

Consumer behavior towards purchasing automobiles: A survey from Pakistan

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ABSTRACT: *Pakistan has fast growing and lucrative car market and industry. Number of cars has tripled within last 10 years and now we can say that this time period is the golden era of automobiles in Pakistan. This boom in car market may be due to increase in per capita income of consumer's international demonstration effect and easy car financing from commercial institutions. The main objective of this research is to identify the socio-economic factors that influence the consumer's car buying behavior. A simple random sampling technique is used to collect the data from 150 car owners in district Faisalabad, Pakistan. Descriptive statistical tools i.e. mean, median, standard deviation regression and binomial logistic model analysis is used to describe the data and explain the results. The results indicate that brand name, brand image, income, availability of spare parts, durability, degree of satisfaction towards different car attributes has positive relation with buying behavior towards cars while age of car, price of car, maintenance cost has negative impact on car buying behavior. The results show that car industry will prove itself one of the most rapid growing industries of the country as people will show high potential towards purchase of cars in future era.*

Keywords: *Consumerism, Auto mobiles, Purchasing Pattern, Pakistan*

Consumer is the king of market economy. He is a main stake holder in economic activity. A consumer is a person who is considered as a rational person having much knowledge about market prices and his given resources.

The studies on consumer behavior provides information regarding; psychology of consumer, attitude of consumer towards shopping, socio-economic factors affecting their buying pattern and limitations faced by the consumers. This knowledge guides the manufacturers to improve the quality and sale of their product. Consumer behavior is the most complex and comprehensive concept which deals with how consumers spends their money income, what they buy, when they buy, where they buy and in the end how often they buy (Schiffman, 1996).

Pakistan is a developing country having a population of over 190million people. It is a country with high level of poverty and income disparities since independence. There is a bulk of difference between Haves and Haves not so on the basis of this unequal distribution of income car industry in Pakistan had been showed great fluctuations in its growth since 1953-2011.Until year 2000, people had less opportunities to purchase a car. At those times, car was considered as a luxury item and rarely seen on the roads of Pakistan.

Pakistan's car industry started its journey of progress and prosperity in 2002 when low interest rate auto financing policy has been adopted by commercial banks. This rapid growth has its healthy impacts not only on local car market but also on foreign auto parts making markets. The automobile industry of Pakistan is now highly furnished with brand choices to compare before making a decision to buy a car, (Athar, 2006). Car sale has been increasing continuously since 2005. Increase in use of cars was due to increase in proportion of middle class in population, rising trends of per capita income both in urban and rural areas and cheap credit loans and leasing facilities from commercial banks. Number of cars has tripled within last 10 years and now we can say that this time period is the golden era of automobiles in Pakistan. 165,000 cars were sold in the year 2015 in which 41000 were imported from abroad that constituted 25 percent of total sale. The average share of imported cars in total car sale remained 15percent since 2005.As for as 2016 is considered car sales are expected to grow 13 percent faster than previous.

The change in consumer preference towards purchase of cars is may be due to the Govt. of Pakistan's liberalization; globalization and privatization policy or it may be associated with State banks decision of reducing interest rate from 10 percent to 7 present. There are many socio-economic factors that can influence consumer's

behavior towards purchasing cars. The most important factors are reasonable price, brand name, fuel efficiency, utility, technology, design, durability, and after sale services (Chidambaram and Alfred, 2007).

OBJECTIVES

1. To determine socio-economic characteristics of respondents.
2. To identify past trends and future forecast of tendencies of car use in Pakistan.
3. To provide guide line to consumers in their future purchase of car.
4. To estimate the impact of various factors on prices of cars.

LITERATURE REVIEW

Anurit (2002) aimed to explain the definition of luxury car and made a comparison between UK and Thailand's car industry and its trends and consumer behavior of both market. The research had been used analytical technique to analyze the quantitative data. Firstly, the research revealed the fact that culture had its significant impact on consumer behavior towards purchase of automobile. Secondly it examined the important role of advertisement activities towards buying behavior was stronger in UK as compared to Thailand. Budicaet al., (2010) analyzed that consumer psychology was determined by their feelings, beliefs, motivations and behaviors. Researchers explained that socio-economic environment was important advantage in society. For the survival of business firms and organization had to understand the latest consumer trends and tastes.

