BUYING PREFERENCE OF 4-WHEELER - AN EXPLORATORY STUDY AT BHUBANESWAR

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Abstract

Targeting the right set of customers for any given product is very important problem in business (B2B / B2C). In this paper we propose a new approach to solve this problem based on product ranking attributes specifically for the automotive sector. We listed different features of 4 wheelers the buyer may be interested while buying car. Each features than ranked and also ranked according to the Demographic features like Gender and income. We than also surveyed the preferable financer to buy car.

Keywords: Consumer Brand preference, sustainable competitive advantage, strategy, automotive sector.

Introduction

Odisha the land of Lord Jagantah, is the Indian state on the subcontinent's eastern part having 3.46% (41,974,218) of total Indian population (Censusinfo India 2011) owns 56 & 43.5 percentage of 4 wheeler respectively in both urban & rural segment (CensusINFO India 2011, Houses, household amenities & assets) having their own values, beliefs and in the path to became successful and rapidly moving to became the smart state having all comfort to live & to communicate on road too. Most companies tapping these current trends of people & attracted prospects with many lucrative offers which made people confuse to get the right products for them which fetch value to them (Singh, A.K & Agarwal, P.K, 2013). Till the date the current car registration in passenger vehicles segment is 186323 as on 31st March 2012 (Govt. of India Statistics of Registered Vehicles). The passenger vehicle category is having 14% of market share (Society of Indian Automobile Manufacturers, 2013-14).

With the total population of 1,210,569,573   In India (Censusinfo India 2011) the large buyers & their varied expectations are increased rapidly from the products they consume or they ought to consume and hence the manufacturer need to sustain, survive & strategise to sale their products by adding more value (Singh, A.K & Agarwal, P.K, 2013), need to create right attitude for their manufactured products, developing brand loyalty (Goyal,A., 2014), the companies need to take adequate care about their marketing mix elements with special focus on distribution (Priyadarsini,S.A, 2014).

The companies need to focus on the family type, demographics segments like Gender, age, occupation, educational qualification, monthly income (Saxena,M. & et al , 2012) along with the other variable like price, environmental concern, quality(Raghavendra,G.P & etal,2009), brand image, durability, convenience, product packaging (Raghavendra,G.P & etal,2009) also (Aggeman,C.M, 2014, Singh, A.K & Agarwal, P.K, 2013, Ghosh,M & Ghosh,A., 2013, Goel, P., 2013, Maheswari, M.U & et al, 2013, Saxena,M. & et al , 2012). The companies need to understand the current trends, choice colour & buying attitudes of consumer (Dutt, R.2013).

It has proved that communications from the company to consumer across zones, cities, gender & age groups create positive attitude towards their product & the usage benefits (Singh, S etal, Sharma, s., & rehman, a. 2012). Popular Brand has also have effect on the consumer minds irrespective of gender who serves their customer to gain customer satisfaction (Lamba, B etal, Ratnesh, K. , 2014, Ghosh,M & Ghosh,A., 2013), price is not having any effect on the preference of consumer's loyalty towards a particular brand (Ghosh,M & Ghosh,A., 2013) but while purchasing the brand consumers are more aware of the value offered by the marketer(Goel, P. , 2013) and by the information collected from friends (Chadha, o, 2011)

Literature Review

The retailer / retail chain can collect information by grouping consumers in a cluster based on few common consumers' demographics or by clustering few similar characteristics. This method and system for gathering and analyzing customer and purchasing information process the retailer / retail chain the transactional information which involve large numbers of consumers and consumer products. The Product information can be collected by uniquely identifying specific product by type, manufacturer and it can be form a group in a generic product clusters. This information can be analyzed in terms of product and/or consumer clusters to find out relationships between the consumers and the products. (W. M. Andersen, D. Hargreaves, S. M. Hoellig, D. S. Johnson and B. D. Mischel, 1999). Targeting customers are basically depends on either customer characteristics or product characteristics. The interest of a customer on any product is depended on the product attributes of the product.

Marketers build Model to predict customer's response both for potentially as well as for the new customers for their offers are basically include the data of demographic and historic purchase. In a catalogue marketing process, customers for each mailing are basically selected using segmentation criteria (C. Apte, E. Bibelnieks, R. Natarajan, E. Pednault, F. Tipu, D. Campbell, and B. Nelson, August 2001) such as recency of last purchase, frequency of last

purchase, number of purchases per year and monetary value spent over the last time periods in a specific product categories.

