THE INDIAN CONSUMER DURABLE MARKET AND AN ANALYSIS OF DEMAND PATTERN FOR MAJOR DURABLES

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1.   INTRODUCTION:

With the continuous inflow of disposable income and the advancement of technology, the need for the varied consumer durable goods are increasing. This in turn is leading to a strong competition among the different consumer durable brands available in the nation. The rural and urban market of consumer durables has been growing at a rate of around 15 % on an average.

When a new durable is introduced initially a small fraction of the population will purchase it and gradually its potential buyers will increase. This will continue till all the potential buyers own it. This lead to the diffusion of durables. This happens because of the outcome of the interaction of a number of quantitative and qualitative factors. Some durables become outdated which are no longer in demand due to availability of better substitutes.

Consumer durables refer to those consumer goods that do not quickly wear out and yields utility over a long period of time. Some of the popular and common examples of these kinds of items are electronic goods, kitchen appliances, home furnishings and leisure equipment etc. Consumer durables can be broadly categorized into the following 3 heads:
- *White Goods:* White goods mainly include air conditioners, refrigerators, washing machines, audio equipment and speakers.
- *Brown Goods:* This kind of consumer durables mostly include kitchen appliances like chimneys, electric fans, grinders, iron, microwave ovens, mixers and varied other cooking ranges.
- *Consumer Electronics:* Some of the mostly used consumer electronic goods are DVD players, MP3 players, mobile telephones, telephones, VCD players etc

Empirical studies on durables are poorly represented whereas non-durables have been intensively studied. The recent literature shows that such studies are scanty and a few studies done so far have estimated the Logit or Probit model to compute threshold

probability, range of predicted probabilities and threshold level of income for the acquisition of durables.

2. REVIEW OF RELATED LITERATURES

Cramer (1962) using the Dutch data fitted the logistic growth curve to know the pattern of demand for refrigerator, washing machine, water heaters, vacuum cleaner etc. and observed that the demand for these item are restricted to highest income groups. Unit price of the durables shows no systematic variation in the demand for these durables. Pattanaik has estimated both logit and probit models incorporating some important determinants of demand for major and minor durables. He has explored the effect of some of the important determinants of demand for durables; estimated the threshold level of income and probabilities for acquiring durables and diffusion of these durables among different occupation group of households in Orissa. Sarangi et al. has estimated the diffusion of major and minor durables by using both qualitative and quantitative determinants in a business town of Odisha state. The result proved various factors affecting on the demand of durables. There is a growing body of literature on time-series and cross-section studies on durables in marketing research but we rarely find studies on demand for household durables.

3. OBJECTIVE OF THE STUDY

The basic objective of the present study is to explore the effect of various determinants in the purchase of major and minor durables.

(i). To study the Indian market of consumer durable industry
(ii). To explore the effect of some important quantitative determinants of demand for major durables in the study area
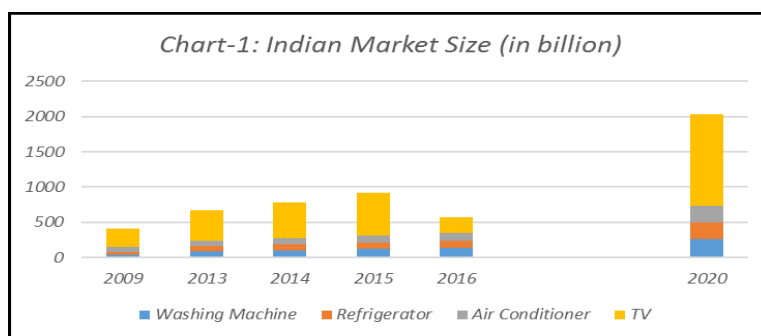
4. AN OVERVIEW OF INDIAN CONSUMER DURABLE MARKET:

The consumer durable industry consists of durable goods and appliances for domestic use such as televisions, refrigerators, air conditioners and washing machines. The consumer durables market is estimated to be US$ 15 billion as on May 2017 and is expected to reach US$ 20.6 billion by 2020. Urban markets account for the major share

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(65 per cent) of total revenues in the consumer durables sector in India. There is a lot of scope for growth from rural markets with consumption expected to grow in these areas as penetration of brands increases. Consumer electronics exports from India reached US$ 186.7 million during April-September 2017. Also demand for durables like refrigerators as well as consumer electronic goods are likely to witness growing demand in the coming years in the rural markets as the government plans to invest significantly in rural electrification.

