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Customer Based Brand Equity of Passenger Cars: An Analytical Study

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Abstract:

Customer Based Brand Equity model provides a blue print for the steps involved in building a strong brand. Customer based brand equity is an appropriate concept for studying brand equity because it is directly linked with the customer behaviour and their attitudes. Customer Based Brand Equity occurs when the consumer has a high level of awareness and familiarity with the brand and holds some strong, favourable, and unique brand associations in memory. Customer Based Brand Equity model lays out a series for building a strong brand equity which are: i) establish the proper brand identity ii) create the appropriate brand meaning. iii) elicit positive brand responses, and, iv) forge strong brand relationship with the customers, Customer Based Brand Equity results in the creation of a strong brand and this is achieved when the brand awareness and the image are at high level and add value to the customers. The data have been collected through interview schedule and primary in nature. The statistical tools namely, Descriptive statistics, Chi-square and Kendall's coefficient concordance has been used for analyzing the data. The study aims to examine the relationship between the demographic factors and product related factors of passenger cars. The study reveals price plays pre-dominant role in the purchase of the cars.

Keywords: Brand equity, branding, customer based brand equity

1. Introduction

Brands are the 21st century's warriors in the market place and a means to distinguish the goods from one brand to another. A customer as well as a firm finds an identity in a brand. A brand carves a niche in the psyche of customers. Brand helps a customer to identify the source of a product. A customer does not need any additional description of a product if he or she recognizes a brand. Brands are all pervasive.

The purpose of any business is to create valuable customers at a profit, and the most valuable asset of a company is its customers' loyalty. The value of a brand comes from its ability to gain an exclusive and prominent place in the minds of a large number of customers. A brand is valuable to an organization and important to its customers. It provides a strong competitive edge over the other companies and hence they are increasingly becoming important tradable assets. Brand has a name, logo, symbol, package design, or other attribute that identifies a product and distinguishes it from others. A brand's ability to gain approval from customers results in the success of brand. Branding is an art and a cornerstone of marketing and is all about creating a difference. Brand equity is one of the most popular and potential concepts in the new era of marketing. Brand equity is uniquely attributable to a brand and relates to its fact. Brand equity is the willingness of someone to continue his loyalty and it measures segments from entrenched users of the brand to convertible users. Aaker (1991) defines brand equity as "a set of brand assets and liabilities linked to a brand, its name, and symbol that add to or subtract from the value provided by a product or service to a firm and / or to that firm's customers". Keller's views on brand equity focus on the customer and his knowledge of the brand. The main elements of Keller's theory of brand equity are differential effect generated by strong brand name, brand knowledge, and customers' response. Brand equity provides a common denominator for interpreting marketing strategies and assessing the value of a brand. Brand equity can be determined at the firm level, product level and customer/consumer level.

Customer Based Brand Equity model provides a blue print for the steps involved in building a strong brand. Customer Based Brand Equity occurs when the consumer has a high level of awareness and familiarity with the brand and holds some strong, favourable, and unique brand associations in memory. Customer Based Brand Equity model lays out a series for building a strong brand equity which are: i) establish the proper brand identity ii) create the appropriate brand meaning. iii) elicit positive brand responses, and, iv) forge strong brand relationship with the customers, Customer Based Brand Equity results in the creation of a strong brand and this is achieved when the brand awareness and the image are at high level and add value to the customers. Customer Based Brand Equity springs from consumer awareness for the brand that triggers associations in memory that are linked to the brand, overtime, their positive brand attitude which takes on strong emotional associations that extend well beyond the 'liking' of the brand. The favourable brand attitude built over time by the acceptance of perceived benefits for the brand, and the loyal brand behaviour, result in strong positive brand equity.

1.1. Statement of the problem

Brands play a significant role in emerging business scenario and are considered to be the wealth-generators of the twenty-first century. The marketers have high responsibility to create a value for their brand. The marketers should identify the parameters for creating value to a particular brand which helps them to sustain in the market for a long period. Customer based brand equity is an appropriate concept for studying brand equity because it is directly linked with the customer behaviour and their attitudes. Moreover, customers play a more active role in the creation of brand at various points and they have reasons to buy a brand. The customer based brand equity comprises five dimensions, namely, brand awareness, brand loyalty, brand association, perceived quality- named as 'principal assets' and proprietary brand assets- named as 'supplementary assets'. The need for customer based brand equity has increased abundantly for industrial sectors especially for car industry which is named as "Sunrise sector" of Indian economy, because the development in automobile sector overhauls the perception of the potential car buyers, with their disposable income and availability of profitable financial position. Today's fast-changing passenger car market has become tougher to analyse the brand equity of a particular brand.

1.2. Scope of the study

The study aims at examining the customer based brand equity of passenger cars both new and pre-owned cars, considering, brand awareness, brand loyalty, brand association, and perceived quality (principal assets) from customer perspective. The dimension of proprietary brand assets (supplementary assets) is not considered in this study as it is a dimension from firm's perspective. The demographic factors and product related factors are examined to identify the relationship between these factors.