Zakir and Khan (2011) explored consumer attitude towards automobile lubricants. The study explained automobile lubricant industry was the fast growing sector in Pakistan. This research was Qualitative research and used both primary and secondary data analysis. Results explained that advertisement and promotional campaigns played a role to enhance the sale of automobile lubricant for short term time period. Seta (2013) examined the factor affecting consumer buying behavior of mobile phone devices in Ethiopia. Primary and secondary data was used to collect required information from sample of 246 consumers. Six methods were used to explore consumer behavior i.e price, social status, brand name, product features after sale services and durability. Data was analyzed through the use of Correlation and Multiple Regression models. This research suggested that mobile phone producing companies should improve the quality of mobiles along with their designs and durability because design and new software features were the main factor

which affect consumer buying behavior of mobile phones.

Shende (2014) made his research on consumer behavior of auto mobile passenger car's customers. The main of study was to identify the factors who influence the purchasing trends of purchasing car in India. Secondary had been used. Study pointed out the key factor regarding buying behavior was reason able price and engine quality of vehicles. Kusuma (2015) investigated which factors involved in buying behavior of consumers in Karnataka India. An exploratory approach (primary research) had been used with the help of interview and questionnaires results indicated that peer group the biggest influencing factor toward cars purchase decision in India. The research explained that Indians should purchase small cars due to its limited and narrow roads and non-availability of space for parking.

Malke (2015) explored that Indian small car industry was the biggest in the world furnished with high growth rate. Convenience sampling method was used in this study to identify the factor which affects the purchasing behavior of Indians toward small cars. The study analysis showed that Indians purchasing pattern towards cars was changed with the passage of time. Along with price conscious parameter people became more sensitive toward technical and safety specification as well.

Methodological Framework

This part includes the research design, data resource, questionnaire design, sampling methods and the performed work.

Defining the Population

Population is group of individuals or items that share one or more characteristics from which data can be gathered and analyzed. Population is denoted by 'N'.

Sample size

Sample size is denoted by 'n'. The selection of respondents should be accordingly to be in a right place at a right time and so the sampling is quite easy to measure, evaluate and co-operative. It is a randomly area sampling method that attempts to obtain the sample of convenient. Total sample size is 150.

Data

Study consisted on the primary and the secondary data. Primary data was collected from the car holder in Faisalabad area. Secondary data was taken from the statistical bureau of Pakistan. In this study reliability of the questionnaire was also tested by using 'Cronbach's alpha'. It is most commonly used when multiple Likert

questions was used in questionnaire. Cronbach's alpha was 0.721 which represents excellent internal reliability.

Statistical Techniques for Data Analysis

Ordinary least square regression model is used for the analysis of maternal employment of schooling of children. The functional form of the model is given

The functional form of the model is given:

$$P.C = \alpha + \beta_1 B.N + \beta_2 D.R + \beta_3 C.C + \beta_4 D.S + \beta_5 A.C + \beta_6 M.C + \beta_7 S.T + \epsilon$$

'P.C' is price of car, 'B.N' is brand name of car, 'D.R' is durability of car, 'C.C' is horse power of engine, 'D.S' is degree of satisfaction towards different car attributes, 'A.C' is age of car, 'M.C' is maintenance cost of car, 'S.T' is safety measures of car, 'E' is error term.

Logistic regression model is used to check the effect of different factors on buying behavior of new car.

$$\text{Logit}(p) = \ln \frac{p}{1-p} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_n X_n$$

$$B.B = f(B.I, P.C, F.C.B, I.R, S.P, S.W)$$

'B.B' is buying behavior towards car ("1" if car is new and "0" if car is second hand), 'B.I' is brand image, 'P.C' is price of car, 'F.C.B' is financing of car by banks, 'I.R' is income of respondent, 'S.P' is spare parts, 'S.W' is since when the respondent own his particular car.

