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## CONSUMERS BUYING BEHAVIOR ON GREEN PRODUCTS – AN ANALYTICAL STUDY

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### ABSTRACT

*The concept of green was neither prominent in the late 1980's nor was the concept of green marketing / consumerism globally popular till 1990's. Environmental deterioration and global problems have together paved the way for the emergence of green marketing. This paper suggests assessing the consumer buying behaviour towards green products. Based on the past literature conceptual framework was developed. Based on the Discriminant function analysis age, marital status, family monthly savings and type of purchase have significantly discriminate into low user and high user.*

*Keyword: Green Marketing, Green Product, Buying Behaviour and Environment*

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## **INTRODUCTION**

In the present day world, marketing strategies have gained greater social significance. For the modern marketer, green marketing has become the matter of prime importance. The concept of green was neither prominent in the late 1980's nor was the concept of green marketing / consumerism globally popular till 1990's. Environmental deterioration and global problems have together paved the way for the emergence of green marketing. In the business world, the companies are using the concept of green marketing for profit and the outcome of green policies is due to social responsibility.

## **NEED FOR THE STUDY**

The study is a niche attempt to find the level of acceptability and reach of Green products among consumers in the market. Hence, it is felt necessary by the researcher that in order to promote the products in the market, the manufacturer should be able to make their products distinct from their competitors' products, not only in quality but also making them eco-friendly.

## **HYPOTHESES**

H<sub>0</sub> :There is no significant difference between the demographic variables of the respondents and the buying behaviour towards green products.

## **OBJECTIVES OF THE STUDY**

1. To study the buying behaviour of the respondents towards green products.

## **RESEARCH METHODOLOGY**

The area of study is confined to Coimbatore city. The data collected for the study covers a period of one year from 1-4-2012 to 31-3-2013. The study consists of both primary and secondary data. Convenient random sampling technique was adopted to determine the sample size. The data for the study were collected from 500 respondents. The Discriminant Function Analysis was used to analyses the data.

## **LIMITATIONS OF THE STUDY**

The sample size of the study restricted only to five hundred consumers. The data for the present study were collected through questionnaire. As a result generalization of the finding is not applicable to any similar situation.

## **Data Analysis**

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**DISCRIMINANT FUNCTION ANALYSIS**

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Discriminant analysis was the traditional statistical technique used for differentiating groups (categorical dependent variable) when the independent variables were quantitative. In the study area five hundred respondents were divided into two groups .i.e., low level of opinion about respondents buying behaviour of green products and the high level of opinion about respondents buying behaviour of green products. The difference of opinion of the respondents in one group from the other is studied with the help of discriminant function analysis. For the purpose of the study, the following variables were selected like., Age, Gender, Marital Status, Educational Qualification, Occupational Status, Nature of Family, Size of the family, Residential area, Family monthly income, Family monthly savings, Family monthly expenditure, Number of earning member in the family, Type of purchase and duration of usage of green products. The discriminant function analysis attempts to construct a function with these and other variables so that the respondents belonging to these two groups are differentiated at the maximum. The linear combination of variables is known as discriminant function and its parameters are called discriminant function coefficients. In constructing this discriminant function all the variables which contribute to differentiate these two groups are examined. This method is based on the generalized squared Euclidean distance that adjusts for unequal variances in the variables. The major advantage of this procedure is that it is computed in the original space of the predictor (independent) variables rather than as a collapsed version which is used in the other method. Generally, all the variables selected will not contribute to explain the maximum discriminatory power of the function. So a selection rule is applied based on certain criteria to include those variables which best discriminate. Stepwise selection method was applied in constructing discriminant function which selects one variable at a time to include in the function. Before entering into the function the variables are examined for inclusion in the function.

The variables which could have maximum  $D^2$  value, if entered into the function are selected for inclusion in the function. Once entered any variable already in the equation is again considered for removal based on certain removal criteria. Likewise, at each step the next best discriminating variable is selected and included in the function and any variable already included in the function is considered for removal based on the selection and removal criteria respectively.