1.3. Objectives

The study has focuses on the following objective:

- To study the demographic factors and product related factors in respect of passenger cars and to examine the relationship between these factors.

1.4. Research Methodology

1.4.1. Period and Area of the Study

The period considered for the study has been 2009-2013. The study is pertaining to Coimbatore City only.

1.4.2. Sampling

Stratified random sampling method has been adopted for the selection of respondents in this study.

Regional Transport Office, Coimbatore is the main source of information in respect of passenger cars selected for the study. Coimbatore region is mainly divided into three zones, South, North, and Central. The total numbers of passenger cars registered during the year 2005- 2011 has been 101365. National Education Association, (US) has prescribed a model to determine the size of sample when the population size is very large.

Accordingly, the following model is used to determine the required sample size.

$$s = \frac{\chi^2 NP(1-P)}{d^2 (N-1) + \chi^2 P(1-P)}$$

where,

- s = required sample size
- χ^2 = the table value of chi-square for 5 degree of freedom at the desired confidence level (6.635)
- N = the population size
- P = the population proportion (assumed to be 0.50 since this would provide maximum sample size)
- D = the degree of accuracy expressed as a proportion (0.10).
- Thus, the sample size arrived at is 498. For arithmetical convenience, the sample size considered is 500, which is distributed in the ratio of registered passenger cars in zone wise i.e., 45:35:20(South, North, and Central).

1.4.3. Data and Data Sources

The study is based mainly on primary data. Secondary data have also been used in this study. Primary data have been collected using interview schedule. A pilot study has been conducted initially with 50 respondents. The results of the pilot study have necessitated certain changes for the final structuring of the interview schedule meant for 500 respondents chosen. The brands of passenger cars selected for the study are on the basis of the survey by the Automotive Component Manufacturers Association of India (ACMA). The association has ranked the brands of cars based on their market share (2010). The market share of passenger cars in India in the year 2009-2010 has been: Maruti – 50 per cent, Hyundai - 26 per cent, Tata Motors - 12.7 per cent, Hindustan Motors - 2.6 per cent, Ford - 2.4 per cent, Honda - 2.0 per cent and other brands - 4.3 per cent.

Hence, the study has considered brand selection limited to only six brands based on the market share and other brands are not considered as their contribution to market share is insignificant.

1.4.4. Statistical Tools Used

The following statistical tools have been used for analyzing the data collected using SPSS version 17.

- Descriptive Statistics: Percentage analysis
- Statistical tests: Chi-square and Kendall's coefficient concordance

1.5. Limitations of the Study

The following are the limitations of the study:

- Inability of the human mind to remember certain facts poses a limitation.
- The normal limitations inherent in the statistical tools may be present in the current study too.

2. Review of Literature

An overview of the relevant research studies in the same research areas helps to tune a sound methodology for research in the study. The base of any research is associated with previous studies undertaken by researchers. The study has identified various dimensions, factors, and attributes with the help of the past studies. Hence, the findings of earlier studies have been presented to provide a strong foundation and research gap for the present study with a thorough review of literature.

Peter. H. Farquhar (1989)¹, in his article, “Managing Brand Equity”, has analyzed the meaning of brand equity and has found that there is a general agreement at the conceptual level as to the meaning of brand equity which can be summarized as “the financial value endowed by the brand to the product” and the brand equity is measured by the incremental cash flow from associating the brand with the product. The competitive advantage of firms that have brands with high equity includes the opportunity for successful extensions, resilience against competitors’ promotional pressure and creation of barriers to competitive entry. Consumer based perspective of equity emphasizes on psychological and behavioural tenets that go into the causality of consumer purchases like brand loyalty, dominance and brand image etc., after identifying the requirements of psychological and behavioural aspects. In building brand equity, a need has been created to explore the factors and elements involved in psychological and behavioural tenets. The researcher has identified three elements for building strong brand, namely, positive brand evaluation, accessible brand attitude, and consistent brand image.

Kevin Lane Keller (1991)² in his research paper on “Conceptualizing, Measuring and Managing Customer-Based Brand Equity”, has conducted a study with the aim of providing conceptual framework of brand equity. The author has conceptualized brand equity from the perspective of the individual consumer and the result of the study introduced the concept of customer-based brand equity, and defined it as the differential effect that brand knowledge has on consumer responses to marketing activity for that brand. A brand is said to have positive (negative) customer-based brand equity when consumers react more(less) favourably to marketing mix activity for the brand as compared to the same marketing activity that is attributed to a hypothetical or unnamed version of the product or service. The main findings of his study revealed the concept of customer-based brand equity, in which the consumers are aware and familiar with the brand and hold some favourable, strong, and unique brand association in the memory. The brand knowledge has been the basis of brand equity which has been created by differential effect. The differential effect (attributes, benefits, and attitudes) has been identified by brand association.

