

# “The Impact of Demographic Attributes on Consumer’s Green Purchase Behaviour: Evidences from India”

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## **Abstract:**

Growing concern on the various environmental problems has changed consumer attitude towards a green lifestyle at a global level. However, these changes are still in evolutionary phase, and yet can provide a strong competitive edge in terms of green products innovation. This study is basically exploratory in nature and has four objectives. The first, second and third objectives are to compare attitudes of Indian consumers towards the environment and green buying behaviour on the basis of age, gender and socio-economic status. The fourth objective is to examine the relationship between environmental attitude and green buying behaviour. Result from study explains that there are no significant differences between genders in their environmental attitudes and green buying behaviour while there are significant differences due to age and socio-economic status. The factor analysis further identified four major dimensions of the environmental attitudes, named as extremely high level of environmental concern, high level of environmental concern, extremely low level of environmental concern and low level of environmental concern. Result from Multiple linear regression analysis indicates that Indian consumer green buying behaviour is influenced by their environmental attitude. Cluster analysis is used to classify Indian consumer into five categories as Core Non-green consumers, Non-green consumers, Apathetic green consumers, Light green consumers and Dark green consumers. This enhances our understanding for India green consumer behaviour while providing a tool to marketers in terms of analysing the market for environmentally friendly products.

**Keyword:** Environmental attitude, Green Buying Behaviour, Indian consumer.

## **1. Introduction**

Environment quality is one of the important issues facing by the world wide as it is continuously deteriorating because of over-consumption and utilisation of natural resources (Chen & Chai, 2010). The consequences of environmental degradation are global warming, depletion of ozone layer, pollution of sea and rivers, noise and light pollution, acid rain and desertification of land. (Ramlogan, 1997).

Therefore, strict measures for sustainable consumption of natural resources must be needed immediately to stop environment degradation otherwise our future generations will suffer the consequences. The environmental pressure can be reduced by increasing the number of the customers, who are willing to purchase green products (Mainieri et al., 1997). Consumers' positive attitude towards environmental issues is motivating manufactures to design and manufacture a wide array of green products in global market. Therefore, a better understanding of consumer preferences in this case should allow businesses to develop a more market-friendly approach for competing in the market. Consumers who are inclined towards the environment and aware of environmental issues when shopping will only buy green products (Bergeron & BarbaroFarleo, Laroche, 2001). Previous studies conducted internationally suggest that the categories of green consumers are evolving and that consumers tend to be diverse in terms of acceptance of green products and lifestyles (Jungermann & Jungermann, 2010). However, it is also generally noticed that business firms are exploited these environmental issues as a source of strategic competitive advantage and profit making (Chen & Chai, 2010).

It has been noted, that in Indian market consumers generally prefer products that are high tech (Chitra, 2007) and due to this reason, eco-friendly products are yet to get properly find their market share in the mainstream market sector. One survey (Market probe international 2012) finding revealed that Indians are least cynical and most enthusiastic about driving a positive change –locally as well as globally – among the 31 countries surveyed. In the literature, we found that the majority of the research has been conducted in context of developed countries to explore and investigate green consumer behaviour. While, hardly any study examined the scope of green consumerism in perspective of developing countries like India. Therefore, it is observed that there is big research gap existing in area of consumer's green buying habits with respect to developing countries. While, environmentalism has already taken its healthy steps in all over world; it has yet to make its impact on the Indian consumers. Thus, it is become essential to now to see how Indian consumers behave, particularly their attitude towards environmental issues and green products. This may provide insights for future marketers and regulators.

This study starts with a discussion of the academic background of the related literature based on environmental attitude and green buying behaviour of consumers. Subsequently, the research techniques and the outcomes from the data analysis will be discussed. The study concludes with a discussion of the finding and conclusion.

## **2. Literature review**

The literature review attempts to discuss past empirical evidences related to environmental attitude, and factors affecting green buying behaviour of consumers. The term "green marketing" was first discussed at a seminar on "green marketing" hosted by the American Marketing Association (AMA) in 1975, including

product changes, manufacturing process changes, packaging changes, changes, and more. Activities are included.

Green marketing became popular in the late 1980s and 1990s after the end of the first green marketing workshop in Austin, Texas, USA in 1975. Green Marketing, also known as Environmental Marketing and Sustainable Marketing, describes an organization's efforts to design, promote, price, and distribute products that are not harmful to the environment (Pride and Ferrell, 1993).