**DISCRIMINANT ANALYSIS**

Discriminant function analysis involved classification problem also, to ascertain the efficiency of the discriminant function analysis, all the variables which satisfy the entry and removal criteria were entered into the function. Normally the criteria used to select the variables for inclusion in the function is minimum F to enter into the equation (i.e.) F statistic calculated for the qualified variable to enter into the function is fixed as  $\geq 1$ . Similarly any variable entered in the equation will be removed from the function if F statistic for the variable calculated is  $< 1$ . The two groups are defined as

- Group 1 - Low level  
Group 2 - High level

The mean and standard deviation for these groups and for the entire samples are given for each variable considered in the analysis.

**HYPOTHESIS:**

H<sub>0</sub>: There is no significant difference between the demographic variables of the respondents and the buying behaviour towards green products.

**Table – 1: Group Means (Between Low and High groups) of Buying Behaviour**

S. No.	Factor	Low		High		Total	
		Mean	SD	Mean	SD	Mean	SD
1	Age	2.70	.995	2.70	1.110	2.70	1.054
2	Gender	1.62	.485	1.65	.478	1.64	.482
3	Marital Status	1.34	.546	1.48	.524	1.41	.539
4	Educational Qualification	3.04	1.449	2.96	1.384	3.00	1.416
5	Occupational Status	2.96	1.732	3.17	1.946	3.07	1.845
6	Nature of Family	1.66	.473	1.70	.458	1.68	.465
7	Size of the family	3.04	1.109	3.26	1.060	3.16	1.089
8	Residential area	1.53	.720	1.70	.862	1.62	.798
9	Family monthly income	2.20	1.015	2.29	.922	2.25	.969
10	Family monthly savings	1.62	.698	1.97	.731	1.80	.736
11	Family monthly expenditure	2.16	.753	2.24	.684	2.20	.719

12	Number of earning member in the family	1.97	.695	1.90	.697	1.94	.696
13	Type of purchase	1.90	.983	1.69	.939	1.79	.966
14	Duration of usage	2.78	1.634	2.63	1.656	2.70	1.645

**Source: Primary Data**

The overall stepwise Discriminant function analysis results after all significant discriminators have been included in the estimation of discriminated function, is given in the following table.

**Table -2: Summary Table between Low level and High level groups of Buying Behaviour**

Step	Variables entered	Wilk's Lamda	F-value	Significance
1	Age	.906	17.833	.001*
2	Marital Status	.931	22.455	.000*
3	Family monthly savings	.961	29.728	.000*
4	Type of purchase	.903	14.813	.000*

**Source: Primary Data****\*Significant at 1% level**

The summary table indicates that variable age entered in step one. The variables such as marital status are significant at one per cent significance level and followed by other variables like Family's monthly savings and Type of purchase. All the variables are significant discriminators based on their Wilk's lambda and F-value. The multivariate aspect of this model is given in the following table

**Table -3: Canonical Discriminant Function (Between Low and High Groups) of Buying Behaviour**

Canonical correlation	Wilks Lamda	Chi -square	D.F	p-value	S/NS
0.327	.893	56.079	4	.000**	<b>S</b>

**Source: Primary Data****\*\*P<0.01 S-Significant**

The canonical correlation in the discriminant group can be accounted for by this model, Wilks lamda and chi square value suggest that Discriminant Function is significant at one per cent level.

The variables given above are identified finally by the Discriminant function analysis as the eligible discriminating variables. Based on the selected variables the corresponding Discriminant Function coefficients are calculated. They are given in the following table.

**Table -4: Canonical Discriminant Function Coefficients  
(Between Low level and High level) of Buying Behaviour**

Age	.457
Marital Status	1.520
Family monthly savings	1.159
Type of purchase	-.328
(Constant)	-4.880

**Source: Primary Data**

$Z = -4.880 = +457 (\text{Age}) + 1.52 (\text{Marital Status}) + 1.159 (\text{Family monthly savings}) + (-0.328) (\text{Type of purchase})$ . Using this Discriminant Function coefficients and variables discriminating scores for two groups are found out and are called group centroids or group means