Walfried Lassar, Benwari Mittal and Arun Sharma (1995)³, in their study on “Measuring customer based brand equity”, have attempted to measure customer based brand equity. The customer based brand equity scale has been developed based on five underlying dimensions of brand equity, viz., Performance, value, social image, trustworthiness, and commitment. They have carried out three pilot studies and a scale has been developed after pilot studies in which 83 items reduced to a scale of 17 and the resulting scale has been significantly correlated with an overall measure of brand equity. 113 respondents have been considered for the study. LISREL has been applied to measure the model. The measurement of brand equity has enabled companies to evaluate their marketing programme and the findings suggested that brands that scored higher on the customer based brand equity scale generally had higher prices. The measurement of brand equity has aided in the event of marketing mix elements of a brand.

Rodolfo Vazquez, A. Belen Del Rio, Victor Iglesias (2002)⁴, in their article on “Consumer-Based Brand Equity: Development and Validation of a measurement Instrument”, have conducted a study by considering the development and validation of a measurement instrument of brand equity based on the value ascribed by consumers. The study has been confined to individuals who have purchased sports shoes in the last two years. They have collected data from 1000 respondents and 1726 brand assessment have been considered for the study. Confirmatory analysis test has been conducted to know the validity and reliability of scale items and the test shows a reasonable degree of reliability and validity of the proposed scale for sports shoes sector. The results obtained have indicated the existence of four basic dimensions of brand utilities: Product functional utility, product symbolic utility, brand name functional utility, brand name and symbolic utility.

Woo Gon Kim, Hong-Bumm Kim (2004)⁵, in their article, “Measuring Customer-Based Restaurant Brand Equity”, have examined four elements of brand equity, namely, brand awareness, brand image, brand loyalty, and perceived quality. Random sampling technique has been employed to collect the data and 394 respondents have been considered for the study. Cronbach’s reliability test, Seven point Likert scale, chi-square, t-test, factor analysis, and regression analysis have been employed in the study. The results show that the attributes of brand awareness had the strongest direct effect on revenues, while loyalty has the least effect. They have identified high-performing and low-performing groups of restaurants. The results show that customers differentiated the high-performing restaurants on several product-quality measures, including knowledgeable employees and food served on time and as ordered. Oddly, high-and low-performing restaurants are not differentiated on such other quality factors as making quick corrections of errors, experienced personnel, and cleanliness. Even though, they have considered all the four factors of brand equity, the findings show that the awareness has the smallest effect on brand equity, followed by image, loyalty, and product quality. Brand awareness alone may not be enough to achieve high sales volume and perceived quality and that brand image should also be concentrated. Thus, there is a further research required to show how far all the attributes of brand awareness are positively correlated with brand equity.

Benjamin Kartono, Vithala R.Rao (2005)⁶, in their research on “Linking Consumer-Based Brand Equity to Market Performance: An Integrated Approach to Brand Equity Management”, have proposed an integrated approach to brand equity management by developing an econometric model of supply and demand that captures the structural link between consumer-based brand equity and the brand’s market performance and accounted for strategic firm competition in pricing and advertising. Secondary data have been

collected from the year 1996-2003 from Ward's Automotive Year Book, Automotive News Market Data Book and Consumers' Reports. Consumer Based Brand Equity Model has been framed using logit choice model and consumer heterogeneity has been considered random coefficient logit model. The results of their study suggested that the existence of strong structural link between consumer-based brand equity and the brand's market performance has illustrated the value of the customer based brand equity in accounting for changes in the market performance and helps the managers to make optimal brand equity management decisions.

3. Automobile Industry in India

The Indian automobile industry has emerged as a "Sunrise sector" in the Indian economy and larger markets in the world. India is emerging as one of the world's fastest growing passenger car marketer and the second largest two wheeler manufacturers. Global and Indian manufacturers are focusing their efforts to develop innovative products technologies, and supply chain. India's passenger car and commercial vehicle manufacturing industry is the sixth largest in the world. India overtook Brazil and became the sixth largest passenger vehicle producer in the world with an annual production of more than 3.9 million units in 2011.

In 2009, India emerged as Asia's fourth largest exporter of passenger cars as well as, has been significant for Indian automobile industry as numbers of models are launched in the domestic market. As of 2010, India is home to 40 million passenger vehicles. The majority of India's car manufacturing industry is based around three clusters in the South, West, and North. The Southern cluster consisting of Chennai is the biggest with 35 per cent of the revenue share. The Western cluster contributes to 33% of the market and the Northern cluster, the national capital region contributes 32%. The Indian car manufacturers have been serving a wide variety of transportation at different levels. Automobile manufacturer have clearly committed them to supply the market with even safer and more comfortable. The automobile industry in the country has shown a spurt in growth during the period. The growth of Indian middle class with increasing purchasing power along with strong growth of economy over a past two years have attracted the major auto manufacturers to Indian market. The increasing competition in auto companies has not only resulted in multiple choices for Indian consumers at competitive costs; it has also ensured an improvement in productivity by almost 20 per cent a year in auto industry, which is one of the highest in Indian manufacturing sector. As per statistics launched by Society of Indian Automobile Manufacturer (SIAM), the passenger car transactions in domestic market have surged to 145905 units in January 2010 against the 2009 sales of 110300 units. This indirectly refers to 32.28% growth in the domestic car sales. In March 2012, passenger cars grew by 19.66 per cent as compared to the previous year domestic sales. The automotive industry also promises significant employment opportunities directly and indirectly. The automotive mission plan 2006-2016 promises additional employment generation of 25 million by the automobile industry by 2016.

