

Exploring the Environmental Knowledge of Urban and Rural Consumers and Its Impact on Green Purchase Behavior

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Abstract: The rapid economic growth has increased the demand for products and services in the market place. On the other hand there is a vice-versa effect on the environment. This unsustainable growth was taken due consideration and this research was done with an objective to explore the environmental knowledge of consumers and their impact on green purchase behavior in the context of urban and rural scenario. This study indicates the inter-correlation effect of environmental knowledge and its impact on selected green product purchase behaviour. The study result provides a reasonable support for the companies who come out with green product offering and to design their marketing campaign as well.

[Nalini P, Muruganandam D. **Exploring the Environmental Knowledge of Urban and Rural Consumers and Its Impact on Green Purchase Behavior.** *Life Sci J* 2013; 10(1):2148-2153] (ISSN:1097-8135). <http://www.lifesciencesite.com> 303

Key words: Environmental knowledge, Ecology, Green products, Purchase behaviour.

Introduction

Modern business is an integral part of current day society. This business has far reaching impact on social & economic life of people. As a socio-economic institution, each marketing company is to deliver the goods and services, the standard of living or a life style as per the aspirations of the members of this society. It has a great social responsibility which means an intelligent and objective concern for the well-being of society. The marketing philosophy revolves around doing business profitably by identifying and meeting needs and wants of customers. However, the conventional marketing view that the environment as limits, it becomes clear that meeting the need of today's customers unsustainably will reduce the ability to meet the needs of future generation customer's (Davis D.P 1999). Consumer Environmentalism is defined as the level of environmental concern and responsibility a consumer brings to the product purchase decisions he or she makes. This value should be the most significant and accurate predictor of consumer behaviour in the environmentally friendly marketplace. An enduring definition of a value was put forth by Rokeach (1973), describing a Value as an "enduring belief that a specific mode of conduct or end-state existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence. "The rapid economic growth of the city increased the demand for office space and apartment's. Builders acquired vacant spaces, demolished old houses, and built tall towers. All these residential and office blocks need water, power and sewage facilities thousands of trees

were removed to make space for the city's development. As green spaces shrink water bodies and wetland disappears, power consumption in the city as well as rural has an enormous increase. India is, of course not unique in experiencing environmental destruction. There are similar stories in all parts of the world. Glaciers are melting rapidly in the polar regions and in many mountain ranges are cut down for human benefits. Every major city in the developing countries faces serious problems. Keeping this in the backdrop, this study was done with the following objectives:

Objectives of the Study

- 1) To study the consumer awareness on environmental issues and its impact on purchase decision of selected green products.
- 2) To investigate the demographic profiles and their differences in understanding the environmental issues and preference for green products

Literature Review

The word *environment* often refer to the term as "all external conditions and factors, living and non-living (chemicals and energy), that affect an organism or other specified system during its lifetime" (Depoe, 2007). From the seventies ecological green marketing had been flourishing in developed countries. In this early period attention was payed to specific environmental problems, so solutions were searched for them separately, that is why only few products, companies and industries were affected by this new trend. Ecological green marketing was the

sport of the minority, and caused changes in the lifestyle of only a few consumers. (Peattie, 2001).

The First Age: “Ecological” Green Marketing

Ecological marketing was defined by Henion and Kinnear (1976) as “concerned with all marketing activities

- (a) That have served to help cause environmental problems and
- (b) That may serve to provide a remedy for environmental problems.”

The characteristics of this first age of concern were as follows:

- It was narrowly focused on specific “environmental problems” such as air pollution, depletion of oil reserves, oil spills and the ecological impacts of synthetic pesticides. The emphasis was on pollution and resource depletion (particularly energy resources) and on local or national concerns.
- It sought to identify particular products, companies or industries which were causing, or in a position to help solve, these particular problems.
- It was debated across a relatively narrow “front line” of industries including automobiles, oil and agro-chemicals.
- It was something of a “minority sport” with relatively few consumers and companies significantly changing their behaviour.