Growing awareness, easier access, and changing lifestyles have been the key growth drivers for the consumer market. The Government of India's policies and regulatory frameworks such as relaxation of license rules and approval of 51 per cent foreign direct investment (FDI) in multi-brand and 100 per cent in single-brand retail are some of the major growth drivers for the consumer market.

India is likely to emerge as the world's largest middle class consumer market with an aggregated consumer spend of nearly US$ 13 trillion by 2030, as per a report by Deloitte titled 'India matters: Winning in growth markets'.
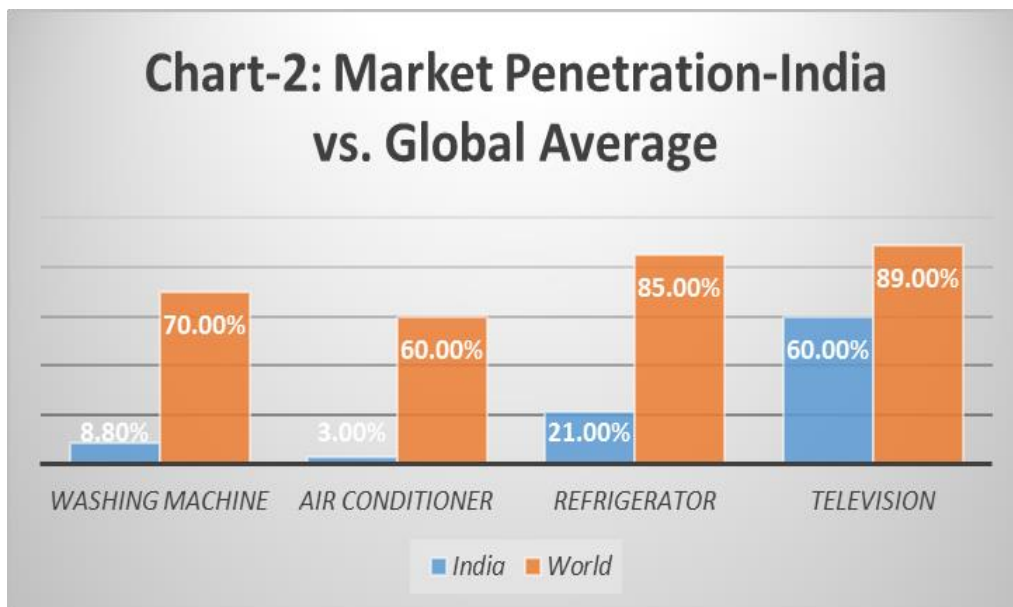
Fuelled by rising incomes and growing affordability, the consumer durables market is expected to expand at a compound annual growth rate (CAGR) of 14.8 per cent to US$ 12.5 billion in FY 2015 from US$ 7.3 billion in FY 2012. Urban markets account for the major share (65 per cent) of total revenues in the Indian consumer durables sector. In rural markets, durables, such as refrigerators, and consumer electronic goods are likely to witness growing demand in the coming years. From US$ 2.1 billion in FY 2010, the rural market is expected to grow at a CAGR of 25 per cent to touch US$ 6.4 billion in FY 2015.