The objective is to study the demographic factors and product related factors in respect of the passenger cars and to examine the relationship between these factors. In this chapter, demographic factors, namely, gender, age, marital status, educational level, occupational status, family income, family size, and number of cars owned are considered to identify the Customer Based Brand Equity of passenger cars in Coimbatore City. The product profile of the study includes the factors, namely, brand possessed, price, period of usage of the car, fuel used, mileage per litre, kilometers in a month, maintenance expenditure per year, frequency of usage of the car per week, period of change of the car, period of servicing the car as well as family influence. An attempt has been made to ascertain the relationship between demographic factors and product related factors.

Percentage analysis and Kendall's coefficient concordance have been used to understand the general profile of the respondents. Chi-square analysis has been employed to examine the relationship between demographic factors and product related factors.

Demographic Factors	Group	Number of Respondents	Per cent
Gender	Male	414	82.8
	Female	86	17.2
	Total	500	100.0
Marital Status	Married	436	87.2
	Unmarried	64	12.8
	Total	500	100.0
Age	21-30 yrs	134	26.8
	31-40 yrs	177	35.4
	41-50 yrs	118	23.6
	Above 50 yrs	71	14.2
	Total	500	100.0
Educational level	No formal education	26	5.2
	School level	63	12.6
	Graduate level	204	40.8
	Post Graduate level	143	28.6
	Professional	64	12.8
Total	500	100.0	
Occupational Status	Business/self-employed	228	45.6
	Agriculture	5	1.0
	Employed	132	26.4
	Professional	77	15.4

	Student	30	6.0
	Housewife	22	4.4
	Retired	6	1.2
	Total	500	100.0
Family Annual Income	< 200000	60	12.0
	200001-400000	153	30.6
	400001-600000	139	27.8
	600001-800000	96	19.2
	> 800001	52	10.4
	Total	500	100.0
Number of Members in the family	One	12	2.4
	Two	35	7.0
	Three	127	25.4
	Four	235	47.0
	Above 4	91	18.2
	Total	500	100.0
Number of Cars Owned	One	399	79.8
	Two	80	16.0
	Three	15	3.0
	More than 3	6	1.2
	Total	500	100

Table 1: Demographic Factors
Source: Primary Data

Product related Factors	Group	Number of Respondents	Per cent
Brand possessed	Maruti	247	49.4
	Hindustan Motor	13	2.6
	Ford	56	11.2
	Tata	35	7.0
	Hyundai	54	10.8
	Honda	24	4.8
	Others	71	14.2
	Total	500	100.0
Colour of the Car	Silver	108	21.6
	White	165	33.0
	Black	59	11.8
	Red	54	10.8
	Blue	33	6.6
	Green	15	3.0
	Others	66	13.2
	Total	500	100.0
Period of Usage of the Car	1-4 yrs	285	57.0
	5-8 yrs	136	27.2
	9-12 yrs	56	11.2
	13-16yrs	7	1.4
	>16yrs	16	3.2
	Total	500	100.0
Price of the car	Less important	8	1.6
	Neither/nor important	15	3.0
	Important	126	25.2
	Very important	351	70.2
	Total	500	100.0
Mode of Purchase	Cash	272	54.4
	Credit/loan	198	39.6
	Exchange	30	6.0
	Total	500	100.0
Fuel Used	Petrol	204	40.8
	Diesel	282	56.4

	Gasoline	14	2.8
	Total	500	100.0
Mileage of the Car	<10 km	29	5.8
	11-15 km	177	35.4
	16-20 km	220	44.0
	21-25 km	64	12.8
	> 25 km	10	2.0
	Total	500	100.0
Kilometers run in a month	500 Kms or less	147	29.4
	501-1000 Kms	178	35.6
	1001-1500 Kms	64	12.8
	1501-2000 Kms	64	12.8
	Above 2000 Kms	47	9.4
	Total	500	100.0
Maintenance per year	Up to Rs.5000	88	17.6
	Rs.5001-10000	155	31.0
	Rs.10001-15000	223	44.6
	Above Rs.15000	34	6.8
	Total	500	100.0
Period of Car Serviced	Once in 3 months	262	52.4
	Once in 6 months	163	32.6
	Yearly	75	15.0
	Total	500	100.0
Frequency of Usage of the Car	Every day	350	70.0
	Once in a week	52	10.4
	Twice in a week	40	8.0
	Thrice in a week	58	11.6
	Total	500	100.0
Have you changed your car	Changed	359	71.8
	Not Changed	141	28.2
	Total	500	100.0
Period of Change of Car	< 1 yr	97	27.0
	1-2 yrs	83	23.1
	3-4 yrs	96	26.7
	5-6 yrs	69	19.2
	> 6 yrs	14	3.9
	Total	359	100.0
Family Influence in the purchase	Yes	391	78.2
	No	109	21.8
	Total	500	100

