect of the globalisation and liberalisation drastic change has been found in automobile industry. In recent times due to these changes in Gujarat, one can purchase any national and international brand of car at their doorstep without much hassle.

Due to modernisation and need of the recent times one can also observe that there is an increase in nuclear families compared to the earlier years. With modernisation and availability of financing facilities, mindset of the customer is also changed. Initially cars were made for higher income group people for their leisure only, this mind set gradually changed and people started using the car for moving from one place to the other with their family. In recent era this phenomenon has been totally changed due to nuclear family and availability of financing facility and due to this change there is vast change for demand in automobile industry. Especially in car industry demand is very high and people of higher income, higher middle income group prefer cars in medium segment.

As per literature review it was found that medium segment cars are highly in demand in the current market. People have their own choice for the facilities, so in medium segment cars it plays vital role in selection of different manufacturing companies' car. Recent era is the era of tailor made product and this concept has much influence in automobile industry too. So the study is mainly focused on the changes in customers' demand for the facilities provided by the medium segment car companies. The targeted city is Ahmedabad of the Gujarat State and data has been gathered for primary data analysis.

Literature Review

In World Different types of cars are popularly named as follows:

ONE BOX (VAN / MPV): If there is no separate area for engine, passengers and luggage then it is known as one box car. e.g. Ecco, Ace Magic, Versa etc.

TWO BOX (HATCHBACK): It means engine having separate cabin but passengers and luggage area having same cabin. e.g. Eon, Alto, Santro, i10, A-Star, Swift etc.

THREE BOX (SEDAN/SALOON / NOTCH BACK): It means engine, passengers and luggage all three having separate cabin. e.g. SX4, City, Fiesta, Dzire, Ambassador, Indigo etc.

ESTATE / STATION WAGON: It is same as sedan the main difference is whose roof is extended till the rear to create more boot space. e.g. Indigo Marina.

SUV (Sports Utility Vehicle): Usually these type of vehicles have large tyres, higher seating, higher ground clearance and the engine area is separate but the passenger and luggage area are enclosed together. Majority of this type of vehicle has options of four wheel drive. e.g. CRV, Safari, Grand Vitara, Pajero etc.

SEMI NOTCHBACK: It is same as sedan but boot door can be opened like hatchback as well as rear windshield too opens along with the boot door where as in sedan windshield is always fix. e.g. Skoda Octavia, Accent Viva.

In India

In the beginning of automobile industries, cars were luxurious product which was mainly for rich and royal people. There were very few models available in that era but gradually newer inventions took place due to which some basic bifurcation has taken place. It is known as segmentation which is done on the basis of price, length etc. In India initially it was segmented as A,B,C and D type cars which was gradually changed based on price. The categorisation is as follows:

Table 1 : Old Car Segment in India

Segment	Price (in lakhs)
A	2 – 3
B	3 – 4
B+	4 – 5
C	5 – 7
C+	7 – 9
D	9 – 12

Source: As per SIAM (Society of Indian Automobile Manufacturers)

But this segmentation was not long lasting because there was lot of confusion in pricing based segmentation. Also price increased manifold in today's scenario. So new segmentation has been done based on size rather than price.

Table 2 : Latest Car segments in India

Vehicles	Description	Examples
A1 Mini	Maximum length 3400 mm	Maruti 800, Nano
A2 Compact	Length 3401 – 4000 mm	Alto, Wagon R, Zen, i10, A-Star, Swift, i20, Palio, Indica etc.
A3 Midsize	Length 4001 – 4500 mm	City, SX4, Dzire, Logan, Accent, Fiesta, Verna etc
A4 Executive	Length 4501 – 4700 mm	Corolla, Civic, C class, Optra, Octavia etc
A5 Premium	Length 4701 – 5000 mm	Camry, E class, Accord, Sonata, Laura, Superb etc
A6 Luxury	Length 5001 mm and above	S class, 5 series
B1 Van	Mass up to 3.5 tonnes No of seats 7 to 9	Omni, Versa, Ace-Magic etc
B2 MUV/ MPV	Mass up to 5 tonnes No of seats 7 to 13	Innova, Tavera, Sumo, Trax, Traveller etc
SUV	Mass up to 3.5 tonnes No of seats up to 7	CRV, Vitara etc.

Source: http://www.siamindia.com/ scripts/ technicalregulations.aspx

Segmentation on the basis of length is true, but length wise segmentation creates confusion for non-technical persons. (eg. people in comparison say i10 and swift do not fall in one category). So, for research purpose we have divided the above segments into five which is as follows based on engine capacity (in cc).

