CLASSIFICATION OF CONSUMER GREEN BEHAVIOUR: AN EMPIRICAL STUDY

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ABSTRACT

The paper is based on an empirical study that has tried to explain the dimensions of green behaviour of Indian consumers. For this, a total of 120 consumers in Bhubaneswar were contacted through convenience sampling. Factor analysis was used to extract various factors that could explain green behaviour among consumers. According to the loadings, the factors extracted are energy preserver who cares for saving energy; energy prudent who saves energy because of economic considerations and green patronizer who takes positive actions to save environment. The respondents were found to be more motivated by economic considerations. Considering this, it is advised to green marketers to consider the economic motivation criteria first to target consumers. Marketers should be careful in designing messages as these consumers constitute an emerging segment consuming green products. Marketers should use rational appeals and stress economic benefits. The paper is expected to offer guidelines to green companies who intend to target these consumers.

Key Words: Green behaviour, Energy preserver, Energy prudent, Green patronizer

Introduction

There is a growing concern regarding preservation of the environment. Many people now realize the issues of environmental protection. Since the government and public are more responsive towards environmental aspects while consuming products, businesses have also felt the necessity to display green behaviour. As a result, more and more marketers are coming out with products that are 'green' or 'environment friendly'. Considering remarkable growth rate of green product markets, companies perceive tremendous market opportunities in development of green products (Schlossberg, 1992; and Polonsky and Ottman, 1998). To put this into perspective, Prendergast and Thompson (1997) pointed out that segmentation analysis help companies to identify environmentally conscious consumers and enable them to target effectively. Cross-sectioning the body of green research, many researchers used various bases to segment green consumer segments, viz. (a) Tremblay and Dunlap (1978), Samdahl

and Robertson (1989), Pickett et al. (1993) and Gooch (1995) used geographic measures; (b) Anderson et al. (1974), and Webster (1975) used cultural measures; (c) Kinnear et al. (1974) and Crosby et al. (1981) used personality measures; and (d) socio-demographic characteristics.

This paper is an attempt to capture the green consciousness of the consumers. This paper covers the literature on green marketing and green behaviour at the beginning. The different dimensions of green behaviour have been looked into. Then these dimensions have been critically examined to find out the factors which determine distinct behavioural pattern from which different types of green consumer categories can be drawn. The research methodology has then been given which is followed by the findings and discussion of the main findings.

Literature Review

Green Marketing

According to the American Marketing Association, green marketing is the marketing of products that are presumed to be environmentally safe. Thus green marketing incorporates a broad range of activities, including product modification, changes to the production process, packaging changes, as well as modification in advertisements. Yet defining green marketing is not a simple task where several meanings intersect and contradict each other; an example of this will be the existence of varying social, environmental and retail definitions attached to this term. Other similar terms used are Environmental Marketing and Ecological Marketing. Thus "Green Marketing" refers to holistic marketing concept wherein the production, marketing consumption and disposal of products and services happen in a manner that is less detrimental to the environment with growing awareness about the implications of global warming, non-biodegradable solid waste, harmful impact of pollutants etc., both marketers and consumers are becoming increasingly sensitive to the need for switch to green products and services. It is widely believed that the shift to "green" may appear to be expensive in the short term, it definitely proves to be indispensable and advantageous, cost-wise too, in the long run.

According to Peattie (2001), the evolution of green marketing has three phases; 'Ecological' green marketing, where marketing activities were concerned with helping environment problems and provide remedies for environmental problems; 'Environmental' green marketing, which refers to clean technology that involved designing of innovative new products, which take care of pollution and waste issues and 'Sustainable' green marketing. In more simple words, Polonsky defined green marketing as all activities designed to generate and facilitate any exchanges intended to satisfy human needs or wants, such that the satisfaction of these needs

or wants occurs, with minimal detrimental impact on the natural environment (Polonsky, 1994). In this regard trying to find out if there are different types of green purchasing behaviour is an important aspect of research in this field. To simplify the understanding of green segmentation, more apt bases for segmentation need to be developed, as traditional way of market segmentation loses the effectiveness (Peattie, 1999).

Green Behaviour

In existing literature, Green Behaviour (GB) is commonly understood as displaying behaviour like recycling, energy conservation, preference for energy efficient products, waste disposal, and supporting green organizations explicitly and encouraging others to consume green products. Kollmuss and Agyeman (2002, p. 240) simplified GB as behaviour that "consciously seeks to minimize the negative impact of one's actions on the natural and built world (e.g., minimize resource and energy consumption, use non-toxic substances, and reduce waste production)".