Table 2: Product Related Factors
Source-Primary Data

Variable	Number of Respondents	Per cent
Spouse	155	39.6
Children	167	42.7
Elders	102	26.1
Others	35	9

Table 3: Family members' influence in the purchase- Multiple Response
Source-Primary Data

Source of Awareness	Number of Respondents	Per cent
Advertisements	154	30.8
Friends and relatives	337	67.4
Dealers representative	55	11

Exhibition/fair	14	2.8
Others	8	1.6

Table 4: Source of Awareness- Multiple Response
Source- Primary Data

Brand	Number of Respondents	Per cent
Maruti	332	66.4
HM	147	29.4
Ford	259	51.8
Tata	270	54
Fiat	180	36
Hyundai	250	50
Volkswagen	221	44.2
Honda	272	54.4
Chevrolet	199	39.8

Table 5: Awareness of the Brand- Multiple Response
Source-Primary Data

Reasons for the purchase of the car	Number of Respondents	Per cent
Increase in disposable income	31	6.9
Better safety on roads	76	16.9
Family needs	273	60.5
Increase in family size	19	4.2
Suit your lifestyle	52	11.5

Table 6: Reason for the purchase of the car - Multiple Responses
Source-Primary Data

Reason	Number of Respondents	Per cent
Comfort	312	62.4
Spacious	208	41.6
Value for money	269	53.8
Height of the car	182	36.4
Resale value	266	53.2
Exciting colour	209	41.8
Fuel efficiency	299	59.8
Superior ride quality	207	41.4
Environmental friendly	208	41.6
Performance	262	52.4
Brand name	250	50

Table 7: Reasons for Brand selection - Multiple Responses
Source-Primary Data

Purpose of the Car	Mean Rank
Business Purpose	2.76
Personal Purpose	2.17
Family Purpose	2.08
Official Purpose	2.99

Table 8: Purpose of the Car- Ranking
Source-Primary Data

Kendall's W	.119
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Table 9: Kendall's Coefficient of Concordance

In order to find out whether demographic factors and product related factors have any association with each other, chi-square analysis has been employed. The demographic factors, namely, gender, age, marital status, educational level, occupational status, and family annual income

related with brand possessed has been analysed to identify the significant association with each other. For this purpose, a null hypothesis has been framed and tested.

- H₀: “The demographic factors of the respondents, namely, gender, age, educational level, occupational status, and family annual income have no significant relationship with the brand possessed.”

Demographic Factors	Calculated Value	Table Value	Significance
Gender	10.511	12.592	Ns
Age	14.97	28.86	Ns
Educational level	29.36	36.41	Ns
Occupational Status	59.414	58.691	**
Family annual income	36.993	36.415	*

Table 10: Chi-square Test- Demographic Factors Vs Brand Possessed
 *-Significant at 5 % level **- Significant at 1% level Ns-Not significant

- H₀: "The demographic factors of the respondents, namely, gender, age, educational level, occupational status, and family annual income have no significant relationship with price of the car".

Demographic Factors	Calculated Value	Table Value	Significance
Gender	7.229	7.815	Ns
Age	7.985	16.919	Ns
Educational level	9.506	21.026	Ns
Occupational Status	50.403	34.805	**
Family annual income	12.857	21.026	Ns

Table 11: Chi-square Test- Demographic Factors Vs Price
 **-Significant at 1 % level Ns- Not significant

- H₀: “The demographic factors of the respondents, namely, gender, age, educational level, occupational status, and family annual income have no significant relationship with the mode of purchase of the car”.