Green marketing covers all activities aimed at generating and facilitating exchanges aimed at meeting human needs with minimal adverse effects on the natural environment. Achieve satisfaction with minimal detrimental impact on the natural environment (Polonsky, 1994).

Elkington (1994) defined green consumer as one who avoids products that can be probably endanger the health of the consumer or others; cause significant damage to the environment during manufacture, use or disposal; devour a disproportionate quantity of energy; cause pointless waste; use substances derived from threatened species or environments; involve unnecessary use of, or cruelty to animals; adversely affect other countries. Green advertising and marketing is seemed as one of the maximum crucial phenomenon in present businesses (McDaniel & Rylander, 1993; Pujari & Wright, 1996; Kassaye, 2001).

Similarly, Mainieri et al., (1997) defined green products as ecologically safe products that can facilitate the long term goal of protecting and preserving our natural habitat. The evolution of green marketing has three phases (Peattie, 2001). First phase was termed as "Ecological" green marketing, and during this period all marketing activities were concerned to help environment problems and provide remedies for environmental problems. Second phase was "Environmental" green marketing and the focus shifted on clean technology that involved designing of innovative new products, which take care of pollution and waste issues. Third phase was "Sustainable" green marketing. It came into prominence in the late 1990s and early 2000.

While Belz & Peattie (2008) defined green marketing for green consumers who are willing to pay high prices for environmentally beneficial green products such as biodegradable diapers, energy efficient light bulbs and eco-friendly detergents.

Several studies have focused on general environmental concern, however very few addressed specifically the relationship between environmental awareness and green purchasing behaviour. In the literature, environmental awareness is defined as an emotional trait that can express a person's interest, consideration, likes, and dislikes of the environment (Yeung, 2005) and is identified as an important determinant of green purchasing behaviour (Mainieri et al., 1997). Many studies have found a positive link between environmental awareness and green purchasing behaviour (Arbuthnot & Ringg, 1975; Crosby et al., 1981; Balderjahn, 1988; Schwepker and Cornwell, 1991; Laroche et al., 2001; Christopher Gan et al., 2008).

In the literature, Environmental attitude is defined as a general attitude that reflects how concerned consumers are about the threat to the environment (Alhassan, 2007). The relationship between environmental attitudes and environmental protection behaviours remains important in various environmental studies (Schwepker and Cornwell 1991; Irland, 1993). Such environmentally conscious consumers not only create opportunities for businessman in terms of producing eco-friendly consumer but also can contribute significantly to improve the quality of the environment. Governments and regulators would also benefit from a better understanding of this relationship Thus, Consumer attitudes are the maximum constant explanatory variable in predicting consumers` readiness to pay for inexperienced merchandise (Chyong et al., 2006).

However, numerous research display that consumers` warning signs of positive mind-set in the direction of environmental problems do not necessarily lead to actual green buying behaviour (Mandese, 1991; Laroche et al., 2002). Majority of patron do now no longer buy merchandise primarily based totally at the environmental situation by myself and they'll now no longer trade-off different product attributes for a higher environment (Yam-Tang and Chan, 1998). Such study clearly state that consumer showed an environmental concerns, But when it comes to actually buying green products they did not respond.

Product attributes such as convenience, availability, price, quality and brand were still the most important attributes that consumers consider when making green purchasing decision (Johri and Sahasakmontri, 1998; Christopher Gan et al., 2008). Several studies show that higher price has a negative effect on the probability of consumers purchasing green products. Thus, consumers are less likely to purchase green products if the products are more expensive (Blend and van Ravenswaay, 1999; D'Souza et al., 2006; Christopher Gan et al., 2008).

The Factors such as environmental attitude, and environmental concern, perceived seriousness of environmental problems, perceived environmental responsibility, perceived effectiveness of environmental behaviour, social influence and concern for self-image in environmental protection are found as important factors in several environmental studies that affect adolescent consumers' green purchasing behaviour (Lee Kama, 2008; Ronnie Irawan and Dahlia Darmayanti, 2012).

In addition, consumers' belief, social influence, environmental attitude, and perceived quality of green product are also important factors which positively influenced green purchasing intention among young consumers (Mohammad Reza Irawania, 2012).