Clustering is a commonly used technique for customer segmentation and targeting. (W. M. Andersen, D. Hargreaves, S. M. Hoellig, D. S. Johnson, and B. D. Mischel, October 1999) group products into product clusters based on product information; and customers into customer clusters based on demographic information. A mapping between product clusters and customer clusters is used for determining the target customer set. Marketers have also used brand choice models (P. E. Rossi, R. E. McCulloch, and G. M. Allenby, 1996) with user heterogeneity to generate market segments in targeting.

Fuzzy techniques may be useful for well performance with uncertainty. Targeting and personalization area are best application for these kind of fuzzy techniques (V. Jain and R. Krishnapuram, July 2001). Fuzzy clustering techniques may also used for targeting customer (T. Hsu, K. M. Chu, and H. C. Chan, May 2000) to generate fuzzy clusters of customers based on their responses to survey and utilize them to find out the market structure and tell the application of a supervised learning method supported by fuzzy clustering of customers to select target customer in direct marketing. (M. Setnes and U. Kaymak, 2001)

Gain curve characteristics may also be used as a criterion for collection of the most flattering customer feature to use for targeting and add customer features incrementally (I.V. Cadez, P. Smyth, and H. Mannila, August 2001) by using the EM algorithm to create a customer profile by using transaction data. Every customer is allocated a set of unique weights indicating the probability that the customer's transactions [modelled by number of items purchased in each category] are created by component of the "Component mixture model."

These approaches do not unambiguously take into account the customer's motive for making the purchase because only demographic data and purchase transaction data do not provide information about the objective behind the customer's purchase decision. In reality, the purchase decision of a customer rely on vivid factors which includes product attributes, the degree to which the product possesses the attributes relative to other products, the importance that the customer places on the attributes, timing of the purchase, the customer's level of experience with the product, etc.

Objective

1. To find out the Top 3 preferred features of Bhubaneswar (Odisha) people while buying car.
2. To find out the Top 3 preferred features of Bhubaneswar (Odisha) people of demographic segment like Gender & Income.
3. To find out the most preferred financer while buying passenger car.

Methodology

Keeping the objective in mind the authors collected responses via survey of the people of Bhubaneswar owning 4-wheeler from various govt. Offices, Institutions, Financial institutions, Hospitals, corporate through Non probability- convenience sampling technique. The sample size is 253. All the items were measured & validated through "Content Validity" methodology. The Research approach is exploratory in nature. The data collection has been done after a pilot test of 25 people owning 4-wheelers to access the content adequacy,

including appropriateness of the questions, scales & instructions given. Based on the Pilot test feedback, the questionnaire was slightly modified to achieve the research objectives. All the demographic constructs & research items were measured on nominal scale. The best feature constructs were measured through a rank order data. Respondents were asked to fill the responses the degree to which they will buy 4-wheeler with those preferred features they rank from 1- 11 where 1 is most preferred and 11 means least preferred.

Data Analysis & Result

Before the starting up of actual data analysis, the final data has been prepared by removing the missing values of different items in a scale by replacing them by 9 and ensured the rank order data was properly filled by the respondent to avoid un-ambiguity in data analysis. The rank order data was checked and cross checked to avoid any kind of discrepancy for its authenticity with the help of excel manually and by checking the sum of all the ranks which is 66 (1-11) and then applied conditional formatting to check whether any value > 66 or < 66 and replaced the missing value with the last numbered rank (least preferred rank) by verifying case to case basis for the suitability of other application of statistical tools and techniques then the rank order data was cross checked by calculating the frequency. From the Table – 1 and by analysing the descriptive statistics we can found that the features were ranked appropriately by the respondent and the Standard deviation is also very less for the different features. The rank sample data features like interior space and interior looks was slightly deviated with the little less of standard deviation 1.840 and 1.936.

The rank order items in the scale are checked for its normality by Kolmogorov Smrinov test and all the items are found to be normal for further analysis (Figure- 1). The data was found to be highly reliable for the managerial implication with the Cronbach's alpha value of .861 (George and Mallery (2003).

Table 3 explaining the demographic profile of the respondent in this study. Out of 253 respondents 88 % are male (N=223) & 12% are female (N=50), 1.6 % of people belongs to the age group of 18-25 years (n=4), 26.1% of responses (n=66) belongs to the age group of 26-35 years, 53% responses (n=134) belongs to the age group of 36-45 where as 19.4% (n=49) are people whose age group is more than 46 years. Professional respondents were 91.7 (n= 232) and businessman were 8.3% (n =21) only. 17% (n = 43) of respondent's annual income is up to 5 Lakh , highest income group with 64.4% (n = 163) are earning 5- 10 Lakh per annum. 14.2% (n = 36) are earning 10-15 Lakh per annum and only 4.3%   (n= 11) of our sample are only earning 15-20 Lakh per annum. 29.2% (n =74) of our sample belongs to the traditional education category who have done courses like (Under Matric, BA, B.Sc ,B.Com, MA, M.Sc, B.Ed ,Graduation, P.G, IA[10+2],) are highest in our sample.

