An Empirical Analysis on Consumer Behaviour Towards Replacement of Select Home Appliances in Coimbatore City

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ABSTRACT
The fast pace of new Product Development and great market competition, existing technologies often become outdated very quickly and prematurely. The present study examines the reasons and factors that influence the replacement of home appliances. A questionnaire was used to elicit responses from 577 respondents who had replaced either one of their refrigerators, washing machines and air conditioners in Coimbatore city. The demographic profile of the replacers, reasons for replacement, factors influencing the replacement, and post purchase satisfaction are ascertained and analyzed in this paper. Hypothesis framed for the study was analyzed with the help of the Friedman rank test, Chi-square test and Factor analysis. The results of the study revealed that majority of 87.00 % respondents had replaced their washing machines, next to that 72.44% had replaced their refrigerators and only 11.09% respondents had replaced their air conditioners. This study also revealed that in case of refrigerators and washing machines majority of the respondents replaced when they had excess disposal of income. Air conditioners was replaced when offers available. Features, Appearance, Energy efficiency, reliability and Value for money, were some basic core product features that were found to be important in influencing the replacement of refrigerators, washing machines and air conditioners. Majority of the respondents were not satisfied with their replacement of select home appliances.

Introduction

According to Schiffman and Kanuk (2004) the behaviour that consumers display in searching for selecting, purchasing, using, evaluating and disposing of products and services that they expect will satisfy their needs. The behaviour of consumer is dependent upon economic factors such as income, price, psychology, sociology, anthropology, culture and climate. Home appliances are increasingly becoming a means to demonstrate prosperity and the products have continuously changed and improved with time in most of the product categories. The urban home appliance markets have now largely become a product replacement market due to the rapid economic growth. The demand for home appliances has increased with rising income levels, declining prices of appliances, double income families, changing lifestyles, availability of credit, increasing consumer awareness and introduction of new model. The household appliances such as refrigerators, air conditioners and washing machines are the more expensive household appliances and are generally considered long-term purchases due to their expected service life. There are many home appliances companies in like Videocon, Voltas, Godrej, Samsung, LG, Whirlpool etc., which are trying to take a market lead by providing energy-efficient and environmental- friendly products at affordable price.

Replacement purchase behaviour

Replacement is an act or process of replacing or of being replaced an item with a similar or different, inferior or a superior item. A piece of equipment is replaced only when it breaks down. As far as replacement is concerned, consumers cannot make replacement decision without taking into account the likely future versions of the appliances. The consumers are now replacing their existing appliances with frost-free refrigerators, split air conditioners, fully automatic washing machines which are boosting the sales of home appliances.

Statement of the problem

Home appliances are intended to endure regular usage for several years. Replacement can occur when an item in the existing assortment was replaced by another item roughly comparable in function and quality, need and style or prestige. Profiling consumers by combining their decision-making style and demographic variables provide more meaningful ways to identify and understand various consumer segments and target them with more focused marketing strategies, So the researcher has developed a curiosity to study the reasons behind replacement, factors influencing replacement and level of satisfaction derived from the replacement of select home appliances i.e., refrigerators, washing machines and air conditioners.

Objective of the study

- To identify the reasons for replacement of select home appliances.
- To find out the factors influencing the replacement of select home appliances.
- To study the level of satisfaction on the replacement of select home appliances.

Literature Review

Bayus (1988)[1] used a survey methodology to demonstrate differences between early and late replacers of automobiles in terms of income, education, occupation and response to styling, image and costs. In turn, it is proposed that late replaces will be influenced by a number of factors identified in previous research related to aggregate replacement (or scraping), such as used product prices, scrap values, repair costs, advertising, styling and feature changes and product reliability. With regards to replacement of consumer durables, Hoffer and Reilly (1984)[2] stated that when the problem arises the consumer has two choices: either to continue with his/her current piece of equipment or to scrap it and replace it. The recent literature on consumer durable goods replacement conducted by Antonides(1990)[3] finds that failure rate is increasing size and income, and is decreasing with purchasing prize. Bayus (1991)[4] in his article had stated that unforced replacements influenced by several factors such as price, advertising, promotion, residential moves, product features, product styling and colours and newer technologies. Morelli (2001)[5] stated that replacement purchases are influenced by socio-economic variables, product characteristics and time factors. Higher income is generally associated with a higher probability of early replacements and households that can afford to often upgrade appliances that are still functional to acquire latest trends and new technology.