### **3. Environmental Attitudes**

Allport (1935) defined attitude as: "A mental and neural state of readiness, which exerts a directing, influence upon the individual's response to all objects and situations with which it is related". According to Schultz and Zelezny (2000), "attitudes of environmental concern are rooted in a person's concept of self and the degree to which an individual perceives him or herself to be an integral part of the natural environment".

It refers to the extent to which an individual perceives himself as an integral part of the natural environment. Most environmental sociologists label their attitudes towards the natural environment as "environmental problems" (Vining and Ebreo, 1992).

#### **4. Green Purchase Behaviour**

Green products are commonly known as ecological products or eco-friendly products. Shamdasami et al. (1993) defined eco-friendly products as products that can be recycled or preserved without polluting the earth or depleting natural resources. In other words, green products are products that incorporate strategies such as the use of recycled or recycled content, reduced packaging, or the use of less toxic materials to reduce their impact on the natural environment. Krause (1993) found that consumers were increasingly concerned about their daily habits and their impact on the environment. As a result, some consumers have turned their environmental concerns into aggressive efforts to buy green products (Martin and Simintiras, 1995). Consumers who are environmentally friendly and interested are called green consumers (Soonthonsmai, 2007). These green consumers usually organized petitions, boycotted manufacturers and retailers, and actively promoted the conservation of the planet (Fergus, 1991). The terms commonly used by companies promoting green products are "environmentally friendly," "environmentally safe," "recyclable," "biodegradable," and "ozone-friendly." There are several terms that are used interchangeably with green purchasing behaviour, such as green purchasing behaviour, environmentally friendly purchasing behavior, and environmentally friendly purchasing behaviour.

#### **5. Research Methodology**

Research is started with an exploratory research design to get insights in related published literature. Subsequently, study used a descriptive research design and "survey" method to investigate the respondent's attitude towards environment and their green buying behaviour.

##### **5.1 Research Objective**

The study is carried out with the following objectives;

- To find out whether a relationship between consumer attitude towards environment and their green buying behaviour exist in context of India.
- To determine the impact of demographic attributes (age and gender) of the consumer towards the environment and green buying behaviour.
- To identify the impact of socio-economic status (education, income and profession) of the consumers towards the environment and green buying behaviour.

##### **5.2 Research Question**

*"Does Environmental attitude influence green purchasing Behaviour?"*

**5.3 Sampling design: first sampling design**

Sample size was calculated by using formula,

$$ss = \frac{Z^2 * (p) * (1-p)}{c^2}$$

Where:

Z = Z value (e.g. 1.96 for 95% confidence level)

p = percentage picking a choice, expressed as decimal (.5 used for sample size needed)

c = confidence interval, expressed as decimal (e.g., .05 = ±5)

**Correction for Finite Population**

$$\text{new ss} = \frac{ss}{1 + \frac{ss-1}{\text{pop}}}$$

Where: pop = population

Therefore, the sample consisted of 384 participants.

**5.4 Sampling**

Proportional stratified sampling was used for sampling purpose. Strata were formed on the basis of Age, Gender and socio-economic status of Indian consumer. Madhya Pradesh Census data 2011 was used as a population for Proportional stratified sampling.

$$n_h = (N_h/N) * n$$

Where,

$n_h$  = sample size for stratum h

$N_h$  = is the population size of stratum h

$N$  = is the total population size

$n$  = Total sample size

Age	Total Population	Male	Female	Sample size
20-39	617434	322012	295422	266
40-59	274028	149778	124250	118
Total				<b>384</b>

**Table: 1 First Strata on the basis of Age**

Age \ Gender	20-39	40-59
Male	139	65
Female	127	53
Total	<b>266</b>	<b>118</b>

**Table: 2 Second Strata on the basis of Gender**

Due to unavailability of Socio- economic data of Madhya Pradesh Population, disproportionate stratification technique was used for forming third strata. Due to time and cost constraints convenience sampling was used to obtain data from these respondents.

### **5.5 Data Collection**

A structured questionnaire was prepared and administered to 384 respondents using convenience-sampling techniques in the city of Bhopal to collect first-hand. Questionnaires were filled by respondent themselves. Both the personal and electronic survey methods were used as the mode of data collection. In personal method, college and mall intercepts method were used and in electronic method, links were sent to respondents, by using internet as a medium to conduct the survey.