RESULTS

This portion depicts the results of the study with the help of descriptive analysis and with the help of econometric models.

Descriptive Analysis

Table 2 depicts mean distribution of characteristics of respondents. Mean age of respondents was 38.4 years, education was 16 years, total utility charges was Rs. 52500, total monthly expenditures was Rs. 50602 and mean price of car is Rs. 12 lac.

Table 2: about here

According to (Crawford and Benedetto, 2000) Car attributes are of three types: features, functions, and benefits. They gave an example to explain the concept of attributes. Example: a spoon is a small shallow bowl (feature) with a handle (another feature) on it. The bowl enables the spoon to function as a holder and carrier of liquids. The benefits include economy and neatness of consuming liquid materials. Of course, the spoon has many other features (including shape, material, reflection, and pattern). And many other functions (it can pry, poke, project, and so on).

Table 3 depicts the mean value of each characteristic. We can see by checking their mean values that Price is the most important car attribute towards purchase of car with highest mean value of 4.42 which is followed by fuel consumption with mean value of 4.38 than brand image and break quality. While speed, post sell service and warranty are less important attributes towards purchase of car

Table 3: about here

Table 4 indicates the results of multiple regression models. Brand name has statistically positive and significant effect on price of car. As shown in table results that brand has strong impact towards price of car. As for as Pakistan is concerned our car market is furnished with three main brands and each brand has different prices of car. Respondents are willing to pay high price for Honda, and Toyota as compared to Suzuki. Brand also affects the prices of cars. Durability has positive and statistically insignificant impact on price of car. Table shows that keeping other variables constant one percent increases in durability of car increases .785 percent price of car. This result is consistent with many previous studies. When a car is more durable in case of its interior and exterior design its price is also higher than its rivals.

CC means cubic centimeter in a car. It's a dimensional representation of engine cylinder volume. The actual cylinder volume where the combustion process takes place. Table depicts that CC has positive and highly significant impact on price of car. Results shows that 1 percent increase in horsepower of engine increases the price of car by 0.777 percent. Basically CC is the proxy of strong and firm interior of a car. As quality of a product rises it's a universal truth that its price also raises.

Degree of satisfaction means the level of satisfaction of respondents towards different features of car, as people are more satisfied with a specific car attributes they are ready to pay high price for that car. It has positive and statistically insignificant relation with price of car, means 1 percent rise in level of satisfaction increases .362 percent price of car. Degree of satisfaction means the level of satisfaction of respondents towards different features of car, as people are more satisfied with a specific car attributes they are ready to pay high price for that car. Age of car means the time span when this specific vehicle first time lunched in market for sale to time of collection of data. Table shows that it has negative and statistically highly significant effect on price of car that is 1 percent increase in age of car decreases 0.210 percent price of car. As the car becomes older one its market value due to entrance of new models decreases and on the other hand it has to face higher wear and tear process repairing poor

performance is the main reason that as for as age of car increases its price falls.

Machines need repair on daily basis. Few vehicles have more expenditure on their maintenance as compared to their rivals. Table shows that maintenance cost has negative and statistically insignificant effect on price of car i.e. 1 percent increase in maintain cost decrease 0.43 percent price of car. It's a general phenomenon that price of car is more or less one time in life but its maintenance is a matter of daily consumption. So people are more conscious towards maintenance cost and they pay less for cars whose repair expenditures are high, that is the reason behind negative relationship between car price and its maintenance cost.

Safety measures are one of the most important car features in current scenario of terrorism and road accidents. Table shows that safety measures has positive and statistically significant effect on price of car, that is 1 percent increase in safety measures of car increases its price by 0.358 percent. Now a days roads are tightly pack with vehicles so the danger of road accidents has increasing tendency respondents are well aware with the need of safety measures in their automobiles .They are happily ready to pay a car with satisfactory safety equipment so there is positive and significant relation between price and safety measures of a car.