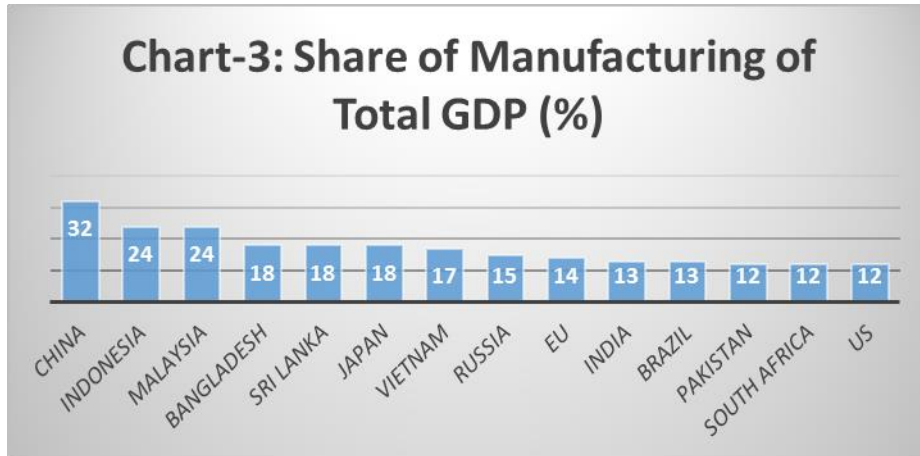Source: JP Morgan, TechNavio, Spark Capital estimates and EY analysis

The Market of white goods and televisions has growing since the year 2009. The chart-1 derived below shows the market growth over various years for the mentioned four goods and a projection of growth by the year 2020. In an analysis it is observed that the CAGR between the years 2009 to 2013 was at 13.7% which increased to CAGR of 17% from the year 2013 to projected year 2020.

The total market which was INR 403 billion for the four white goods including TV has reached to a total market of INR 1077 billion by the year 2016 and is projected to reach at INR 2021 billion by the year 2020. The market penetration for the above goods can also be compared with the global market. In a comparison it can be seen form the chart-2 that, Indian durable market is having enough potentialities to grow further.

Chart-2: Market Penetration-India vs. Global Average

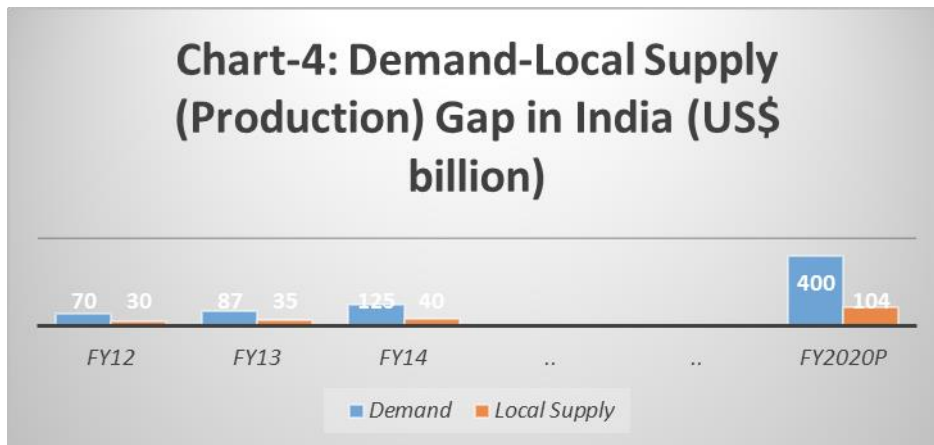|	India	World
WASHING MACHINE	8.80%	70.00%
AIR CONDITIONER	3.00%	60.00%
REFRIGERATOR	21.00%	85.00%
TELEVISION	60.00%	89.00%

Source: JP Morgan and EY analysis

Electrics manufacturing industry contributes significantly to the most of the developed countries' GDP. In India it is 1.7% while it is 15.5% for Taiwan, 15.1% for South Korea and 12.7% for China. The chart-3 drawn below shows the share of manufacturing to total GDP (%) by various countries by the year 2016.

Chart-3: Share of Manufacturing of Total GDP (%)

CHINA 32, INDONESIA 24, MALAYSIA 24, BANGLADESH 18, SRI LANKA 18, JAPAN 18, VIETNAM 17, RUSSIA 15, EU 14, INDIA 13, BRAZIL 13, PAKISTAN 12, SOUTH AFRICA 12, US 12

Source: Study of Indian Electronics and Consumer Durables Segment

The global electronic industry is at US$1.8 trillion, of which India consumers around US$125 billion electronics. This consumption is expected to grow to US$400 billion by 2020 with the local production of only US$104 billion. The demand supply gap of electronics is expected to touch US$300 billion by the year 2020. The demand for these products are increasing in a CAGR 25% while the local supply is at CAGR of 16%. The chart-4 derived below shows a comparative picture of the demand-supply gap in these sectors in India.