### **5.5 Instrument for Data collection**

An established and validated scale was selected for data collection in order to obtain reliable information from respondents.

**Kuppuswamy scale** was used to measure respondents' socio- economic status. Income variable in this scale was further revised by taking the CPI-(IW) value 2.2 for the month December 2012. Likewise, for measuring the attitudes toward the environment variable, **Tantawi et al. (2007)** was adopted. Three items were deleted from scale which was based on the religious aspect. The construct, buying behaviour towards green product was derived from **Chai and Chen (2010)** scale and consists of 4 items. The respondents were asked to rate each item on five-point Likert scale with response options ranging from strongly agree to strongly disagree.

### **5.6 Reliability and validity of Instrument**

The instrument was already tested with reliability score;

	Number of Scale Items	Cronbach's Alpha
<b>Environmental Attitude</b>	35	.809
<b>Green Buying Behaviour</b>	4	.782

### Table 3 Reliability Statistics

Schuessler (1971) stated that scales are considered reliable if the alpha value is greater than 0.60. Hair et al. (1998) He added that reliability estimates between 0.60 and 0.70 represent the lower limit of acceptability in studies of quantitative research.

#### 5.7 Hypothesis

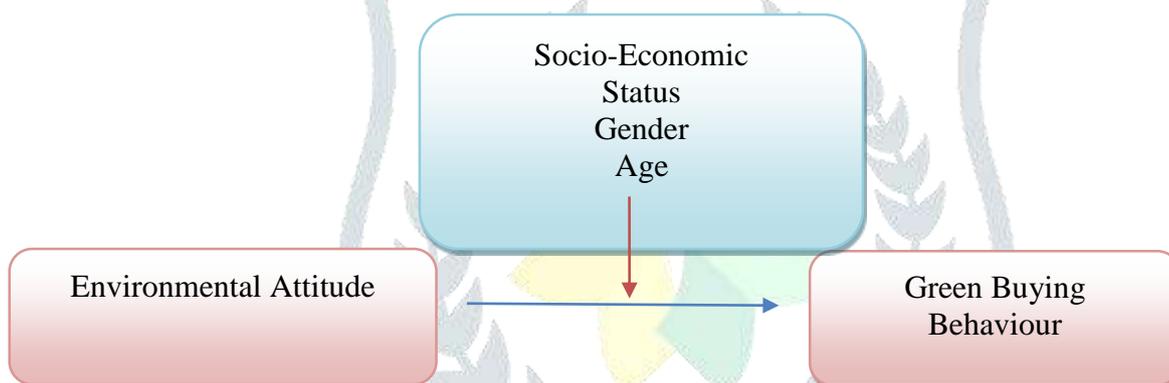
To achieve study objectives, following hypothesis are formulated.

**H1:** Difference between Ages of consumers has significant effect in their attitudes towards environment and green buying behaviour.

**H2:** Difference between Genders of consumers has significant effect in their attitudes towards environment and green buying behaviour.

**H3:** Difference between socio-economic status of consumers has significant effect in their attitudes towards environment and green buying behaviour.

**H4:** Environmental attitude will influence green purchasing behaviour of Indian consumers.



**Figure-1: Theoretical Model**

#### 5.8 Statistical methods

##### 5.8.1 Hypothesis 1 and 2 : Independent sample t-test

The first part of the analysis serves as an independent sample t-test to measure differences in consumer attitudes towards the environment and green purchasing behaviour between men and women of different age groups.

##### 5.8.2 Hypothesis 3: One way ANOVA Test

One way ANOVA method is used Measure the difference between consumer attitudes towards the environment and green purchasing behaviour between socio-economic statuses.

##### 5.8.3 Hypothesis 4: Factor analysis and multiple linear regression

Factor analysis is performed for data reduction to reduce a large number of overlapping measures to a much smaller set of factors.

Multiple linear regression analysis is performed to measure impact of environment attitude, Age, sex and Socio-economic Status (independent variable) on consumer green buying behaviour (dependent variable).

Cluster analysis is adopted to classify Indian consumers on the basis of their environmental attitude.