Research methodology

The design of the research is descriptive in nature. Both primary and secondary data have been used for the present study. The primary data have been collected from consumers through structured questionnaire. The total respondents of the study were 577 samples in Coimbatore city of Tamil Nadu. A convenient sampling technique was adopted in the study to select the sample respondents. The study has been conducted on the respondents who had replaced any one of the select home appliances of refrigerators, washing machines and air conditioners. The study was conducted over a six months period from February 2012 to July 2012. The statistical tools used for analyzing the data were Percentage analysis, chi-square analysis, Friedman rank test and Factor analysis.

Analysis and interpretation of data

The descriptive analysis of the study on the demographic characteristics of the respondents of gender, age, educational level, income group and occupation status are presented in the Table 1.

Table-1
Demographic variables

Group	No of respondents	percentage
Gender Male Female	333 244	57.7 42.3
Age Below 30 years 31 to 40 years 41 to 50 years 51 to 60 years Above 60 years	154 77 179 120 47	26.7 13.3 31.0 20.8 8.1
Educational qualification No formal education School level Under graduate Post graduate professional	47 62 187 211 70	8.1 10.7 32.4 36.7 12.1
Monthly Income Below Rs20,000 Rs 20,000-30,000 Rs 30,001-40,000 Above Rs 40,000	13 28 310 226	2.25 4.85 53.73 39.17
Occupation Government service Private sectors Business/self employed House wives	79 51 300 108 39	13.7 8.8 52.0 18.7 6.8

It is found from the Table 1 that out of 577 samples 57.7 % respondents were male and 42.3% were female respondents. Respondents were mostly between the age group of 41-50 years (31%). Majority of the respondents have completed their Post graduation degree (36.70%), majority (53.73%) of respondents were earning a monthly income of Rs 30001 to 40000 and 52% of the people are professionals.

Replacement made by the consumers across product categories

Consumers replace their working or wear out appliances for a variety of reasons, including style, fashion preference, product features and technology advances. The replacements made by the 577 respondents across select home appliances were listed in the following Table 2.

Table: 2
Replacement made by the consumers across product categories

Product categories	No of respondents	Percentage
Refrigerators	418	72.44
Washing machines	502	87.00
Air conditioners	64	11.09

Table 2 portrays that out of 577 samples, majority (87.00%) of respondents had replaced their washing machines, next to that 72.44 % had replaced their refrigerators and only 11.09 % respondents had replaced their air conditioners.

Reasons for replacement across product categories

Replacement of home appliances occurs when the consumer perceived a need and become motivated to enter a decision-making process to resolve the felt need. Throughout the period of consumption, users evaluate the product or service. Attributions for replacement may be made to the particular item, brand, class of product, and so forth. Replacement decisions will be made based on the attitude and expectations formed during the inter purchase interval.

Table 3
Reasons for replacement across product categories

Product categories	Upgrading	Disposable income	Market offer	Product failure
Refrigerators	97 (23.20)	146 (34.20)	127 (30.40)	48 (11.50)
Washing machines	124 (24.70)	146 (29.10)	138 (27.50)	94 (18.70)
Air conditioners	19 (29.70)	3 (4.70)	32 (50.00)	10 (15.60)

Note: Figures in parenthesis are in percentage.

Table 3 shows that, in the case of refrigerators the majority of the respondents (34.90%) recognized a need for replacement when they had excess disposable income. Likewise, majority of (29.10%) respondents also replaced their washing machines when they had sufficient disposable income. Whereas, in case of air conditioners majority (50.00%) of respondents replaced when the market offers were available.

Source of information

Consumers during the post purchase evaluation process may seek out reassurance and opinion from others to confirm the wisdom of their purchase decision and when the consumer's attitude lowers, they deny or distort any information that does not support the choice they made, or look for information that does support the choice they made. The consumers collected information through advertisement, point of purchase, energy guide label, manufacturers, sales personnels, trade fairs, magazines, websites and service persons. Phone calls are also made to different stores for salespeople's recommendations. The Friedman chi-square test was applied to test the significance of hypothesis.