Multi Dimensional scaling is like cluster analysis. It operated directly on dissimilarities, no statistical distribution assumption is necessary (Wilkinson, L., 1996). To find out our 1st objective i.e the top 3 Features in 4-wheeler we have performed Multi dimensional scaling test on our dataset. The sample data explain that Safety, Mileage and Engine power (Table 1 & Figure 2) are the most preferred features.

To find out our 2nd objective gender wise top 3 most preferred features of car, we split the dataset and compared the group as per gender where we coded Male = 0 & Female = 1. Table 4(a) & Figure 3 explain that Mileage, Safety and engine power are the most preferred

features by male and Table 4 (b) & Figure 4 explain that Safety, Mileage & colour are the most preferred features by female respondent. We can see that both Male & Female considered Safety & Mileage as their top most preferred features. Sample with Per annum income upto 5 Lakh preferred Mileage, Safety & Engine power are the most sought out features (Table-5 & Figure-5). Sample with annual income of 5-10 Lakh choose Safety, Mileage and Price as their most preferred features (Table- 5 & Figure-6). Sample with annual income of 10-15 Lakh choose Safety, Mileage & colour as their most preferred feature (Table-5 & Figure -7). Sample with annual income of 15-20 Lakh choose Mileage, Price and Post-service are the most preferred feature (Table-5 & Figure -8). The preferred features of 4-wheeler as per the income wise demographic segmentation is reliable for managerial application (Table- 6) with the Cronbach alpha of .705, .877, .838 and .809 (George and Mallery (2003). SBI is still the most preferred financer for the people for buying 4 wheeler (Table-7) with 46.2 % of sample response.

SBI is the most preferred financer with 46.2% of respondent (Table – 10) to buy passenger car in the locality of Bhubaneswar.

Conclusion

From the research we can explore that safety; Mileage & Engine power is the most preferred feature of our sample. Male respondent ranked engine power as the 3rd most important features along with Mileage & safety and female respondent ranked colour as the 3rd most important features along with Safety & Mileage. Mileage is the most ranked features across different income group in our research, followed with safety, price, colour, post-service and engine power. SBI is still the most preferred bank out of many private players to get finance while purchasing a passenger car.

Discussion & Limitation

The ranked features may be applied by the 4-wheeler manufacturer while taking gender & income as one of the demographic segmentation with the Cronbach's alpha value. The Cohen's d was calculated with the help of effect size calculator using means & standard deviation (Table – 8) and it was found that for Mileage is -0.050 (small effect, Cohen's (1992)), safety 0.471 (small effect, Cohen's (1992), colour 0.592 (Moderate effect, Cohen's (1992) and engine power is 0.160 (small effect, Cohen's (1992) for the gender demographic segmentation. The most common measure of effect size for a One-Way ANOVA is Eta-Squared (Brown, J. D. 2008) by using the formula $n^2 = SS_{between} / SS_{total}$ and we found that the using the Eta- squared for Mileage, 1.23% of the total variance is accounted for by the treatment effect which has small effect size (Cohen's (1988, 1992), Eta- squared for Price, 7.19% of the total variance is accounted for by the treatment effect which has Medium effect size (Cohen's (1988, 1992), Eta- squared for Safety,2.19% of the total variance is accounted for by the treatment effect which has small effect size (Cohen's (1988, 1992), Eta- squared for colour, 7.09% of the total variance is accounted for by the treatment effect which has Medium effect size (Cohen's (1988, 1992), Eta- squared for Engine power, 1.58% of the total variance is accounted for by the treatment effect which has small effect size (Cohen's (1988, 1992) and Eta- squared for Post Service, 7.42% of the total variance is accounted for by the treatment effect which has Medium effect size (Cohen's (1988, 1992). The sample was collected only from Bhubaneswar by using convenience sampling techniques, the research

would be more meaningful with large effect size and for which the support from the 4-wheeler company is highly solicited.