The Second Age: “Environmental” Green Marketing

Green Marketing’s second age emerged during the latter part of the 1980s. The potential vulnerability of the environment, and human life within it, was highlighted by a series of incidents and discoveries. These included the Bhopal tragedy in 1984, the discovery of the Antarctic hole in the ozone layer in 1985, Chernobyl in 1986 and the Exxon-Valdez oil spill in 1989. Media coverage of these and other disasters stoked public concern about the environment so that it became a mainstream issue.

The Third Age: “Sustainable” Green Marketing

Since 2000, green marketing has evolved into a third stage. With the implementation of more advanced technology, stricter state enforcement on deceptive claims, government regulations and incentives as well as closer scrutiny from various environmental organisations and the media, many green products have greatly improved and regained consumer confidence in the 2000s (Gura u and Ranchhod, 2005)(Ottman, 2007). Together, with the continuous rise of growing global concern about the environmental quality, green marketing has gradually picked up momentum again. Some researchers postulate (Stafford, 2003) that green marketing is now “making a comeback” (Ottman et al., 2006).Once again, there is renewed

sensitivity towards the environment and towards social consciousness. With “sustainable development” being pressed as the dominating theme in twenty-first century commerce, two trends are predicted as inevitable in the near future of green marketing.

Profile of the Respondents

The rural and urban area respondents were given an equal contribution and the majority of age group falls in age group of 20-30 years (44 percent). The results clearly showcase that the youth population has higher impact in exploring environmental factors followed by above 50 years (18 percent) who have greater response and concern towards a better India. In gender classification male (61.4 percent) takes a higher response, it shows their interest towards exploring the environmental issues and environmental safety followed by education qualification of the respondents (33.6 percent) are graduates and (32.5 percent) were post graduates. It clearly indicates the educated respondents showed interest in participating the research. Majority of the respondents belong to employed category (36.3percent) followed by (28.2 percent) of the students who have greater influence in today’s family decision making and (12.3 percent) of the respondents are professionals. The income of the respondents were classified and the higher group falls under the category of dependent (31.2 percent) the youth population followed by (20.3 percent) are in the income group of Rs15000 to Rs 25000 and (12 percent) are in the income group of Rs 25000 to Rs 30000 .The majority of the respondents fall with a family size of four (38.2 percent) followed by three member (30.6 percent) this shows the growth of nuclear setup families. The two earners family is in growing trend (47.2 percent) followed by one earners family (37percent) as compared to other product ranges green products price is comparatively high thus the research have given importance for the family earners. This study results are based on the above mentioned demographic segments it still have scope for other segments also.

Table 1:Profile of the respondents

<i>Characteristics</i>	<i>Percentage n=625</i>
Residing region	
Rural	50.0
Urban	50.0
Age (in years)	
Less than 20	11.7
20-30	44.0
30-40	12.5
40-50	13.8
Above 50	18.1
Gender	

Male	61.4
Female	38.6
Education	
Illiterate	6.1
School level	19.5
Graduate	33.6
Post graduate	32.5
Professionals	8.3
Occupation	
Student	28.2
Professional	12.3
Business	9.6
Employed	36.3
Retired	1.9
Others	11.7
Monthly income(in Rs)	
Dependent	31.2
Less than Rs.5000	3.5
5000-15000	11.7
15000-25000	20.3
25000-30000	12.0
30000 & above	21.3
Family size	
Single	3.8
Two	9.1
Three	30.6
Four	38.2
Five	10.6
More than 5	6.1
No of earners	
One	37.0
Two	47.2
Three	12.5
Four	3.4