Demographic Factors	Calculated Value	Table Value	Significance
Gender	8.163	5.991	*
Age	20.94	16.812	**
Educational level	6.235	15.507	Ns
Occupational Status	17.011	21.026	Ns
Family annual income	23.062	20.09	**

Table 12: Chi-square Test- Demographic Factors Vs Mode of Purchase
 *-Significant at 1 % level *-Significant at 5% level Ns-Not significant

- H₀: “The demographic factors of the respondents, namely, gender, age, educational level, occupational status, and family annual income have no significant relationship with fuel used in the car”

Demographic Factors	Calculated Value	Table Value	Significance
Gender	10.02	9.21	**
Age	6.717	12.592	Ns
Educational level	12.397	15.507	Ns
Occupational Status	38.2	26.217	**
Family annual income	11.69	15.507	Ns

Table 13: Chi-square Test- Demographic Factors Vs Fuel
 **-Significant at 1 % level Ns- Not significant

- H₀: "The demographic factors of the respondents, namely, gender, age, educational level, occupational status, and family annual income have no significant relationship with the mileage run per litre"

Demographic Factors	Calculated Value	Table Value	Significance
Gender	13.012	9.488	*
Age	12.93	21.026	Ns
Educational level	26.315	26.295	*
Occupational Status	49.193	42.98	**

Family annual income	22.192	26.296	Ns
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Table 14: Chi-square Test- Demographic Factors Vs Mileage per litre
 **-Significant at 1 % level * -Significant at 5% level Ns- Not Significant

- H₀: “The demographic factors of the respondents namely, gender, age, educational level, occupational status, and family annual income have no significant relationship with maintenance expenditure of the car.”

Demographic Factors	Calculated Value	Table Value	Significance
Gender	10.264	7.815	*
Age	19.854	16.919	*
Educational level	15.947	21.026	Ns
Occupational Status	62.221	34.805	**
Family annual income	61.131	26.217	**

Table 15: Chi-square Test- Demographic Factors Vs Maintenance Expenditure
 **-Significant at 1 % level * -Significant at 5% level Ns- Not significant

- H₀: "The demographic factors of the respondents, namely, gender, age, educational level, occupational status, and family annual income have no significant relationship with the service period of the car ".

Demographic Factors	Calculated Value	Table Value	Significance
Gender	0.928	5.991	Ns
Age	9.023	12.592	Ns
Educational level	4.574	15.507	Ns
Occupational Status	20.742	21.026	Ns
Family annual income	8.803	15.507	Ns

Table 16: Chi-square Test- Demographic Factors Vs Period of Service
 **-Significant at 1 % level * -Significant at 5% level Ns- Not significant

- H₀: "The demographic factors of the respondents, namely, gender, age, educational level, occupational status, and family annual income have no significant relationship with frequency of usage of car per week".

Demographic Factors	Calculated Value	Table Value	Significance
Gender	3.491	7.815	Ns
Age	17.679	16.919	*
Educational level	13.933	21.026	Ns
Occupational Status	67.33	34.805	**
Family annual income	28.094	26.217	**

Table 17: Chi-square Test- Demographic Factors Vs Frequency of Usage
 **-Significant at 1 % level * -Significant at 5% level Ns- Not significant

- H₀: “The demographic factors of the respondents, namely, gender, age, educational level, occupational status, and family annual income have no significant relationship with the period of changing the car”.

Demographic Factors	Calculated Value	Table Value	Significance
Gender	7.35	11.07	Ns
Age	40.02	30.57	**
Educational level	61.42	37.56	**
Occupational Status	78	50.892	**
Family annual income	46.78	37.66	**

Table 18: Chi-square Test- Demographic Factors Vs Period of Change
 **-Significant at 1 % level Ns- Not significant

- H₀: "The demographic factors of the respondents, namely, gender, age, educational level, occupational status, and family annual income have no significant relationship with the influence of family in the purchase of the car".

Demographic Factors	Calculated Value	Table Value	Significance
Gender	7.054	6.635	**
Age	9.16	7.815	*
Educational level	7.554	9.488	Ns
Occupational Status	8.861	12.592	Ns

Family annual income	2.864	9.488	Ns
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Table 19: Chi-square Test- Demographic Factors Vs Family Influence
 **-Significant at 1 % level * -Significant at 5% level Ns- Not significant

In order to find out whether demographic factors and period of servicing their car have any association with each other, chi-square analysis has been employed. For this purpose, a null hypothesis has been framed and tested.

- H_0 : "The product related factors of the respondents, namely, brand possessed, period of change of the car, mode of purchase of the car, fuel of the car, mileage of the car, maintenance expenditure of the car, frequency of usage of the car, and family influence in the purchase have no significant relationship with frequency of usage of car per week".

Product related factors	Calculated Value	Table Value	Significance
Brand Possessed	24.284	28.869	Ns
Period of Change of the car	41.179	30.578	**
Mode of purchase	2.536	12.592	Ns
Fuel used in the car	42.82	16.812	**
Mileage per litre	20.011	21.026	Ns
Maintenance expenditure per year	49.359	21.666	**
Frequency of servicing the car	24.555	16.812	**
Family influence in the purchase	10.61	7.815	*

Table 20.: Chi-square Test- Product Related Factors Vs Frequency of Usage of the Car
 **-Significant at 1 % level * -Significant at 5% level Ns- Not significant

- H_0 : "The product related factors of the respondents, namely, brand possessed, period of change of the car, mode of purchase, fuel used, maintenance expenditure per year, frequency of usage, mileage per litre, and family influence in the purchase have no significant relationship with the price of the car".