## 6. Analysis and findings

The study is conducted to find out, how sensitive the Indian consumers are towards environment and Green Marketing. The demographic profile of respondents are shown below-

Variable	N=384	Percentage
<b>Age</b>		
20-39	266	69.3
39-59	118	30.7
<b>Gender</b>		
Male	179	46.6
Female	205	53.4
<b>Socio Economic Status</b>		
Upper	76	19.8
Upper Middle	265	69
Lower Middle	27	7
Upper Lower	16	4.2

**Table-4 Demographic Profile of Respondents**

### 6.1 Hypothesis 1: Independent sample t-test

Table 5 provides the results of the t-test for age group (20-39/40-59) and their attitudes on the environment and green buying behaviour. Based on the SPSS results, hypothesis 1 is supported ( $p < 0.05$ ). The result shows that there are significant differences between two age groups in their environmental attitudes and their green buying behaviour.

Variable	20-39 (Mean)	40-59(Mean)	Significance	Findings
Environmental Attitude	3.9	3.7	.002	Significant
Green Buying Behaviour	3.4	3.02	.000	Significant

**Table 5: T-test results of attitudes on environment and green products by age (n= 384)**

### 6.1 Hypothesis 2: Independent sample t-test

Table 6 provides the results of the t-test for gender (male/female) and their attitudes on the environment and green buying behaviour. Based on the SPSS results, H2 is not supported ( $p > 0.05$ ). The result shows that there are no significant differences between male and female in their environmental attitudes and green buying behaviour.

Variable	Male (Mean)	Female (Mean)	Significance	Findings
Environmental Attitude	3.83	3.86	.625	Significant
Green Buying Behaviour	3.2	3.3	.045	Significant

**Table 6: T-test results of attitudes on environment and green products by gender (n=384)**

### **6.3 Hypothesis 3: One way ANOVA Test**

To find out the variation among different socio economic groups and their attitude towards environment and green buying behaviour ANOVA is carried out.

Levene's Test statistic on study of population variances indicates that sixteen out of thirty eight variable don't violate homogeneity of variance and normality of population assumption. (Levene's test statistic > 0.05, 95% confidence).



	Levene Statistic	df1	df2	Sig.
1. The increasing deterioration of the environment is a serious problem	1.797	3	380	.147
2. If all of us, individually, made a contribution to environmental protection, it would have a significant effect.	5.969	3	380	.001
3. The government should take responsibility for environmental protection.	5.556	3	380	.001
4. We should pay a considerable amount of money to preserve our environment.	2.578	3	380	.053
5. The environmental policies of the main political parties are one issue I consider when deciding how to vote	1.410	3	380	.240
6. The environment is one of the most important issues facing the Indian society today.	7.064	3	380	.000
7. Everyone is responsible for protecting the environment in their everyday life.	8.708	3	380	.000
8. Strict global measures must be taken immediately to stop environmental decline.	1.542	3	380	.203
9. The benefits of protecting the environment do not justify the expense involved*.	3.338	3	380	.019
10. We should recognise the need to protect the environment today so that future generations will not suffer the consequences.	3.157	3	380	.025
11. Citizens should recycle their household waste.	.943	3	380	.420
12. Firms should provide a wide array of green products in the market.	1.870	3	380	.134
13. Preserving and protecting the environment should be one of our priorities.	8.844	3	380	.000
14. The importance of the environment is frequently exaggerated*.	3.094	3	380	.027
15. Firms should always put profitability before environmental protection*.	.527	3	380	.664
16. The government should subsidise research on technology for recycling waste products.	3.100	3	380	.027
17. The government should provide us first with employment opportunities before focusing on preserving the environment.	.157	3	380	.925
18. The government should enforce environmental rules and regulations.	2.265	3	380	.081
19. Environmental issues are very important to me.	7.391	3	380	.000
20. Citizens should urge their neighbours and friends not to use products that pollute the environment.	1.223	3	380	.301
21. Recycling should be another option for waste disposal other than the garbage bin.	1.913	3	380	.127
22. The government should first enhance citizens' standard of living before focusing on preserving the environment	9.070	3	380	.000
23. Personally, I have economic concerns which I consider more important than preserving the environment*.	3.341	3	380	.019