Survey Instrument

As noted above, the goal of this study is to advance the marketing discipline in investigations addressing the concept of green marketing and its impact in the environmental alarmism of individual consumers who resides in urban and rural places in Coimbatore district. To guide our investigation, we have done an exploratory research in two stages in the first stage we have analysed the various aspects of consumers awareness and knowledge on environmental disasters and the concern towards this disasters and in the second stage we have analysed their green purchase behaviour with relevant to three selected green product category namely., organic fruits and vegetables, green electronics and green automobiles. The questionnaire used in this study was an attractive six-page booklet with a cover page of brief instructions. Before conducting the comprehensive survey, three marketing professors were first invited to assess the foregoing measurement instrument. After one pre-test with 100 respondents, the final version of the questionnaire with two sections was modified. In the first stage the first section consisted 9 items of demographic data such as age, gender, education level, etc., The second section includes 7 items and it covered 62 items to capture the perceived environmental awareness, knowledge and their personal and social concern towards each

factors. Much research on environmental consciousness has focussed on very specific environmental concerns, such as packaging, recycling etc., but this study comprehensively define other relevant variables related to cause (environmental disasters) and effect(green purchase behaviours) relationship of each variables included in the study with relevant to environment. Whereas the purpose of the second stage of this survey instrument was to measure a broad range of respondents environmental (green) purchase behaviours with respect to selected green product category included for the study. A list of 25 items were included, which includes 110 questions to capture the green purchase behaviours with relevant to organic food stuffs, green electronics and green automobiles. The questions were mostly placed in 5-Point Likert scale and rank order questions were also used to know the priority in preferences.

Samples design

With relevant to the objective of the study the Coimbatore district was selected as the study area, due to its heavy concentration of both extended rural and urban places around it. The stratified random sampling method was adopted for the purpose of data collection. The district were divided into two taluks namely south taluk and north taluk. The south taluk contains 17 towns (urban) and 28 villages (rural) whereas the north taluk consists of 14 towns (urban) and 40 villages (rural). Further all the towns and villages have been alphabetically arranged and from this list applying the Lottery method 6 urban and 6 rural areas were selected for the study further the house numbers of the respective villages were collected and it was given random numbers based on the random number tables and the individual samples were thus selected for the study. The number of respondents were 625 out of 700 distributed questionnaire 625 were valid with all relevant data's and in that 312 were rural and 313 were from urban again for the purpose of operativeness and convenience ,it was decided that the sample would be formed for the respondents who are familiar with the purchase of these green products. In case of organic food stuffs women were more interestingly participating whereas in case of green electronics men were more interested and their responses were given importance. Age quotas were also established, so as to limit the interviewer's prejudice when collecting the sample elements.

Discriminant Function Analysis

Respondent's opinion about exploring the environmental knowledge of urban and rural Consumers and its impact on green purchase behavior. In the study area out of six hundred and twenty five respondents were divided into two groups i.e., low level of impact on purchase decision and the

high level of impact on purchase decision. 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.

1. Gender
2. Age
3. Educational Qualification
4. Occupational status
5. Monthly Income
6. Family size
7. Earning members in the family
8. Present Job position
9. Residing Region

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 three groups are examined. Mahalanobis minimum D^2 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.

Table – 2:
Group Means (Between low and high groups)

S. No.	Factor	Low		High		Total	
		Mean	SD	Mean	SD	Mean	SD
1	Gender	1.36	.480	1.43	.496	1.39	.487
2	Age	2.84	1.346	2.80	1.280	2.83	1.319
3	Educational Qualification	3.13	1.064	3.24	.982	3.17	1.033
4	Occupational status	3.14	1.655	2.95	1.653	3.07	1.656
5	Monthly Income	3.36	1.932	3.52	1.916	3.42	1.926
6	Family size	3.54	1.200	3.63	1.079	3.58	1.154
7	Earning members in the family	1.78	.808	1.89	.714	1.82	.773
8	Residing Region	1.85	.815	1.73	.588	1.80	.736

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

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 is 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 for This Study

Discriminant function analysis involved classification problem and 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 ≥ 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.

Table -3
Summary table between low level and high level groups

Step	Variables entered	Wilk's Lamda	F-value	Significance
1	Residing Region	.994	3.94	.048**

**Significant at 5% level

The summary table indicates that variable Residing Region entered in step two. The variables such as Residing Region are significant at one per cent significance level. 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 -4
Canonical discriminant function (Between low and high groups)

Canonical correlation	Wilks Lamda	Chi-square	D.F	p-value
0.158	0.975	15.718	8	.047**

**P<0.05

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

The variables given above are identified finally by the D.F.A as the eligible discriminating variables. Based on the selected variables the corresponding D.F coefficients are calculated. They are given in the following table.