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ANNEXURE

Table – 1

Descriptive Statistics			
	N	Mean	Std. Deviation
Safety	253	2.79	2.377
Mileage	253	2.80	2.108
Engine power	253	4.01	2.255
Colour	253	4.20	2.411
Price	253	4.22	2.863
Boot space	253	4.25	2.233
Interior looks	253	4.56	1.840
Interior Space	253	4.60	1.936
Post service	253	4.77	2.404
Types of engine	253	5.46	2.513
Technology	253	5.58	2.712
Valid N (listwise)	253		

Table – 2

Reliability Statistics	
Cronbach's Alpha	N of Items
.861	11

Table -3

Sample characteristics	Frequency (N = 253)	Percentage %
Gender		
Male	223	88.1
Female	50	11.9
Age		
18-25	4	1.6
26-35	66	26.1
36-45	134	53
46 & above	49	19.4
Occupation		
Professional	232	91.7
Businessman	21	8.3
Income		
Up to 5 Lakh	43	17
Up to 5-10 lakhs	163	64.4
Up to 10-15 lakhs	36	14.2
Up to 15-20 lakhs	11	4.3
Academic background		
B.Tech, BE,	32	12.6
Under Matric, BA,B.Sc ,B.Com, MA, M.Sc, B.Ed ,Graduation, P.G, IA,	74	29.2
BDS, MDS, P.hd, MBBS,	50	19.8
BCA, MCA, LLB, LLM, M.Tech	26	10.3
PGDM, MBA, M.Com, ICWAI	71	28.1

Table – 4(a)

Descriptive Statistics[a]				
	N	Sum	Mean	Std. Deviation
Mileage	223	622	2.79	2.096
Safety	223	645	2.91	2.439
Engine power	223	899	4.05	2.280
Price	223	935	4.19	2.815
Boot space	223	947	4.25	2.221
Colour	223	971	4.35	2.441
Interior looks	223	1028	4.63	1.834
Interior Space	223	1047	4.70	1.965
Post service	223	1073	4.81	2.377
Types of engine	223	1234	5.53	2.502
Technology	223	1259	5.65	2.699
Valid N (listwise)	223			
a. GENDER = 0 (Male)				

Table 4(b)

Descriptive Statistics[a]				
	N	Sum	Mean	Std. Deviation
Safety	30	58	1.93	1.639
Mileage	30	87	2.90	2.234
Colour	30	92	3.07	1.837
Engine power	30	111	3.70	2.070
Interior Space	30	116	3.87	1.548
Interior looks	30	121	4.03	1.829
Boot space	30	127	4.23	2.359
Price	30	132	4.40	3.244
Post service	30	135	4.50	2.623
Types of engine	30	147	4.90	2.564
Technology	30	154	5.13	2.813
Valid N (listwise)	30			
a. GENDER = 1 (Female)				

Table – 5

	INCOME	Interior Space	Interior looks	Engine power	Mileage	Boot space	Post service	Price	Safety	Colour	Types of engine	Technology
1	Mean	4.60	5.09	4.16	3.02	5.23	5.70	5.70	3.14	5.42	6.72	6.70
	Std. Deviation	1.892	1.875	2.235	2.502	2.245	2.065	2.633	2.436	2.130	2.119	2.416
2	Mean	4.66	4.56	4.13	2.87	4.20	4.87	4.02	2.86	4.08	5.36	5.53
	Std. Deviation	2.041	1.828	2.254	2.135	2.194	2.425	2.940	2.497	2.472	2.538	2.681
3	Mean	4.36	4.17	3.46	2.47	3.58	3.83	3.94	1.97	3.19	4.61	4.78
	Std. Deviation	1.588	1.875	2.368	1.558	2.048	2.171	2.366	1.444	1.786	2.207	2.899
4	Mean	4.45	3.82	3.27	2.00	3.27	2.91	2.18	3.09	4.55	4.82	4.73
	Std. Deviation	1.695	1.328	1.794	1.414	2.240	2.256	1.722	2.468	2.622	2.960	2.533

Report

Table – 6

Reliability Statistics		
INCOME	Cronbach's Alpha	N of Items
1	.705	11
2	.877	11
3	.838	11
4	.809	11

Table – 7

		Frequency	Percent	Valid Percent	
FINANCER NAME					
Valid					
	ALAHABADA	2	.8	.8	
	BOB	1	.4	.4	
	BOI	5	2.0	2.0	
	Canara	3	1.2	1.2	
	CANARA	4	1.6	1.6	
	HDFC	74	29.2	29.9	
	ICICI	6	2.4	2.4	
	IDFC	1	.4	.4	
	OBC	10	4.0	4.0	
	PNB	26	10.3	10.3	
	SBI	117	46.2	46.2	
	SYNDICATE BANK	1	.4	.4	
	UBI	3	1.2	1.2	
	Total	253	100.0	100.0	