Table 4: about here

Table 5 shows brand image has statistically positive and insignificant effect on consumer behavior towards purchase of new car. An odd ratio of brand image is explained as the consumer behavior has 1.485 chances towards purchasing new car. The consumers are more likely to purchase well-known brand products with positive brand image as a way to lower purchase risks (Akaah,1988).Price has statistically negative and significant effect on consumer purchasing pattern .The probability of buying new car is lower when prices are high. This negative association is indicated by the coefficient -0.643. Odds ratio of price is explained as consumer behavior towards purchase of new car has 0.526 chances towards purchase of new car.

Car buying is an expensive shopping .sometimes it takes a lot of time to people to buy a car. The coefficient 3.00 indicates higher probability of buying behavior towards new car with the increase in one unit car financing by banks. Odds ratio of car financing 20.20 explained as one percent increase in level of easy car financing by banks increases chances of buying new car 3.00 times.

Income is the main determinant to measure purchasing power of a person. There is positive relation between income and demand of luxurious items. As income increases people are willing to pay more prices to

purchase cars so the level of buying behavior for cars rises as income increases. Income has statistically positive and highly significant effect on buying behavior towards new car. The coefficient .013 indicates that probability of consumer behavior towards purchase of new car increases due to one unit increase in income of respondents. Odds ratio of income (1.00) explains as one unit increase in income increases chances of buy a new car by 1 time. Spare parts have positive and statistically insignificant effect on consumer buying pattern towards new car. Odds ratio of spare parts (0.737) explained as one unit increase availability of spare parts increases chances of buying behavior towards new car by 0.737 times. This concept is supported by Danish Ahmed and Sanatullah,(2013) that if spare parts are not easily available for a vehicle it is hardly possible for consumers to buy them.

Since when indicates that for how many years respondent has present car in his custody. Time period of car with his owner has statistically negative but significant effect on buying behavior towards new car. The coefficient -.201 indicates probability of buying new car decreases due to one unit increase in age of car in the ownership of current consumer. Odds ratio of age of car (0.18) explains as one year increase in ownership decreases chances of buying new car by .818 times.

Table 5: about here

Results of ARIMA Model

In statistics and econometrics, and in particular in time series analysis, an autoregressive integrated moving average (ARIMA) model is a generalization of an autoregressive moving average (ARMA) model. These models are fitted to time series data either to better understand the data or to predict future points in the series (forecasting). They are applied in some cases where data show evidence of non-stationary, where an initial differencing step (corresponding to the "integrated" part of the model) can be applied to reduce the non-stationary. All the results of ARIMA model show that car market in Pakistan has great potential towards progress and prosperity. No of cars in 2015 is approximately 2,531,600 and it will be 6,320,438 in 2040. The reason behind this rapid progress in no. of cars is may be due to increasing trend in per capita income, easy car financing schemes, improvement in road quality and better technical knowhow of vehicles in Pakistan.

SUMMARY

Ordinary least square regression was used to check percentage impact of different factors on price of car, which is dependent variable. The independent variables are brand, safety, maintained cost, durability, age of car,

degree of satisfaction towards car attributes. OLS results revealed that brand had positive and statistically significant effect on price of car. Keeping other variables constant 1 percent increase in brand name had .115 percent increase in price of car. Durability had positive but insignificant effect on price of car means 1 percent increase in durability had .052 percent increase in price of car. CC shows the horsepower of engine it had positive and highly significant effect on price of car, 1 percent increase in power of cars engine increases .774 percent price of car as a whole. The degree of satisfaction means the satisfaction level of respondents towards car attributes, it has positive and statistically insignificant relation with price of car, means 1 percent rise in level of satisfaction increases .362 percent price of car. Age of car means since when a respondent has this car in his custody, it has negative and statistically highly significant effect on price of car, that is 1 percent increase in age of car decreases 0.210 percent price of car.

Maintenance cost had negative and statistically insignificant effect on price of car i.e. 1 percent increase in maintains cost decrease 0.43 percent price of car. Safety had positive and statistically significant impact on price of car i.e. 1 percent increase in safety measures of car increases its price by 0.358 percent.