Chart-4: Demand-Local Supply (Production) Gap in India (US$ billion)

FY12: Demand 70, Local Supply 30; FY13: Demand 87, Local Supply 35; FY14: Demand 125, Local Supply 40; .. ; .. ; FY2020P: Demand 400, Local Supply 104

■ Demand ■ Local Supply

Source: Study of Indian Electronics and Consumer Durables Segment

The above facts and figures are enough to conclude that the consumer durables sector is having ample potentiality to grow in future.

5. METHODOLOGY OF THE STUDY

This study is based on both secondary and primary data. The secondary data has been used to review the current scenario of durable goods demand in India. This will ultimately help to the readers to know where we stands. To fulfil this objectives, various reports, magazines etc., are covered during the study.

The primary data is based on the structured questionnaires developed for the study. To bridge this gap, an attempt has been made in this study to explore the effect of some important quantitative and qualitative determinants of demand for durables and the threshold level of income and probabilities for acquiring each of the durables and diffusion of these durables among different occupation group. Since household level data on different aspects of demand for durable goods is not available, the study is based on primary household level micro data collected from household survey.

5.1   The Data

It is an empirical study based on primary data collected during the October and November months of the year 2017. The primary data was collected by a sample survey of 165 households of Kalamboli, a small town ship of Navi Mumbai of Maharashtra State.

The area of investigation has been divided into three segments on the basis of occupation of the head of the household. Segment-1 basically constitutes households of government and semi-government officials, Segment-2 is a concentration of business community and finally, Segment-3 constitutes working class households such as carpenters, masons and other manual workers. For the collection of data, household expenditure survey schedules specially prepared for the purpose were canvassed by direct personal interview with the head of the household during their visit to shopping places available. In few questions, the households are dropped the questionnaire and are asked to return it after filling. The apartment data base has also been used to mail the questionnaires and get it back after duly filled.

Classification of major durables are mainly done on basis of their prices. If the price of a durable is more than Rs. 5000/- then it is considered as major durable. Because of the

non-availability of adequate time, as a pilot estimation, four major durables are considered for the study. The major durables considered in the study includes-television, refrigerator, air conditioner and washing machine.

5.2   Quantitative determinants of demand for durables:

Income is one of the important determinants of demand for durables. The average monthly disposable income of a household has a strong positive effect on the acquisition of durables and household expenditure on durables, hence, considered in the study. Household size and number of durables possessed by the household has negative effect on the demand of durables and household expenditure on durables. Age, sex and level of education of the household head are other important determinants in the demand of durables. Younger household heads are generally more active in the acquisition of durables than the older ones.

The logit model has been estimated for all the four durables to know the effect of some of the important quantitative determinants of demand for durables. The stochastic specifications of logit models for all the four durables is:

$$Y_{ij} = \beta_0 + \beta_1 X_{ij} + \beta_2 N_{ij} + \beta_3 D_{ij} + \beta_4 A_{ij} + \beta_5 E_{ij} + \varepsilon_{ij}$$

Where Y_{ij} is the qualitative choice dependent variable for *ith* major durables respectively of the *jth* household. Than Y=1, if the household owns a major durable and Y=0, if it does not. The determinants of demand for *ith* major durables are the income of the households, X_{IJ}, household size, N_{ij}, number durable possessed by the household, D_{ij}, age of the household head, A_{ij}, and year of schooling, E_{ij} are used as the proxy veriable for the level of education of the household head; β is the parameter and ε_{ij} is the stochastic terms of the constructed model. The parameters of the Logit model are estimated by maximum likelihood method.

6. EMPIRICAL ANALYSIS:

The probability of ownership of durables is estimated from the index function of general logit model for four major durables viz., colour television, refrigerator, air conditioners and washing machine. The logit model is estimated for all the four major durable by the

method of maximum likelihood using household level micro data collected from 165 households. The determinants of demand for major durables are the income of the household, household size, number of durables possessed by the household, age and level of education of the head of the household. The parameter estimates of the index function of logit model estimated for four major durables is summarized in Table-1.