Table -5
Discriminant function coefficient
(Between low level and high level)

Residing Region	-0.776
Constant	-1.566

Unstandardized coefficients

$$Z = -1.566 - 0.776 (\text{Residing Region})$$

Using this D.F coefficients and variables discriminating scores for 2 groups are found out and are called group centroids or group means

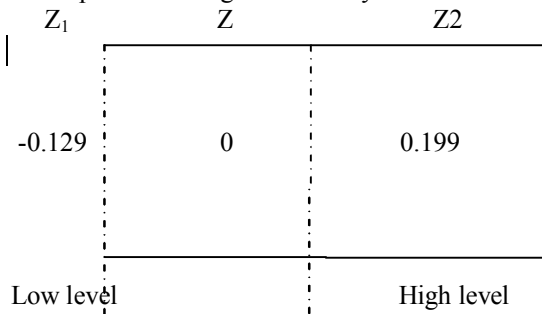
$$\text{For low level user } (Z_1) = -.129$$

$$\text{For High level user } (Z_2) = .199$$

Discriminating factor is the weighted average of Z_1, Z_2

$$(\text{i.e}) Z = \frac{(379 \times Z_1) + (246 \times Z_2)}{379+246}$$

It is represented diagrammatically



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

For each variable the respective D.F coefficient 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 (%) to the function. By looking at this column one education is the discriminating variable and the family income is the least discriminating variable.

Table – 6:Relative Discriminating Index
(Between low level group and high level group)

	Group I Mean X_1	Group II Mean X_2	Unstandardized coefficient	$I_j = \frac{ABS(K_j)}{\text{Mean}(X_{j0} - X_{ji})}$	$R_j = \frac{I_j}{\sum I_j} \times 100$
Residing Region	1.85	1.73	-0.776	0.954	100
TOTAL				0.954	100

Relative discriminating index

Table -7:Classification Results
(Between low level group and high level group)

Actual group	No. of cases	Predicted group membership	
		Group I	Group II
Group I	379	211 55.7 %	168 44.3%
Group II	246	117 47.6%	129 52.4%

The second question is answered by reclassifying the already grouped individuals into low or high level using the D.F (Z) defined in the equation. This classification is called predictor group membership. In short the efficiency of the D.F is called predictor group membership. In short the efficiency of the D.F. is how correctly it predicts the respondents into distinct groups. Per cent of grouped case correctly classified: 54.4 per cent The above table gives the results of the re classification. The function using the variables selected in the analysis classified 54.4 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 the Current Gross Salary per month (1 per cent level).

Discussion and Implications

In the study area out of six hundred and twenty five respondents were divided into two groups .ie. Low level of impact on purchase decision and the high level of impact on purchase decision. The difference on opinion of the respondents in one group from the other is studied with the help of discriminant function analysis and the results indicates that the variable Residing Region entered in step two. The variables such as Residing Region are significant at one per cent significance level. The canonical correlation in the discriminant group can be

accounted for by this model, Wilkslamda and chi square value suggest that D.F is significant at one per cent level.

The function using the variables selected in the analysis classified 54.4 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 level of impact and high level of impact. With all the demographic factors taken for the study current gross salary is discriminated both in high and low level and it is inferred that the salary plays a significant role even though the people are highly aware of the environmental issues. Thus the implications on green product portfolio manufacture should look for cost cutting technology as well the wide range of product offerings.

The relative comparison of the green products in the market are still for a particular niche segment, thus this study can act as base to operate for new product offerings in green product ranges and also it can be explored to other samples for testing its reliability in odd samples. The environmental issues are the basic cause and whereas the effect is the green purchase behaviour of the customers this cause and effect model can be base for many attitude and behaviour studies.

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02/03/2013