Table – 8

	GENDER	N	Mean	Std. Deviation	Std. Error Mean
Group Statistics					
Engine power	0	222	4.05	2.280	.153
	1	30	3.70	2.070	.378
Mileage	0	223	2.79	2.096	.140
	1	30	2.90	2.234	.408
Safety	0	222	2.91	2.439	.164
	1	30	1.93	1.639	.299
Colour	0	223	4.35	2.441	.163
	1	30	3.07	1.837	.335

Table – 9

		Sum of Squares	Df	Mean Square	F	Sig.
		ANOVA				
Mileage	Between Groups	13.875	3	4.625	1.041	.375
	Within Groups	1106.243	249	4.443		
	Total	1120.119	252			
Price	Between Groups	148.547	3	49.516	6.433	.000
	Within Groups	1916.497	249	7.697		
	Total	2065.043	252			
Safety	Between Groups	31.075	3	10.358	1.852	.138
	Within Groups	1386.779	248	5.592		
	Total	1417.853	251			
Colour	Between Groups	103.925	3	34.642	6.339	.000
	Within Groups	1360.794	249	5.465		
	Total	1464.719	252			
Engine power	Between Groups	20.225	3	6.742	1.331	.265
	Within Groups	1255.759	248	5.064		
	Total	1275.984	251			
Post service	Between Groups	108.149	3	36.050	6.659	.000
	Within Groups	1348.010	249	5.414		
	Total	1456.158	252			

Table- 10

		Frequency	Percent	Valid Percent	
		FINANCER NAME			
Valid					
	ALAHABADA	2	.8	.8	
	BOB	1	.4	.4	
	BOI	5	2.0	2.0	
	Canara	3	1.2	1.2	
	CANARA	4	1.6	1.6	
	HDFC	74	29.2	29.9	
	ICICI	6	2.4	2.4	

IDFC	1	.4	.4	
OBC	10	4.0	4.0	
PNB	26	10.3	10.3	
SBI	117	46.2	46.2	
SYNDICATE BANK	1	.4	.4	
UBI	3	1.2	1.2	
Total	253	100.0	100.0	

Figure 1

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The categories of Interior Space occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
2	The categories of Interior looks occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
3	The categories of Engine power occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
4	The categories of Mileage occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
5	The categories of Boot space occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
6	The categories of Post service occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
7	The categories of Price occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
8	The categories of Safety occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
9	The categories of Colour occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
10	The categories of Types of engine occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
11	The categories of Technology occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.