Table 3 : Suggested Segments through Research

Segment	Length	Engine Capacity (in cc)
A1 (Small)	Maximum length 3400 mm	Less than 800 cc
A2 A3 (Mid)	Length 3401 – 4500 mm	801 to 1600 cc

A4 A5 (Large)	Length 4501 – 5000 mm	1601 to 2400 cc
A6 (Luxurious)	Length 5001 mm and above	2401 cc and above
B, C (SUV, MUV and VAN)	Maximum mass 3.5 tonnes to 5 tonnes and number of seats including driver between 7 and 13	As per the model of the car

Source: Research Findings

Therefore through findings the car market can be divided in the four segments: Small, Mid, Large, Luxurious and Others (SUV, MUV and VAN).

Also through literature review we found that:

Goyal & Aggarwal (2008), in their study have made research on analytical study of factors of Importance in connection of car industry in India. Their study reveals few important factors for purchase of Medium, Small and Luxurious cars and they have established some relationship among the factors which are related in each of the three segments mentioned above. Their research was based on the following factors: Mileage, Price, Maintenance cost, After Sales Service Shape, Accessories, Engine, Luggage Capacity, Fuel, Loan, Terms of payment, Brand, Easy Handling, Safety and Availability of spare parts.

Kayaly & Taher (2010) study made in Egyptian market reveals that there are many drivers affecting the customers purchasing behaviour, process related attributes and relationship attributes. There may be multi-benefit framework that identifies the different benefits which may contribute to customers' satisfaction level and clients experience a range of non-functional benefits like process/services or to their relationship with the agent. Perceived value measurement offers a major source of competitive advantage. The study tested the dimensions that affected satisfaction in Egyptian car market.

Menon & Jagathy Raj, Consumer Behavioral Patterns of Passenger Cars, (2011)have done some research on consumer behaviour patterns of passenger cars. Their findings show that the Indian automobile industry actually developed in two clear stages: pre liberalisation and post liberalisation.

Aghdaie & Yousefi (2011) have done some work on the comparative analysis of affecting factors on purchasing domestic and international cars in Iran market- Using AHP technique. Their main research findings are AHP model that determined the importance of buying criteria for domestic and imported cars.

Sardar (2012) has worked on brand preference of passenger cars in Aurangabad district. He concluded that the Automobile industry has strongly striven towards globalisation, which increasingly affects the policy of local, regional and global levels. The present study made a systematic effort on studying consumer brand preference towards passenger cars in Aurangabad district by analysing the factors that influence brand choice of the customer and revealed the impact of brand preference dimensions on customer satisfaction.

Menon & JagathyRaj, IJMT (2012) have done some work on model development and validation for studying consumer preferences of car owners and their findings were possible parameters and a framework development that

influence the consumer purchase behaviour patterns of passenger car owners in the state of Kerala.

Anjum (2013) has worked on buying behaviour and customer satisfaction of Hyundai cars in Hyderabad city also he has been studying the factors influencing the customer to purchase Hyundai cars and has analysed the factors influencing their satisfaction.

Singh & Srivastava (2013) have found some findings on factors affecting customer satisfaction: A study on Maruti Suzuki. They have concluded that the factors like: economy, comfort, spare parts, expensive, money value, mileage, maintenance, radius and parking are considered in the study have significant effect on the overall satisfaction of the customer.

Devi, Gomathy, & Krishnakumari (2013) made a study on consumer preference and satisfaction towards sedan cars in Coimbatore city and have found that sedan car manufactures are the major players in the car segment and there is tough competition among Hyundai, Tata, Ford, Maruti etc. The authorized dealers for sedan car companies have initiated many steps towards boosting sales operation. The study has attempted to understand car purchase satisfaction and influential factors affecting purchase decision.

Zolkifly (2013) worked on Examining customer's satisfaction towards national car attributes among Malay, Chinese and Indian has studied that rapid entry of foreign or imported cars in the domestic market leaves Malaysian car manufacturers struggling to compete with their foreign counterparts. Despite high sales, customer's satisfaction towards national car was low compared to imported cars. Variables like safety feature, vehicle appearance, resale value and standing charges are related to customer's satisfaction. All major ethnic groups; Malay, Indian and Chinese were influenced mostly by safety feature. Chinese has lower satisfaction level towards national car consumption as compared to other races.

Dua (2013) conducted a study of customer satisfaction with reference to Tata Motor Passenger vehicles and observed that the satisfaction is crucial concern for both customers and organizations. It depends on many factors and varies from person to person and product to product. Now a days it has become very important factor for each and every organization is to enhance the level of customer satisfaction. The overall study reveals that the customer are mostly satisfied with price, design, safety, mileage, interior space, status brand name, comfort level, spares part and after sale service.