Product related factors	Calculated Value	Table Value	Significance
Brand Possessed	18.19	28.869	Ns
Period of Change of the car	21.376	37.652	Ns
Mode of purchase	8.254	12.592	Ns
Fuel used in the car	19.44	16.812	**
Mileage per litre	12.2	21.026	Ns
Maintenance expenditure per year	23.176	21.666	**
Frequency of servicing the car	4.856	12.592	Ns
Family influence in the purchase	1.016	7.815	Ns

Table 21: Chi-square Test- Product Related Factors Vs Price of the Car
 **-Significant at 1 % level Ns- Not significant

The chi-square results show that occupational status have a significant relationship at 1 per cent level and family annual income have a significant relationship at 5 per cent level with brand possessed. The other variables, namely, gender, age, as well as educational level do not have a significant relationship with brand possessed. Hence, the hypothesis has been rejected with respect to occupational status and family annual income whereas hypothesis has been accepted with regard to gender, age, and educational level.

The chi-square results show that gender, age, educational level, as well as family annual income do not have a significant relationship with the price of the car. Therefore the hypothesis have been accepted. The other variable, occupational status has a significant relationship at 1 per cent level. Hence, the hypothesis is rejected with respect of the occupational status.

Chi-square results show that age and family annual income have a significant relationship at 1 per cent level. The variable, gender, has a significant relationship at 5 per cent level with mode of purchase of the car. The other variables, namely, educational level and occupational status do not have a significant relationship with mode of purchase of the car. Therefore, the null hypothesis has been rejected with respect to gender, age, and family annual income and accepted the hypothesis with respect to educational level as well as occupational status.

Chi-square results show that gender and occupational status have a significant relationship at 1 per cent level. The other variables, namely, age, educational level, and family annual income do not have a significant relationship with fuel used in the car. Hence, the hypothesis has been rejected with respect to gender and occupational status and accepted with respect to age, educational level, as well as family annual income.

The chi-square results show that occupational status has a significant relationship at 1 per cent level whereas gender, as well as educational level has a significant relationship at 5 per cent level with mileage run per litre. The other variables, namely, age as well as family annual income does not have a significant relationship with mileage run per litre. Hence, the hypothesis has been rejected with respect to gender, educational level and occupational status and other accepted in regard to age and family annual income.

Chi-square results show that gender and age have a significant relationship at 5 per cent level, whereas, occupational status, and family annual income have a significant relationship at 1 per cent level. The other variable educational level does not have a significant relationship with maintenance expenditure of the car. Hence, the hypothesis has been rejected with respect to gender, age, occupational status, and family annual income and accepted with respect of educational level.

The chi-square results show that gender, age, educational level, occupational status, as well as family annual income do not have a significant relationship with the service period of car. Therefore, the hypothesis has been accepted.

Chi-square results show that age has a significant relationship at 5 per cent level, whereas occupational status as well as family annual income has a significant relationship at 1 per cent level with frequency of usage of the car per week. The other variables, namely, gender, and educational level do not have significant relationship with frequency of the usage of the car, the null hypothesis has been rejected with respect of age, occupational status, as well as family annual income and accepted with respect to gender, and educational level.

The table reveals the results of the chi-square analysis applied which shows that age, educational level, occupational level, and family income have a significant relationship at 1 per cent level with the period of change in the car. The other variable, namely, gender does not have a significant relationship with the period of change the car. Hence, the hypothesis has been rejected with respect to age, educational level, occupational status, as well as family income and accepted with respect to gender.

The chi-square results show that gender has a significant relationship at 1 per cent level and age has a significant relationship at 5 per cent level with family influence in the purchase of the car, the other variables, namely, educational level, occupational status and family annual income do not have a significant relationship with the influence of family in the purchase of the car. Hence, the hypothesis has been rejected with regard to gender and age In respect of educational level, occupational status, and family annual income the hypothesis is accepted.

Percentage analysis reveals that price and frequency of usage of car per week are the two most important product related factors, hence, an attempt is made to find out the relationship of these two factors with the remaining product related factors by applying chi-square analysis.

Chi-square results show that the period of change of car, fuel used, maintenance expenditure, frequency of servicing the car have a significant relationship at 1 per cent level with the frequency of usage of the car whereas, family influence in the purchase of the car is significant at 5 per cent level. The other variables, brand possessed, mode of purchase, as well as mileage run per litre do not have significant association with frequency of usage of the car. Hence, the hypothesis has been rejected in respect to period of change of car, fuel used, maintenance, and family influence and accepted in respect of brand possessed, mode of purchase and mileage of the car.

The chi-square results show that fuel used as well as maintenance expenditure per year have a significant relationship at 1 per cent level with price of the car. The other variables, namely, brand possessed, period of change of the car, mode of purchase, frequency of usage, mileage used, as well as family influence in the purchase of the car do not have a significant relationship with the price of the car. Hence, the hypothesis has been rejected with respect to fuel used and maintenance expenditure and accepted in regard to the other variables, such as, period of usage, mileage, brand possessed, period of change of car, mode of purchase and family influence in the purchase of the car.