24. If things continue on their present course, we will soon experience a major environmental catastrophe in India.	1.736	3	380	.159
25. We should do our best efforts to save scarce natural resources from being used up.	2.020	3	380	.111
26. It genuinely infuriates me that the government does not provide more help to control pollution of the environment.	4.941	3	380	.002
27. Using environmentally-friendly products is for luxury and showing-off not for protecting the environment*.	.035	3	380	.991
28. I would accept paying extra price for environmentally-friendly products to preserve our environment.	1.423	3	380	.236
29. I trust that companies producing environmentally friendly products are really providing environmentally safe products.	.253	3	380	.859
30. Products which pollute the environment during manufacturing or consumption should be heavily taxed by the government.	1.208	3	380	.307
31. Parents should raise and educate future generations to care about preserving the environment.	4.957	3	380	.002
32. Schools should require all students to take a course dealing with environment and conservation problems.	1.440	3	380	.231
33. The government should communicate environmental rules and regulations to the public through the media.	4.525	3	380	.004
34. Industries should recycle their wastes to protect the environment	1.452	3	380	.227
35 It is the duty of the media to provide accurate information about the real state of environmental problems	2.285	3	380	.078
36. I like the idea of purchasing green product.	2.849	3	380	.037
37. I have a favourable attitude towards purchasing a green version of a product.	2.013	3	380	.112
38. I believe that the quality of green products is not as good as other products.*	1.113	3	380	.344
39. I believe that the price of green products is usually more expensive than other products.	4.897	3	380	.002

**Table 7 Test of Homogeneity of Variances**

		Sum of Squares	df	Mean Square	F	Sig.
<b>1. The increasing deterioration of the environment is a serious problem.</b>	Between Groups	8.045	3	2.682	3.416	.018
	Within Groups	298.327	380	.785		
	Total	306.372	383			
<b>2. If all of us, individually, made a contribution to environmental protection, it would have a significant effect.</b>	Between Groups	41.378	3	13.793	14.925	.000
	Within Groups	351.161	380	.924		
	Total	392.539	383			
<b>3. The government should take responsibility for environmental protection.</b>	Between Groups	10.545	3	3.515	3.808	.010
	Within Groups	350.788	380	.923		
	Total	361.333	383			
<b>4. We should pay a considerable amount of money to preserve our environment.</b>	Between Groups	22.825	3	7.608	6.674	.000
	Within Groups	433.175	380	1.140		
	Total	456.000	383			
5. The environmental policies of the main political parties are one issue I consider when deciding how to vote	Between Groups	1.281	3	.427	.316	.814
	Within Groups	513.029	380	1.350		
	Total	514.310	383			
<b>6. The environment is one of the most important issues facing the Indian society today.</b>	Between Groups	23.037	3	7.679	7.753	.000
	Within Groups	376.397	380	.991		
	Total	399.435	383			
<b>7. Everyone is responsible for protecting the environment in their everyday life.</b>	Between Groups	17.705	3	5.902	6.681	.000
	Within Groups	335.668	380	.883		
	Total	353.372	383			
<b>8. Strict global measures must be taken immediately to stop environmental decline.</b>	Between Groups	8.599	3	2.866	3.678	.012
	Within Groups	296.148	380	.779		
	Total	304.747	383			
9. The benefits of protecting the environment do not justify the expense involved*.	Between Groups	9.448	3	3.149	2.436	.064
	Within Groups	491.175	380	1.293		
	Total	500.622	383			
<b>10. We should recognise the need to protect the environment today so that future generations will not suffer the consequences.</b>	Between Groups	7.424	3	2.475	2.987	.031
	Within Groups	314.886	380	.829		