Within green marketing literature, various research studies were carried out to understand individual level GBs. Few researchers like Taylor and Todd (1995), Cheung et al. (1999), Harland et al. (1999), Terry et al.(1999) and Heath and Gifford (2002) reported that individuals display various behaviours such as household recycling behaviour, reducing consumption of meat, composting, resource conservation behaviours, viz., water and energy saving, and decreasing car use in various situational diversity. Consumers were cautious about product packaging disposal while purchasing a product, and integrated their environmental consequences in decision making. Recent studies have paid attention to post-purchase behaviours like recycling and waste disposal (Follows and Lobber, 2000).

For several decades, researchers have investigated the motivations of individuals who display green behaviour. As we are looking for solutions to our environmental problem by way of behavioural change, it is needed for policy makers and researchers to understand why an individual shows green behaviour.

As identified by Clark et al. (2003), there are two major streams of thoughts investigating GB at individual level. There are a set of economists who have examined influence of external factors on individual behaviour and their suggestions to environmental problem is of reward or penalty. On the other hand, psychologists have linked psychological variables to behaviour and suggested tools such as awareness, education and persuasion for behavioural change.

Objectives

In the backdrop of the above mentioned literature, the present study has the following objectives:

" To enumerate a list of various types of green behavior displayed by the consumers.
" To crystallize out the predominant factors shaping green behavior of consumers.

Research Methodology

Data and Sample

In this study, data collected were a part of large study aimed to analyze environmental consciousness and purchase behaviour for environmentally friendly products. Both secondary and primary sources of data have been used. An exploratory qualitative study was undertaken to compile the complete list of behaviours which may be considered GB. For this twenty households from urban areas of Bhubaneswar were chosen. The families belong to middle and upper middle classes, basically people who are generally well off and can be termed as aware consumers. To extract the major behaviours from the list of behaviours drawn up at the beginning, structured non-disguised, self-administered questionnaire was administered to 120 consumers. The respondentsbn were recruited through convenience sampling. The respondents talked to were all adults. Some judgment has also been used while recruiting the respondents, basically with respect to their life style. More than 50% of the people talked to were males. More than 50% of the respondents were above 25 years of age. They were all from upper middle class and upper class. This was done to ensure that they were better disposed to give an insight into green behaviour. Finally, only completely filled 100 questionnaires were selected for analysis.

The Survey Instrument

For this study, measures were adapted from earlier studies with required modifications. The questionnaire was divided into two parts where in the first part included basic demographics of population and second section included the GB scale. The GB scale consisted of eleven statements aimed at capturing the respondents' GB. Each answer was recorded with the help of a Likert, five-point scale. Statements were measured on 'strongly agree' (5) to 'strongly disagree'(1). The eleven GB statements were adapted from the study carried out by Cleveland et al. (2005), linking environmental locus of control to GB. The measures of behaviour included items relating to automobile use/maintenance, public transit use, energy use and conservation and '3-R' activities (reduce, reuse, and recycle).

The eleven statements considered initially were as follows:

1. I travel by public transport (train/bus) whenever available.
2. I turnoff my two wheeler/four wheeler at the red signal when I need to wait for some time
3. I prefer to buy durables with more stars as per power saving rating guide

4. I keep my two wheeler/four wheeler well-tuned by taking it for regular service.
5. I usually buy more expensive but more fuel efficient vehicles/ energy efficient light bulbs.
6. I turnoff all electronic equipments/ lights/fans when not in use.
7. I prefer to walk rather than drive to market/shop nearby.
8. I drive my two wheeler/four wheeler within the economic speed limits.
9. When buying packed stuff, I check that it is wrapped in paper or cardboards made from recycled material.
10. I prefer to use my own bags instead of polythene carry bags supplied by vendors.
11. I buy products from companies which have been blamed as environmental polluters.

However, the first statement was not considered while doing analysis as most of the respondents felt this statement does not have much relevance for Bhubaneswar, since public transport system is not well developed in Bhubaneswar (unavailability of train service to commute from one part of the city to another and plying frequency of buses is low and erratic) and there is very less opportunity of using public transport on a daily basis.

Data Analysis and Major Findings

Factor analysis has been used for analysing the collected data. Factor analysis falls into a class of statistical techniques usually intended to use for data reduction and summarization (Crawford and Lomas, 1980; Hooley, 1980; Green et al., 1988; Boyd et al, 1989; and Kim and Mueller, 1994a and 1994b). In other words, factor analysis identifies smaller number of underlying factors from a larger number of observed variables. The present study aims to explore the fundamental 'factors' of GB.

PASW software has been used for testing the data. 10 statements were used for factor analysis. After the data was fed, the Bartlett's test of sphericity was run along with KMO. The approximate chi-square statistic is 224.769 with 45 degrees of freedom which is significant at 0.05 level. The value of the KMO statistic (.722) is also large (> 0.5) [Refer to exhibit 1]. So factor analysis was considered an appropriate technique for analysis. We see from cumulative % column that the three factors extracted together account for 57.975% of the total variance [Refer to exhibit 3].