Kaushal (2014) has examined the buyer behaviour in reference to car purchase intentions and automobiles marketing strategies in Uttar Pradesh. In this study the resultant empirical factor structure indicated that the safety & security conscious buyers items form a first factor while some other factors quality conscious buyers, performance conscious buyers, value conscious buyers and technology conscious buyers formed the second, third, fourth and fifth factors respectively.

QiHua, ChunYan, & RuoPing (2014) with the high-speed development of China's Internet, e-commerce and network information communication make consumers on product quality of service have a more clear understanding. The completion of network sales market brought the traditional automobile sales and services the unprecedented pressure. The

study has analysed the theories about customer satisfaction model both in China and abroad. All of them are expected difference theory as the core, evaluating the benefit of consumer satisfaction by perception, the difference of perceived benefits and loss.

Objective of the Study

To identify the important factors influencing customers' demand for different facilities for medium segment cars as provided by the car manufacturing company.

Research Method

For primary data collection convenience sampling is used and through structured questionnaire and information regarding cars has been collected from 200 respondents. Out of which only 192 responses could be considered for analysis. For getting supporting information about secondary data different car manufacturing companiesand automobile magazines have been explored. Also secondary data have been collected through research article, different journals and periodicals as well as through data base. The data has been analysed through statistical package.

Results and Findings

Demographic Information

Table 4 : Demographic Information

Age (in Years)	Frequency	Percent
Below 25 Years	23	12.0
25 Years– below 45 Years	95	49.5
45 Years– below 65 Years	67	34.9
65 Years –below 85 Years	5	2.6
85 Years and above	2	1.0
Total	192	100.0

Educational Qualification	Frequency	Percent
Matriculate	11	5.7
Diploma	12	6.3
Graduate	91	47.4
Post Graduate	53	27.6
Professional Degree	16	8.3
Doctorate	7	3.6
Other	2	1.0
Total	192	100.0
Occupation	**Frequency**	**Percent**
Government Job	22	11.5
Private Job	73	38.0
Business	56	29.2
Profession	18	9.4
Retired	7	3.6
Farmer	4	2.1
Housewife	8	4.2
Other	4	2.1
Total	192	100.0
MonthlyFamily Income (in Rupees)	**Frequency**	**Percent**
<25000	7	3.6
25000-50000	43	22.4
50000-75000	53	27.6
75000-100000	34	17.7
100000 and above	55	28.6
Total	192	100.0

Source: Research Findings

KMO Test

H0 : There is a sampling adequacy for the data. (For KMO Test)

H0 : The population matrix is an identity matrix. (Bartlett Test)

Table 5 : KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.727
Bartlett's Test of Sphericity	Approx. Chi-Square	384.367
	Df	45
	Sig.	.000

Source: Research Findings

Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy shows the common variance, attributed to the underlying factors. A high value of this statistic (from 0.5 to 1) indicates the appropriateness of the factor analysis for the research data, whereas low value of statistic (below 0.5) indicates the inappropriateness of the factor analysis. In the research this statistic value is 0.727 it indicates the appropriateness of the factor analysis. (See Table: 5)

Bartlett's test of sphericity tests the hypothesis whether the population correlation matrix is an identity matrix. If it is an identity matrix then factor analysis is meaningless because it shows that each variable correlates perfectly with itself (i.e. r = 1) but no correlation with the other variables (i.e. r = 0). From the research findings based on Table: 5 at the 0.05 significance level test shows that significant value of the test is 0.000 which less than that of the selected level of significance. So null hypothesis is rejected and one can comment that there is a significant relationship among the variables, taken for the factor analysis.

Factor Analysis

Following tables (Table: 6, 7, 8 and 9) and figure (Figure 1) are the part of the Factor Analysis.

Communalities: It indicates the amount of variance a variable shares with all other variables taken for the study. This is also proportion of variance explained by the common factors. Table 6 shows the findings of the research.

Table: 6 Communalities

Communalities		
	Initial	Extraction
Fog Lamps	.254	.315
GPS	.076	.086
Parking Assistance	.339	.458
Rear Camera	.380	.478
ABS	.358	.437
Air Bags	.247	.326
All Power Window	.226	.226
Music System	.228	.652
More Luggage Space	.398	.867
More Boot Space	.396	.395
Extraction Method: Principal Axis Factoring.		

Source: Research Findings

Screen Plot : It is a plot of eigenvalues and component (factor) number according to the order of the extraction. This plot is used to determine the optimal number of factors to be retained in the final solution. For an appropriate factor analysis model, this plot looks like an intersection of two lines (Figure 1).