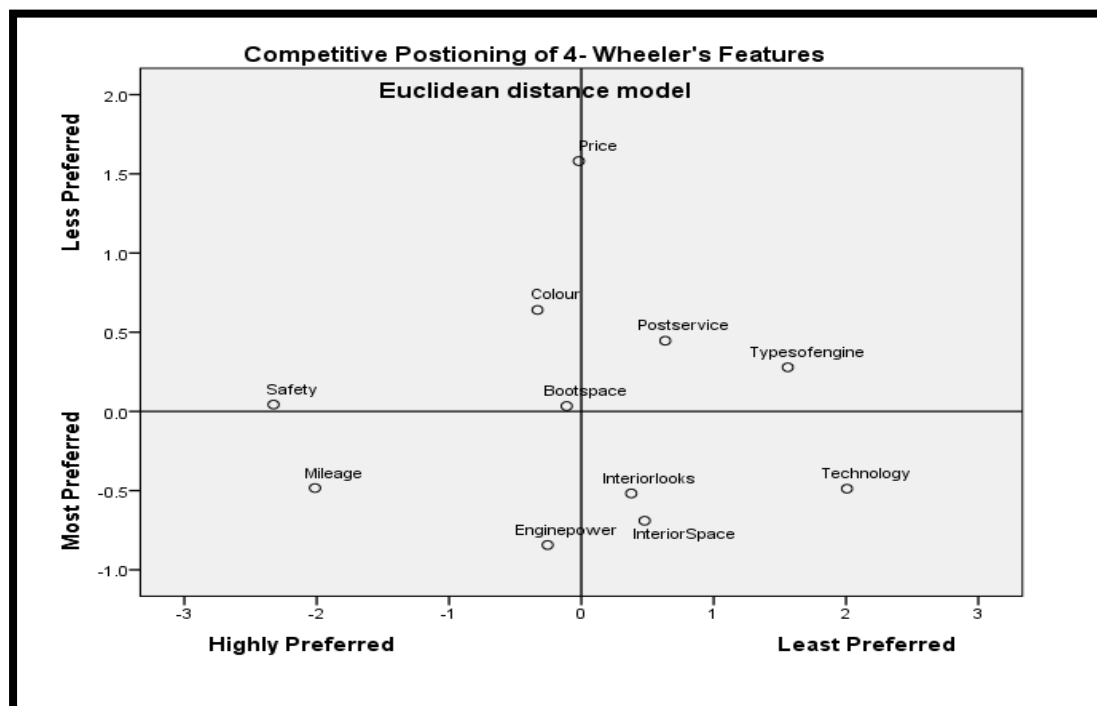Asymptotic significances are displayed. The significance level is .05.