In total, there were 10 variables in the data. Initially three factors were extracted from these 10 variables using the Varimax rotation method, with criteria of eigenvalues greater than 1.

Next we try to interpret what these 3 extracted factors represent. For this, we look at the unrotated and rotated factor matrices. [Refer to exhibit 4 & 5 respectively].

We notice from the rotated factor matrix that variables 2, 4, 6 and 7 have high loadings of .766, .793, .815, and .750 on factor 1. This suggests that factor 1 is a combination of these four original variables. The same is suggested by the unrotated factor matrix. Variable 2 (preference for durables with more stars as per power saving rating guide), var.4 (buying more expensive but more fuel efficient vehicles/ energy efficient light bulbs), var.6 (I prefer to walk rather than drive to market/shop nearby) and var.7 (I drive my two wheeler/four wheeler within the economic speed limits) can be represented by the phrase 'energy prudent', which captures the essence of these factors. It shows a green behaviour which is driven by the economic motive, that is wish to save money.

Similarly for factor 2, we find the variables 1, 3 and 5 have high loadings of .715, .675 and .747 respectively. This indicates that factor 2 is a combination of these three variables i.e., var. 1 (I turnoff my two wheeler/four wheeler at the red signal when I need to wait for some time), var. 3 (I keep my two wheeler/four wheeler well-tuned by taking it for regular service) and var. 5(I turnoff all electronic equipments/lights/fans when not in use). So factor '2' can be named as 'energy preserver', which rightly reflects the drive to save energy.

Factor 3 can be interpreted as a combination of variables 9 (I prefer to use my own bags instead of polythene carry bags supplied by the vendor) and 10 (I buy products from companies which have been blamed as environmental polluters) which have high loadings of .697 and -.640 respectively. The combined factor can be interpreted as 'green patronizer', where the consumer is driven by the desire to support the cause of environment. Factor 10 shows a negative loading which rightly reflects that the consumers consciously avoid companies which have been blamed as environmental polluters. If we look at the rotated factor matrix, we can also combine variable 8 (When buying packed stuff, I check that it is wrapped in paper or cardboards made from recycled material), which has a loading of .442. However, the items with higher cross loading (more than 0.20) and those with lower values of extraction communalities (less than 0.50) in their respective factors should not be considered. Hence statement 8 was finally not considered.

Exhibit 1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.722
Bartlett's Test of Sphericity	Approx. Chi-Square	224.769
	df	45
	Sig.	.000

	Initial	Extraction
1. I turnoff my two wheeler/four wheeler at the red signal when I need to wait for some time	1.0	.597
2. I prefer to buy durables with more stars as per power saving rating guide	1.0	.587
3. I keep my two wheeler/four wheeler well-tuned by taking it for regular service.	1.0	.523
4. I usually buy more expensive but more fuel efficient vehicles/ energy efficient light bulbs.	1.0	.632
5. I turnoff all electronic equipments/lights/fans when not in use.	1.0	.686
6. I prefer to walk rather than drive to market/shop nearby.	1.0	.771
7. I drive my two wheeler/four wheeler within the economic speed limits.	1.0	.564
8. When buying packed stuff, I check that it is wrapped in paper or cardboards made from recycled material.	1.0	.364
9. I prefer to use my own bags instead of polythene carry bags supplied by the vendor.	1.0	.526
10. I buy products from companies which have been blamed as environmental polluters.	1.0	.547

Exhibit 3: Total Variance Explained

Compo-nent	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.935	29.349	29.349	2.935	29.349	29.349	2.857	28.572	28.572
2	1.842	18.424	47.773	1.842	18.424	47.773	1.623	16.231	44.803
3	1.020	10.202	57.975	1.020	10.202	57.975	1.317	13.172	57.975
4	.922	9.223	67.198						
5	.833	8.335	75.532						
6	.699	6.994	82.526						
7	.554	5.540	88.066						
8	.487	4.870	92.936						
9	.442	4.423	97.359						
10	.264	2.641	100.000						

Exhibit 4: Component Matrix

	Component		
	1	2	3
1. I turnoff my two wheeler/four wheeler at the red signal when I need to wait for some time	-.245	**.535**	.500
2. I prefer to buy durables with more stars as per power saving rating guide	**.745**	.067	-.167
3. I keep my two wheeler/four wheeler well-tuned by taking it for regular service.	.241	**.632**	.255
4. I usually buy more expensive but more fuel efficient vehicles/ energy efficient light bulbs.	**.767**	.059	-.200
5. I turnoff all electronic equipments/lights/fans when not in use.	.012	**.825**	.079
6. I prefer to walk rather than drive to market/shop nearby.	**.861**	.040	.166
7. I drive my two wheeler/four wheeler within the economic speed limits.	**.734**	.103	-.120
8. When buying packed stuff, I check that it is wrapped in paper or cardboards made from recycled material.	.486	-.103	.343
9. I prefer to use my own bags instead of polythene carry bags supplied by the vendor.	-.039	-.422	**.588**
10. I buy products from companies which have been blamed as environmental polluters.	-.395	**.517**	-.353