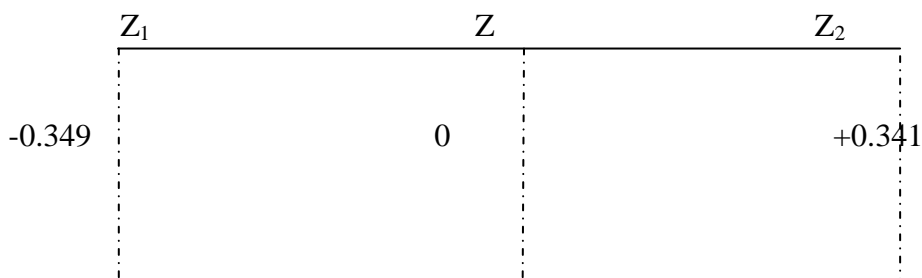
For low level user  $(Z_1) = 247$

For High level user  $(Z_2) = 253$

Discriminating factor is the weighted average of  $Z_1, Z_2$

$$(\text{i.e}) Z = \frac{247 \times Z_1 + 253 \times Z_2}{247 + 253}$$

It is represented diagrammatically (Functions at Group Centroids)



Low level

High level

Thus to classify any respondent as to low or high user the Z score for the respondent is found out by using the equation. If the score found out for any respondent is  $Z_0$  and if the value is  $> Z$  (i.e.  $Z_0 > Z$ ) then it is classified into high user and if  $Z_0 < Z$  then (i.e.  $Z_0 < Z$ ) it is classified into low user.

Now the questions remain to be answered are

1. How efficient are the discriminating variables in the D.F.A?
2. How efficient the D.F itself is?

The first equation cannot be answered directly however the discriminating power or the contribution of each variable to the function can sufficiently answer the question. For this consider the following table

**Table - 5 : Relative Discriminating Index (Between Low Level Group and High Level Group) of Buying Behaviour**

Variables entered	Group I Mean $X_1$	Group II Mean $X_2$	Unstandardised coefficient	$I_j = \text{ABS}(K_j)$ Mean ( $X_{j0} - X_{ji}$ )	$R_j = I_j / \text{sum}$ $I_{ij} * 100$
Age	2.70	2.71	.457	0.005	0.66
Marital Status	1.34	1.48	1.520	0.213	30.75
Family monthly savings	2.20	2.29	1.159	0.406	58.63
Type of purchase	1.90	1.69	-.328	0.069	9.95
<b>TOTAL</b>					100

Source: Primary Data

### RELATIVE DICRIMINATING INDEX

For each variable the respective Discriminant Function coefficient and its mean for each group and  $R_j$  are given.  $R_j$  called relative discriminating index is calculated from the discriminant function coefficient and group means.  $R_j$  tells how much each variable is contributing ( per cent)

to the function. By looking at this column, one can see that education is the most discriminating variable and the family income the least discriminating variable.

The second question is answered by reclassifying the already grouped individuals into low or high level using the Discriminant Function (Z) defined in the equation. This classification is called predictor group membership. In short the efficiency of the Discriminant Function is called predictor group membership. In short the efficiency of the Discriminant Function is how correctly it predicts the respondents into distinct groups.

**Table –6: Classification Results**

**(Between Low Level Group and High Level Group) of Buying Behaviour**

Actual group	No. of cases	Predicted group membership	
		Group I	Group II
Group I	247	171 69.2%	76 30.8%
Group II	253	109 43.1%	144 56.9%

**Source: Primary Data**      **Per cent of grouped case correctly classified: 63per cent**

The above table gives the results of the re classification. The function using the variables selected in the analysis classified 63 per cent of the cases correctly in the respective groups. It is found that the Discriminant function analysis was applied to the respondents on low user and high user. The following factors significantly discriminate the two users. They are Age, Marital Status, Family monthly savings and Type of purchase (1 per cent level).

## CONCLUSION

The study focuses on examining the buying behavior of green products. Based on the results of buying behaviour supports highly that influence consumers using green products. However, it is felt that if the suggestions are taken into consideration with due care by the authorities, it will help to enhance the awareness, attitude and buying behaviour of green products among consumers that will help the human beings to live in pollution-free environment in the near present and for the future generations.



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