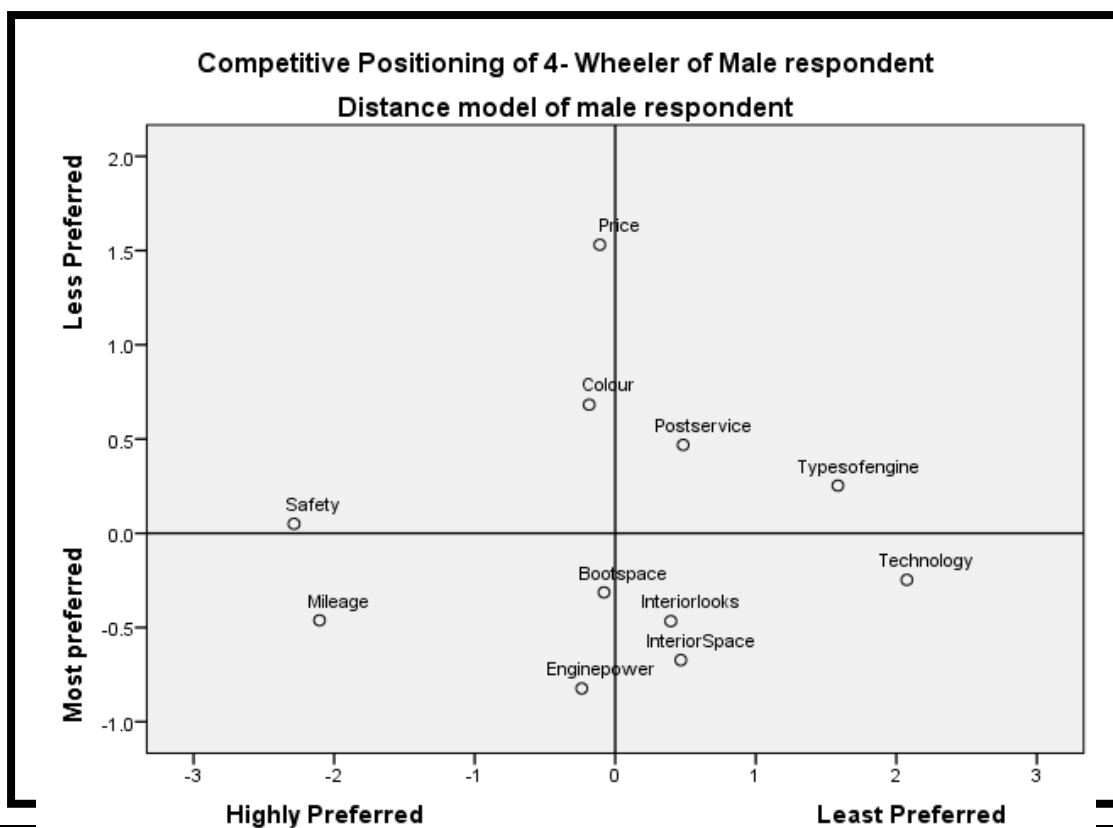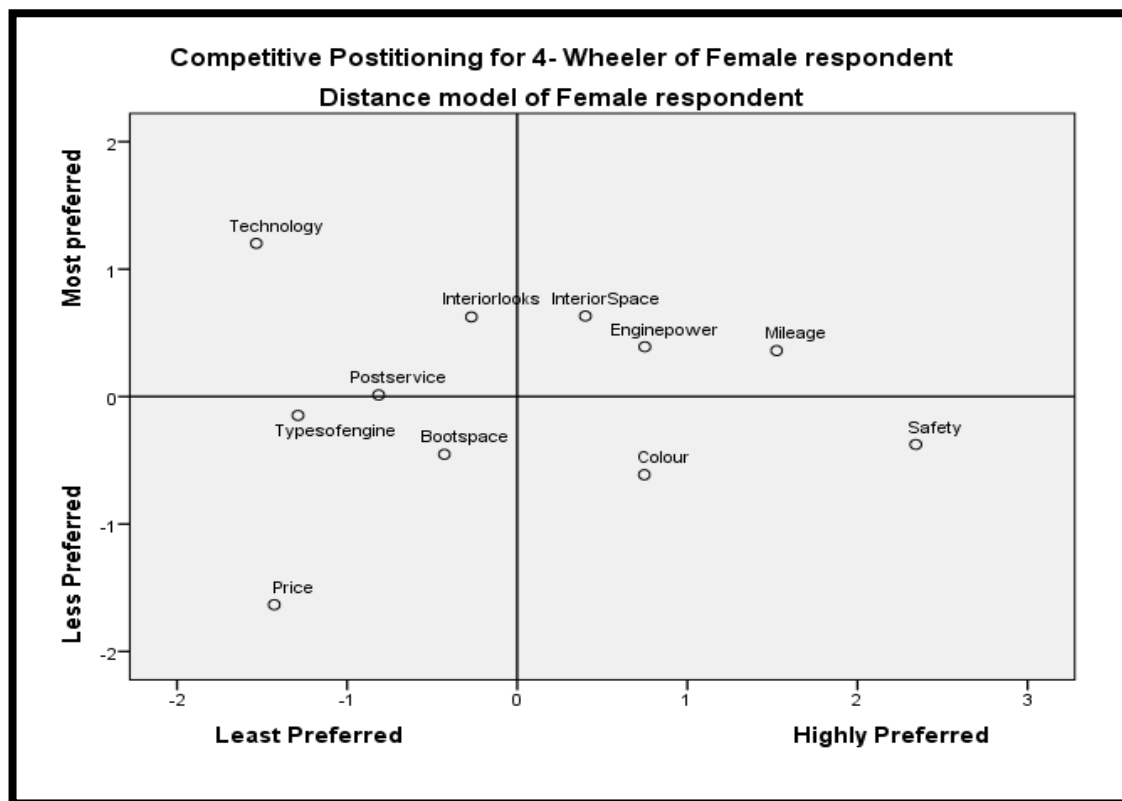
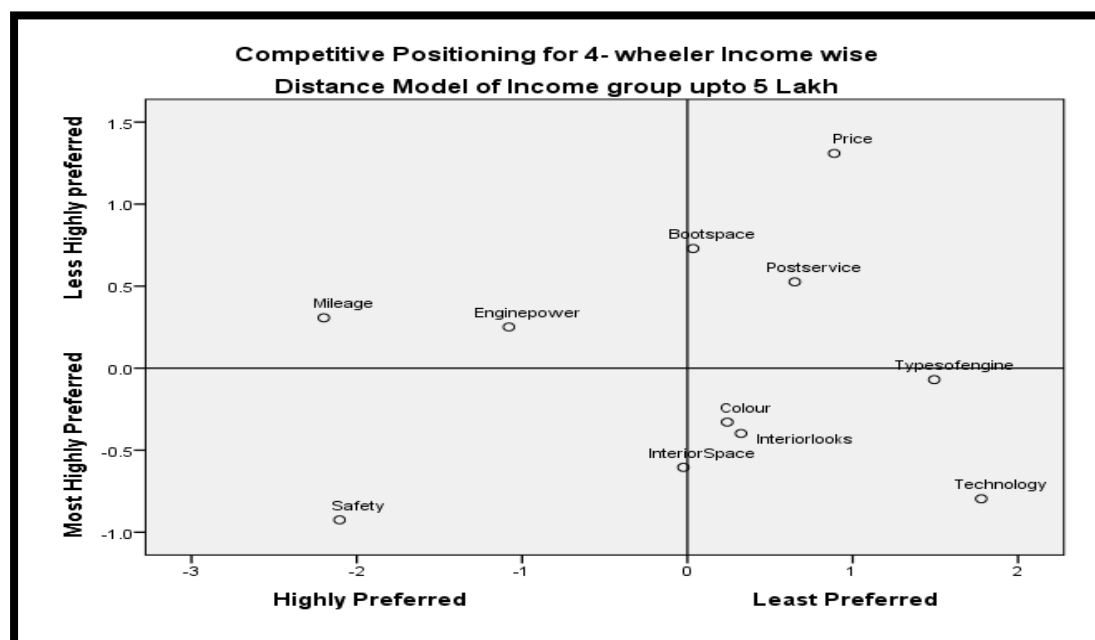Figure- 2