The result of the study has proved that price of the car and usage of the car is the most important factors from the customer point of view. Price of the car has a predominant role in the selection of the brand and all other product related factors have also contributed to the selection of the brand. This result has paved a way for the marketers to work on the cost-benefit analysis to fix the price of the product which can be affordable by any class people. This in turn, helps to increase the sales and fetch more profit. .

4. Summary of Findings and Suggestions

➤ Following observations are made:

- Male respondents are more in number than female respondents.
- 87.2 per cent of the respondents are married respondents.
- Majority of respondents belonging to the age group of 31-40 years have possessed the car.
- Majority of the respondents are graduates.
- 45.6 per cent of the respondents are self-employed.
- Respondents who earn a family annual income Rs.200000-400001 constitute 30.6 per cent.
- Majority of the respondents' family consists of four members.
- Majority of the respondents (78 per cent) have possessed a single car.
- Majority of the respondents are aware of Maruti brand and its model and possess car belonging to Maruti brand.
- 33 per cent of the respondents have possessed white colour car which has a good resale value and emotional attachment; white colour car is comparatively cheaper than other colours and relatively safe especially for night drive.
- 57 per cent of the respondents have been using the car since 4 years.
- 70.2 per cent of the respondents feel that price is very important
- Majority of the respondents have purchased their car for ready cash.
- Majority of the respondents (56.4 per cent) use diesel cars
- 44 per cent of the respondents enjoy a mileage of 16-20 kilometers per litre for their car.
- 35.6 per cent of the respondents run their car in a month for a distance of 501-1000 kilometers
- Majority of the respondents (44.6 per cent) spend Rs.10001- 15000 for the maintenance of their car.
- 52.4 per cent of the respondents service their car once in three months.

- 71.8 per cent of the respondents have changed their car.
- 27.01 per cent of the respondents change their car in less than one year.
- 78.2 per cent of the respondents have been influenced by their family members for their purchase of their car
- 42.7 per cent have been influenced by the children in the family.
- Friends and relatives play a significant role in creating awareness in the respondents. 60.5 per cent of the respondents have indicated their family needs to be an important reason for the purchase of the car.
- Majority of the respondents have purchased their car for family purpose.
- Kendall's coefficient concordance result shows that there is less similarity among the respondents in ranking the purpose of the car.

Chi square test has been employed to find out the significant relationships, if any, between demographic factors and product related factors.

The results are:

- Brand possessed has a significant relationship with occupational status. Whatever be the occupational status, majority of the respondents possess Maruti cars. Family annual income plays a vital role in possessing the brand. Majority of the respondents possess Maruti irrespective of their income.
- Price plays a pre-dominant role in the purchase of the car. Occupational status has a significant relationship with the price of the car.
- Gender, age, and family annual income have a significant relationship with the mode of purchase of the car.
- Gender and Occupational status have a significant relationship with fuel used in the car. Male respondents prefer diesel cars while female respondents prefer petrol cars. Occupational status shows that business people prefer diesel cars to petrol and gasoline cars.
- Demographic factors have no any significant relationship with the period of servicing of the car.
- The maximum usage of car is by the respondents belonging to 31-40 years age group, business people, and the respondents having an annual income of Rs.200001 to Rs.400000. The same result holds good for the period of change of car.
- Family influence in the purchase of the car is more for males, and the respondents belonging to 31-40 years age group.
- Frequent usage of car leads to change of the car within a short period of time, more fuel usage, more maintenance expenditure, and frequent servicing of the car.
- Fuel used in the car and maintenance expenditure per year has a significant relationship with the price of the car. Though the price is a little high, the respondents prefer diesel cars because of less consumption of fuel and moderate maintenance expenditure per year.
- Based on the findings of this study, the following suggestions are offered:
- Customers must be provided with necessary knowledge by the manufacturer about the brand as well as the customer should be aware of eco-friendly car and its uses.
- Manufacturers and dealers should make an analysis on customers' satisfaction to know their opinion about the brand to enhance their brand value.
- Manufacturer should concentrate more in the research and development to innovate low-carbon emission vehicles. Customers should be given awareness about ill-effect of usage of high- carbon emission vehicles.
- Manufacturers are responsible to the society also and they should take effort in solving environmental issues i.e., noise and air pollution by introducing electric cars or pollution free cars.
- Manufacturers should innovate and launch more models in small segment for convenient usage by the customers.

5. Conclusion

The demographic and product related factors determines the relationship between these factors. Brand value depends on management's ability to leverage the brand's strength by adopting strategic actions to fetch more current and future profits at lowered risks. The findings in the study will be useful to the marketers to employ the various marketing strategies to maximize the sales and there by it also help to increase the market share for their brand.

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