Exhibit 5: Rotated Component Matrix

	Component		
	1	2	3
1. I turnoff my two wheeler/four wheeler at the red signal when I need to wait for some time.	-.277	**.715**	.095
2. I prefer to buy durables with more stars as per power saving rating guide	**.766**	-.023	-.015
3. I keep my two wheeler/four wheeler well-tuned by taking it for regular service.	.253	**.675**	-.056
4. I usually buy more expensive but more fuel efficient vehicles/ energy efficient light bulbs.	**.793**	-.047	-.035
5. I turnoff all electronic equipments/lights/fans when not in use.	.082	**.747**	-.349
6. I prefer to walk rather than drive to market/shop nearby.	**.815**	.127	.301
7. I drive my two wheeler/four wheeler within the economic speed limits.	**.750**	.032	.004
8. When buying packed stuff, I check that it is wrapped in paper or cardboards made from recycled material.	.400	.093	**.442**
9. I prefer to use my own bags instead of polythene carry bags supplied by the vendor.	-.191	-.058	**.697**
10. I buy products from companies which have been blamed as environmental polluters.	-.267	.257	**-.640**

Extraction Method: Principal Component Analysis,
Rotation Method: Varimax with Kaiser Normalization

Exhibit 6 refers to the three factors extracted and their shared variance in total. It can be seen that all the three factors have an eigenvalues of above 1, ranging from 1.020 to 2.935. Factor 1, energy prudent contributes the maximum variance of 29.349% followed by Factor 2, energy preserver which contributes 18.424. Green patronizer, which is identified as the third factor contributes 10.202% of variance. All three factors explained total cumulative variance of 57.975%.

Exhibit 6: Factors, Eigenvalue, % of Variance and Cumulative % of Variance

Factors	Eigenvalue	% of Variance	Cumulative % of Variance
Energy Prudent	2.935	29.349	29.349
Energy Preserver	1.842	18.424	47.773
Green Patronizer	1.020	10.202	57.975

1. Energy Prudent: Several researchers have upheld economic considerations as Green Behaviour drivers (e.g., Corrado and Ross, 1990; as cited in Kalafatis et al., 1999). This study as per Exhibit 6 depicts that energy prudent is one of the main reasons behind green behavior.

2. Energy Preserver: Some consumers display the behaviors wherein they take care towards preserving energy.

3. Green Patronizer: This factor refers to the positive actions taken by consumers to protect the environment.

Exhibit 7: Factor loadings of various statements whose combinations form the major factors.

Factors	Variable	Statements	Factor loadings
Energy Prudent	Var 2	I prefer to buy durables with more stars as per power saving rating guide	.766
	Var 4	I usually buy more expensive but more fuel efficient vehicles/ energy efficient light bulbs.	.793
	Var 6	I prefer to walk rather than drive to market/shop nearby.	.875
	Var 7	I drive my two wheeler/four wheeler within the economic speed limits.	.750
Energy Preserver	Var 1	I turnoff my two wheeler/four wheeler at the red signal when I need to wait for some time.	.715
	Var 3	I keep my two wheeler/four wheeler well-tuned by taking it for regular service.	.675
	Var 5	I turnoff all electronic equipments/lights/fans when not in use.	.747
Green Patronizer	Var 9	I prefer to use my own bags instead of polythene carry bags supplied by the vendor.	.697
	Var 10	I buy products from companies which have been blamed as environmental polluters.	-.640

Discussion and Conclusion

The findings suggest that there are three types of Green Behaviour which help us to classify the consumers, namely-energy prudent; energy preserver and green patronizer. Here consumer profiling has been done based upon the score on three factors extracted with the help of factor analysis and their background information. Green marketers can use this consumer profile for market segmentation which will help them to take decisions related to product positioning for green products.

Economic consideration was the primary motivation behind green behavior in the city of Bhubaneswar, which is a capital city and since the study was also done among relatively well off respondents, we can expect that generally Indians will show similar behavior in other parts of the country even if they are economically sound. All respondents were not found to be particularly meticulous about preserving energy and even lacked orientation towards the same. It was also noted that the consumers still do not mind using 'convenient' polythene bags if they get them free. Awareness of 'recycling' is still at a very nascent stage among the respondents. Therefore, green marketers are advised to analyze these underlying factors before targeting the consumers. They should stress more on money saved while promoting green behavior. Also, the study will provide insights to the policy makers. It is also worth mentioning that there is an obvious need to identify more ways which are socially acceptable to encourage public to support environmentally-friendly products that are more cost effective too.

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