Hypothesis H_0: Source of information for replacement of select home appliances do not differ among the consumers

Table 4
Source of information

Sources	Mean rank	Ranking
Advertisement	7.26	2
Point of purchase	5.02	5
Packing label	7.22	3
Manufacturers	7.15	4
Sales personnels	3.20	
Trade fair	3.24	6
Magazines	3.11	8
Websites	1.38	9
Service persons	7.42	1

The table 4 portrays that among the nine sources of information, service persons advice for replacement were with mean rank of 7.42 and it was ranked as first, advertisements with mean rank 7.26 as second factors, Energy guide label with mean rank 7.22 as third factors, like wise manufacturers(7.15),point-of purchase (5.02),trade fair (3.24),sales personnels (3.20),magazines(3.11) and websites(1.38) which were ranked fourth, fifth, sixth, seventh, eighth, ninth respectively. For these ranking, the obtained chi-square value was 3723.87, for degrees of freedom it was 8. Hence the hypothesis was rejected. As the calculated 'p' value is less than 0.01 levels, there exists significant difference in consumer opinion, as far as source of information for replacement is concerned. Service personnel's opinion was ranked as most preferred source of information for replacement of select home appliances.

Product factors considered for replacement of select home appliances

In order to explore the product factors influencing consumers towards the replacement of home appliances and group them into specific factors, Factor analysis was done using component analysis. The general purpose of Factor analysis is to find a method of summarizing the information contained in a number of original variables into a smaller set of new composite dimensions (factors) with minimum loss of information. The Principal Components Analysis (PCA) is used to extract factors. The PCA is a method used to transform a set of correlated variables into a set of factors, so that the factors are unrelated and the variables selected for each factor are related. All coefficients are used to express a standardized variable in terms of the factors. These coefficients are called factors loadings, since they indicate how much weight is assigned to each factor. According to Hair et al (1992) minimum loading necessary to include a variable with loading greater than 0.30 is considered significant, loading greater than 0.40 more important and loading 0.50 or greater are very significant.

Table 5
Results of Factor analysis

Factors	Component				
	Factors 1	Factors 2	Factors 3	Factor 4	Factors 5
Features	0.972				
Reliability	0.968				
Appearance /style	0.956				
Energy efficiency	0.944				
Value for money	0.883				
User friendliness		0.938			
Resale value		0.768			
After sales service		0.745			
Brand image		0.526			
Maintenance cost			0.939		
Seasonal offers			0.939		
Quality				0.917	
Availability of spares				0.831	
Guaranty/ warranty				0.589	
Functional advantage				0.588	
Durability					0.948
Innovation					0.938
Eigen Values	4.979	4.493	2.317	1.754	1.084
% of Variance Explained	29.288	26.428	13.628	10.318	6.375
Cumulative % of Variance	26.314	42.864	58.508	73.612	86.037

(Note: Only the factor loadings higher than 0.50 are presented)

On the basis of varimax rotation in this study, generally criteria were accepted items with loading of 0.55 or greater. Not a single factor had been dropped out under these circumstances. The Factor 1 explains 29.288% of variance for replacement of home appliances, next to that the second factor had 26.428% of variance, the third factor had 13.628% variance, the fourth factor had 10.318% variance and finally the fifth factor had 6.375 % variance. Total contribution by all these five factors accounts for 86.037 per cent and Extraction has been limited to five factors.

The rotated factors model makes some small adjustments to all the five factors.

The first factor consists of "Features (0.972)" "Reliability (0.968)" "Appearance/style (0.956)" "Energy efficiency (0.944)" and "value for money (0.833)".The second factor consists of "User friendliness (0.938)", "Resale value (0.768)", "After sales service (0.745)", "Brand image (0.526)". The third factor consists of "Maintenance cost (0.939) and "Seasonal offer (0.939)". The fourth factor encompasses "Quality (0.917)", "Availability of spares (0.831)" "Functional advantage (0.589)", and "Guarantee/ warranty (0.588)". The Factor five consists of "Durability (0.948)" and "Innovation (0.938)".

Each of the five dimensions was loaded into five different factors and all the product factors were related to consumer's replacement behaviour. Among the identified seventeen factors features, product features, reliability, Appearance, Energy efficiency and Value for money were some basic cores that were found to be important in influencing the replacement of refrigerators, washing machines and air conditioners.

Mode of payment considered during replacement of select Home appliances

The Table 6 states the Mode of payment considered during the replacement of the select home appliances. It was classified as cash, credit and installment.