The second model which used was Binomial logistic regression applied to identify the effect of different factors on consumer buying behavior towards new car. Type of car (Brand new "1" and second hand "0") is used as dependent variable. It is a categorical variable. In this model other variables such as brand image, price of car, financing by banks, income of respondent, and since when are used as independent variables.

The results depicts that Brand image has statistically positive and insignificant effect on consumer behavior towards purchase of new car. Price has statistically negative and significant effect on consumer purchasing pattern. The probability of buying new car is lower when prices are high. Auto financing has statistically positive and highly significant effect on consumer behavior. The coefficient 3.00 indicates higher probability of buying behavior towards new car with the increase in one unit car financing by banks. As income increases people are willing to pay more prices to purchase cars so the level of buying behavior for cars rises as income increases. Income has statistically positive and highly significant effect on buying behavior towards new car. The coefficient .013 indicates that probability of consumer behavior towards purchase of new car increases due to one unit increase in income of respondents. Spare parts have positive and statistically insignificant effect on consumer buying pattern towards new car.

Another objective of this research work was an attempt to forecast no. of cars in next 25 years for this purpose I selected the best and accurate model among various ARIMA estimated models which possess high power of predictability (forecasting power). We have identified a framework for ARIMA modeling which includes the following steps: data collection and examination; determining the order of integration; model identification; diagnostic checking; model stability testing; and forecast performance evaluation.

We have adopted the traditional Box-Jenkins approach of forecasting known as ARIMA modeling, in which a time series is expressed in terms of past values of itself (the autoregressive component) plus current and lagged values of a 'white noise' error term (the moving average component). The primary purpose behind this study was to find out which ARIMA model is more accurate and appropriate for forecasting purposes in the real world situation, keeping in view the cost of model building. So on the basis of ARIMA it is concluded that no. of cars will be showing positive trend in future as no. of cars in 2015 is 2,531,600 and it will be 6,320,438 in year 2040.

Recommendations

Consumer must purchase a car with good fuel efficiency
 Consumer must purchase vehicles whose spare parts are easily available in the market
 Consumers should purchase cars at economical prices
 Environmental friendly /hybrid cars should be promoted to reduce bad impacts on ecosystem
 Future cars must be furnished with modern modes of communication like Bluetooth and

Wi-Fi
 Cars should be purchased which is well-equipped with good safety measures

Govt. should reduce tax rates on purchase of cars

As for as Pakistan's dusty weather is concerned consumers must prefer to purchase light colored cars.

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Appendix

Table 1: Reliability statistics

Cronbach's Alpha	Number of items
.721	54

Table 2: Mean distribution of characteristics of respondents

Descriptive analysis	Mean
Age of respondents	38.4
Education of respondents	15.54=16 years
Total household income	2lac 40,000 thousand
Total utility charges	52,500
Total monthly EXP.	50,602
Price of car	13 lac
Amount of loan	27000

Table 3: Mean distribution of car attributes

Car attributes	Mean	Car attributes	Mean
Brand image	4.33	Spare parts	4.28
Break quality	4.35	Price	4.2
AC/Heater	4.26	Re sale value	4.22
Post sell Services	4.06	Warranty	4.01
Durability	4.29	Entertainment Features	4.26

Table 4: Multiple regression model

Variable	Coefficients	Significance	Standard Error
Brand name	.115	.022	.050
Durability	.052	.785	.189
CC	.774	.000	.124
Degree of satisfaction	.362	.333	.373
Age of Car	-.210	.000	.050
Maintenance Cost	-.043	.525	.067
Safety	.358	.051	.182
Constant	6.252	.000	1.198

Table 5: Binomial Logistic Regression Model

Variables	Coefficients	Standard error	Significance	EXP of β
Brand Image	.396	.327	.227	1.485
Price	-.643	.371	.083	.526
Financing by banks	3.006	.739	.000	20.204
Income	.031	.234	.000	1.000
Spare parts	.305	.324	.347	.737
Since When	-.201	.084	.016	.818
Constant	.000	2.186	1.000	1.000