Figure 3

Figure- 4

Figure – 5
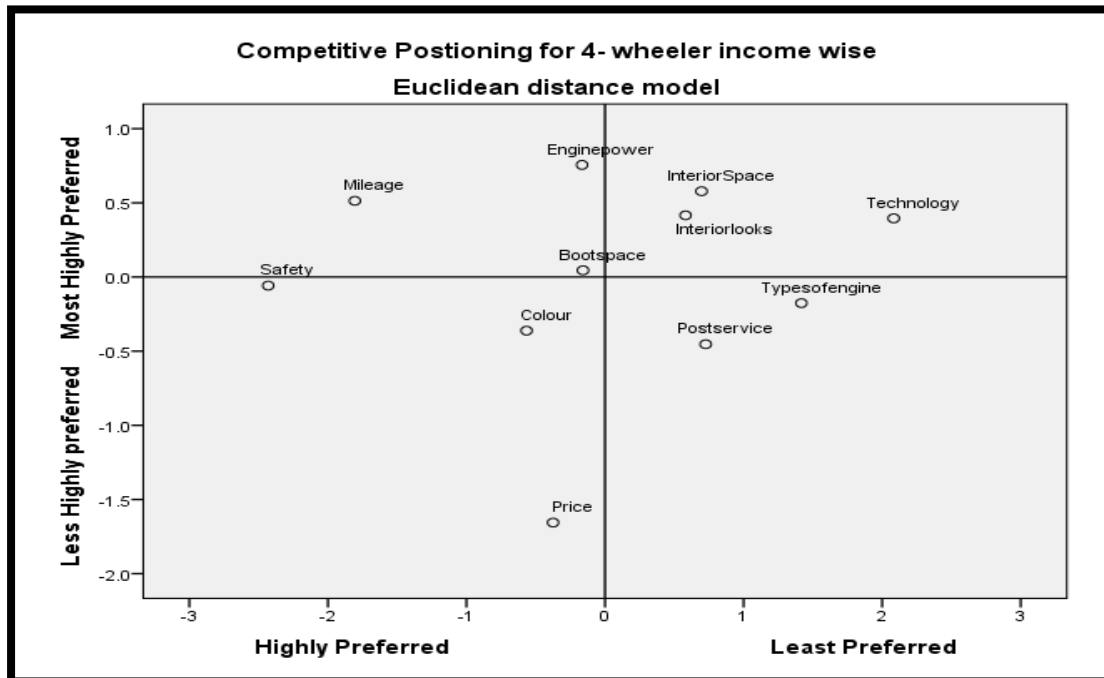
Figure- 6

Distance Model of Income group from 5-10 Lakh

Figure- 7

Competitive Positioning for 4-wheeler Income Wise
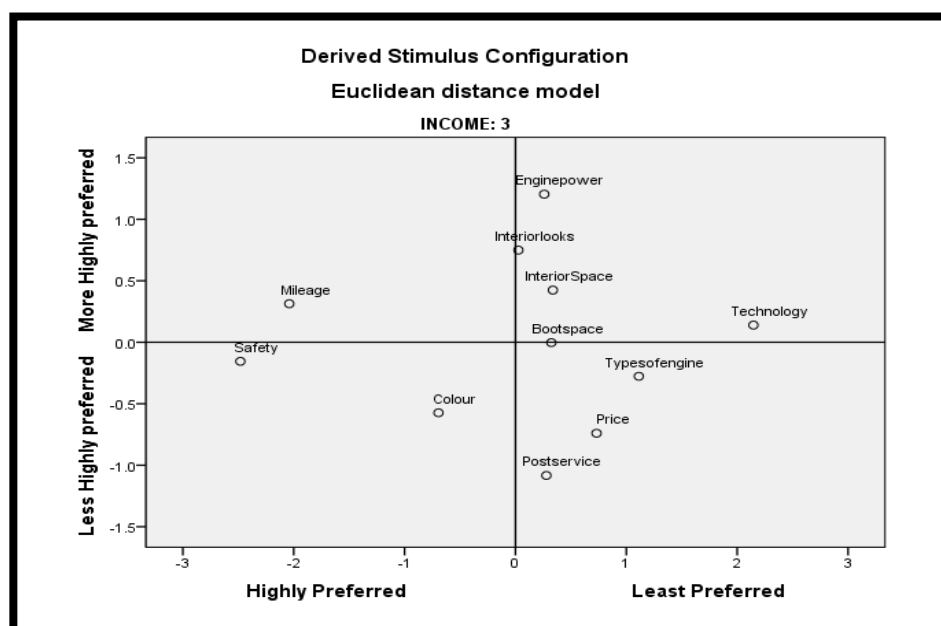
Distance Model of Income group from 10-15 Lakh

Figure – 8

Competitive Positioning for 4-wheeler Income Wise

Distance Model of Income group from 15-20 Lakh