It clearly shows that the factor on the steep slope should be retained in the model and the factors on the shallow slope can be excluded from the model because these factors contribute relatively little to the factor model. As per the research the Figure: 1 shows that there factors should be retained and rest can be removed.

Figure 1 : Screen Plot
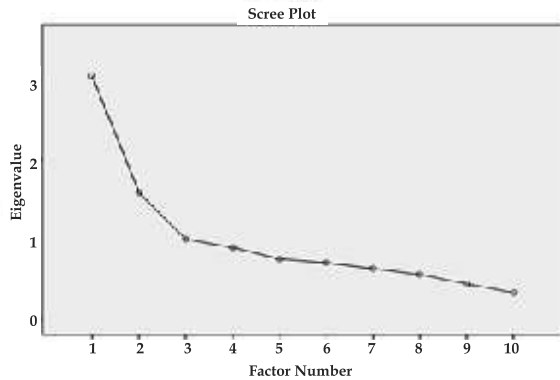
Source: Research Findings

Factor Matrix : Factor matrix table contains the factor loadings for each variable taken for the study on un-rotated factors. (Table 7)

Table 7 : Factor Matrix

Factor Matrix			
	Factor		
	1	2	3
Rear Camera	.647		
Parking Assistance	.621		
ABS	.602		
Fog Lamps	.513		
Air Bags			
All Power Window			
GPS			
More Luggage Space		.739	
More Boot Space			
Music System			.632
Extraction Method: Principal Axis Factoring.			
a. Attempted to extract 3 factors. More than 25 iterations required. (Convergence=.015). Extraction was terminated.			

Source: Research Findings

Rotated Factor Matrix: It shows process of manipulation or adjusting the factor axes to achieve a simpler and pragmatically more meaningful factor solution. (See Table: 8)

Table 8 : Rotated Factor Matrix

Rotated Factor Matrix[a]			
	Factor		
	1	2	3
Parking Assistance	.657		
Rear Camera	.641		
ABS	.634		
Air Bags	.565		
Fog Lamps	.547		
GPS			
More Luggage Space		.929	
More Boot Space		.584	
Music System			.791
All Power Window			
Extraction Method: Principal Axis Factoring. Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 5 iterations.			

Source: Research Findings

Table 9 : Factor Transformation Matrix

Factor Transformation Matrix			
Factor	1	2	3
1	.797	-.450	-.403
2	.559	.802	.209
3	.229	-.392	.891
Extraction Method: Principal Axis Factoring. Rotation Method: Varimax with Kaiser Normalization.			

Source: Research Findings

For research purpose ten independent variables have been selected. Through factor analysis conversion of these variables in few groups of variables called factors has been done.

Exploratory factor analysis with principle axis factoring also Varimax rotation method with Kaiser Normalization was taken. It was

attempted to extract 3 factors and for that more than 25 iteration were done and finally the extraction was terminated. These factors can be checked based on Table: 8. Here it was found that three factors among that Factor 1 which can be named as Safety Constraints includes the variable called Parking Assistance, Rear Camera, ABS, Air Bags, and Fog Lamps, the Factor 2 which was named as Space Constraints includes the variables called More Luggage Space and More Boot Space and the Factor 3 which was named as Entertainment Constraints includes the variable Music System. Here two variables GPS and All Power Windows were deleted. (See Table 9)

Table 10 : Name of Factor

Factor No	Name of the Factor	Grouped Variables
Factor 1	Safety Constraint	Parking Assistance, Rear Camera, ABS, Air Bags, Fog Lamps
Factor 2	Space Constraint	More Luggage Space, More Boot Space
Factor 3	Entertainment Constraint	Music System

Source: Research Findings

Conclusion

Overall three factors have been incorporated through research findings. (See Table: 9) In totality 10 variables were considered but according to our research findings, it has been observed that out of 10, only 8 variables have been influencing one. Three factors have been considered here by grouping few variables, i.e. Safety Constraint is the First factor which includes Parking Assistance, Rear Camera, ABS, Air Bags, Fog Lamps, Second factor is Space Constraint which includes More Luggage Space, More Boot Space and Third Factor Entertainment Constraint includes Music System. Each one has great relevance in terms of

identifying the important factors that influence the demand of the customers for medium segment car. The study will be helpful for further analysis for researchers as well as medium segment car manufacturing company.

Limitations

The study is based on medium segment cars and targeted population is Gujarat state only. Results may vary and one can get clear picture if more states and other segments of cars are included in the study.

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