The estimates of the index function of logit model for major durables represented in Table-1 reveals that income, number of durables possessed, age and education level of the household head have significant effect on the demand for most of the major durables. Income as one of the most important determinants has significant positive effect on the demand for all the major durables as expected. Household size which is another important variable has significant negative effect on the demand for television and washing machine but insignificant positive effect on the demand for refrigerator and air conditioner. The reason for negative household size effect may be addition of a child which enhances household expenditure thereby reducing expenditure in the acquisition of less useful major durables.

Households are interested for the better education of their children and spend more on education and less on durables. Age of the head of the household has significant negative effect on the demand for washing machine and also on refrigerator but significant positive effect on the demand for television and air conditioner which may be due to the fact that older household heads do not prefer to own washing machine and do not prefer to eat food and vegetable preserved in refrigerators. So, household size and age of the household head have no definite effect on the demand for major durables. It is also noticed that the number of durables possessed and education level of the household head have significant positive effect on the demand for major durables which may be due demonstration effect and availability of better substitutes. Most of the coefficients of the logit model for major durables are found to be significant at 1 per cent level of significance.

The likelihood ratio (LR) and Chi-square test which are generally used to test the joint significance of slope of coefficients of the Logit index function, are also found to be significant for all the four major durable goods. The R^2_{McF} (McFadden R^2), a measure of goodness of fit is found to be the highest for refrigerator and the lowest for air

conditioner. Even though the value of R^2_{McF} is not found to be so high for most of the major durables but R^2 which is also considered as an acceptable indicator to measure the goodness of fit is found to be more than 0.60 for most of the major durable.

7.   CONCLUSION:

From the consumer durable market analysis it can be concluded that this sector has huge potentialities to grow in near future in India. Further, the present government's initiative "Make in India' could act as a greatest opportunity to this sector.

It is concluded that the determinants like income, the number of durables possessed, level of education of household head have significant positive effect on the demand for most of the major durables. Income is one of the important determinants which has significant positive effect on the demand for the major durables. The level of education of the household head has positive significant effect on the demand for major durables Similarly, the number of durables possessed by a household also has positive effect on the demand for durable goods.

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Table-1: Parameter Estimates of Index Function of General Logit Model on Demand for Major Durables

Major Durables	Constant	X-coefficients					$L(\beta_R)$	$L(\beta_{UR})$	LR	x^2 Value (df=4)	R^2_{McF}	R^2	Count $R^2(\%)$
		Income	HH Size	Total Durables	Age	Education							
T.V.	-6.743 (-1.738)	0.432 (3.226)	-0.647 (-2.156)	0.331 (2.118)	0.313 (2.117)	0.447 (2.221)	-16.467	-24.227	0.689	22.669	0.652	0.461	87.6
Refrigerator	-2.536 (-0.441)	0.521 (4.112)	-0.529 (-0.559)	0.471 (2.887)	-0.227 (-3.557)	0.561 (3.559)	-19.889	-23.447	0.8334	27.221	0.721	0.252	92.5
Air Conditioner	-5.236 (-1.752)	0.618 (3.231)	0.487 (0.216)	0.897 (5.167)	0.881 (4.998)	0.336 (4.669)	-13.889	-20.886	0.897	8.637	0.325	0.331	87.9
Washing Machine	-3.891 (-1.327)	0.331 (3.896)	0.337 (2.114)	0.339 (2.775)	-0.712 (-3.447)	0.311 (3.521)	-28.442	-34.548	0.901	17.762	0.701	0.789	86.8

Note: 1. Computed value. The figure in the parenthesis are the 't' ratios; LR-likelihood ratio, $L(\beta_R)$ – Restricted likelihood function; $L(\beta_{UR})$ - Unrestricted Likelihood function; R² is the coefficient of determination; R^2_{McF} – McFadden Squared Correlation.

2. The values are significant at 1% level of significance with the critical value of chi-square =13.28.