Table 6
Mode of payment for the replacement of Home appliances

Mode of Payment	Numbers	Percentage
Cash	226	39.2
Credit	323	56.0
Installment	28	4.9
Total	577	100

The Table 6 depicts that out of 577 respondent's majority of the respondents(56.0%) replaced their select home appliances through credit payment, (39.2%) of the respondents replaced through cash payment and (4.9%) of the consumers replaced by installment.

Demographic factors and Mode of payment

Chi-square test was applied to find out if there is any significant association between the demographic factors of the respondents and mode of payment. Each of the demographic factors like gender, age, occupation, income, and education qualification was compared with mode of payment.

Null Hypothesis: The demographic factors of the respondents have no significant influence on the mode of payment.

Table 7
Demographic factors and Mode of payment- Chi-square values

Demographic variables	Chi-square value	p- value	NS/S
Gender	3.086	0.214	NS
Age	81.353*	0.000	S
Occupation	52.847*	0.000	S
Income	1154.00*	0.000	S
Educational qualification	271.339*	0.000	S

S-Significant NS- Not Significant
(*5% level significant)

The Table 7 depicts the obtained chi-square values for the demographic factors and mode of purchase for the replacement of select home appliances. Since the significant P-value is less than 0.05, the null hypothesis was rejected at 0.05 level of significant for the demographic factors of age, occupation, income, educa-

tion qualification where as in the case of gender the significant value is higher than 0.05, the null hypothesis was accepted. It was concluded that the demographic factors of age, occupation, income, educational qualification had significant relationship with the respondent's mode of payment and gender had insignificant relationship with the mode of payment.

Post-purchase satisfaction level on the replacement of select home appliances
The consumer decision process does not end with the purchase. After consumption, the consumer assesses the level of performance of the product or service. The feedback acquired from actual use of a product will influence the likelihood of future purchases.

Table 8
Post- purchase satisfaction on the replacement

Satisfaction	No of respondents	percentage
Highly satisfied	22	3.81
Satisfied	150	26.00
Neutral	140	24.26
Not satisfied	193	33.45
Highly not satisfied	72	12.48
Total	577	100

The Table 8 shows that out of 577 respondents majority (33.45%) of respondents were not satisfied with their replacement of select home appliances, 26% of the respondents were satisfied with their replacement, 24.26% of the respondents were neither satisfied nor dissatisfied with the replacement, 12.48 % of the respondents were highly not satisfied, and 3.81 % of the respondents were satisfied with their replacement of refrigerators, washing machines and air conditioners.

Conclusion
Consumer decision with regards to replacement is a complex decision. Majority of them had replaced their washing machines and only very few respondent had replaced their air conditioner when compared to refrigerators and washing machines. The findings on the reason for replacement showed that consumers were more concern with Market offer on their replacement rather than upgrading and product failure. It can therefore be concluded that consumers today are more concerned with obtaining the best deal regarding replacement of home appliances and also they had replaced whenever they had disposable income. The service persons advice was ranked first among the source of information. Out of seventeen factors Features, Appearance, reliability, Energy efficiency and Value for money were some basic core product features that were found to be important in influencing the replacement of refrigerators, washing machines and air conditioners. Majority of the respondents replaced their home appliances through credit payment. The study showed that demographic factors such as age, occupation, income and educational qualification had a significant relationship with the respondent's mode of payment and gender did not show any significant relationship with the mode of payment. From the study it was concluded that most of the consumers were not satisfied after replacement. In order to fulfill individual needs and wants manufactures should ensure customers' satisfaction, hence the positive performance so that the brand is retained in the evoked set and increases the likelihood for future purchase.

Suggestion and recommendation
1. The consumer were more concerned with the features followed by appearance and style, so the manufactures should not compromise on the features and design of the product as it can affects the purchase of the product.
2. Since the service persons advice was considered as the most important source of information by the consumers the durable products manufactures should adopt suitable strategies to target the consumers.

Scope for further research
The question remains of positioning the home appliances towards this newly identified target group hence, the future research studies can focus on the following

1. This current study focuses on select home appliances of refrigerators, washing machines and air conditioners further research should be done on the rest of appliances, which would yield some richer insights on how replacement varies across different product categories.
2. Further research is needed in other districts of Tamil Nadu.

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