	Total	322.310	383			
<b>11. Citizens should recycle their household waste.</b>	Between Groups	9.029	3	3.010	3.271	.021
	Within Groups	349.596	380	.920		
	Total	358.625	383			
<b>12. Firms should provide a wide array of green products in the market.</b>	Between Groups	11.906	3	3.969	5.849	.001
	Within Groups	257.833	380	.679		
	Total	269.740	383			
<b>13. Preserving and protecting the environment should be one of our priorities.</b>	Between Groups	10.025	3	3.342	5.040	.002
	Within Groups	251.933	380	.663		
	Total	261.958	383			
14. The importance of the environment is frequently exaggerated*.	Between Groups	5.810	3	1.937	1.266	.286
	Within Groups	581.416	380	1.530		
	Total	587.227	383			
15. Firms should always put profitability before environmental protection*.	Between Groups	5.045	3	1.682	.999	.393
	Within Groups	639.913	380	1.684		
	Total	644.958	383			
16. The government should subsidise research on technology for recycling waste products.	Between Groups	1.327	3	.442	.647	.585
	Within Groups	260.006	380	.684		
	Total	261.333	383			
<b>17. The government should provide us first with employment opportunities before focusing on preserving the environment.</b>	Between Groups	16.398	3	5.466	4.462	.004
	Within Groups	465.475	380	1.225		
	Total	481.872	383			
18. The government should enforce environmental rules and regulations.	Between Groups	3.409	3	1.136	1.333	.263
	Within Groups	323.831	380	.852		
	Total	327.240	383			
<b>19. Environmental issues are very important to me.</b>	Between Groups	33.385	3	11.12 8	12.84 9	.000
	Within Groups	329.105	380	.866		
	Total	362.490	383			
<b>20. Citizens should urge their neighbours and friends not to use products that pollute the environment.</b>	Between Groups	7.435	3	2.478	3.565	.014
	Within Groups	264.190	380	.695		
	Total	271.625	383			
21. Recycling should be another option for waste disposal other than the garbage bin.	Between Groups	5.020	3	1.673	2.432	.065
	Within Groups	261.480	380	.688		

	Total	266.500	383			
22. The government should first enhance citizens' standard of living before focusing on preserving the environment	Between Groups	8.043	3	2.681	2.278	.079
	Within Groups	447.204	380	1.177		
	Total	455.247	383			
23. <i>Personally, I have economic concerns which I consider more important than preserving the environment*</i> .	Between Groups	13.952	3	4.651	4.287	.005
	Within Groups	412.287	380	1.085		
	Total	426.240	383			
24. <i>If things continue on their present course, we will soon experience a major environmental catastrophe in India.</i>	Between Groups	23.581	3	7.860	10.56 <sub>9</sub>	.000
	Within Groups	282.604	380	.744		
	Total	306.185	383			
25. <i>We should do our best efforts to save scarce natural resources from being used up.</i>	Between Groups	9.360	3	3.120	3.990	.008
	Within Groups	297.137	380	.782		
	Total	306.497	383			
26. <i>It genuinely infuriates me that the government does not provide more help to control pollution of the environment.</i>	Between Groups	10.504	3	3.501	3.881	.009
	Within Groups	342.829	380	.902		
	Total	353.333	383			
27. <i>Using environmentally-friendly products is for luxury and showing-off not for protecting the environment*</i> .	Between Groups	1.096	3	.365	.230	.875
	Within Groups	602.144	380	1.585		
	Total	603.240	383			
28. <i>I would accept paying extra price for environmentally-friendly products to preserve our environment.</i>	Between Groups	17.631	3	5.877	4.669	.003
	Within Groups	478.275	380	1.259		
	Total	495.906	383			
29. I trust that companies producing environmentally friendly products are really providing environmentally safe products.	Between Groups	3.316	3	1.105	.877	.453
	Within Groups	478.923	380	1.260		
	Total	482.240	383			
30. <i>Products which pollute the environment during manufacturing or consumption should be heavily taxed by the government.</i>	Between Groups	13.233	3	4.411	3.915	.009
	Within Groups	428.100	380	1.127		
	Total	441.333	383			
31. <i>Parents should raise and educate future generations to care about preserving the environment.</i>	Between Groups	30.782	3	10.26 <sub>1</sub>	12.67 <sub>6</sub>	.000
	Within Groups	307.590	380	.809		
	Total	338.372	383			

<b>32. Schools should require all students to take a course dealing with environment and conservation problems.</b>	Between Groups	8.043	3	2.681	3.996	.008
	Within Groups	254.955	380	.671		
	Total	262.997	383			
<b>33. The government should communicate environmental rules and regulations to the public through the media.</b>	Between Groups	6.605	3	2.202	2.735	.043
	Within Groups	305.885	380	.805		
	Total	312.490	383			
<b>34. Industries should recycle their wastes to protect the environment</b>	Between Groups	10.077	3	3.359	4.285	.005
	Within Groups	297.882	380	.784		
	Total	307.958	383			
<b>35 It is the duty of the media to provide accurate information about the real state of environmental problems</b>	Between Groups	8.753	3	2.918	3.258	.022
	Within Groups	340.349	380	.896		
	Total	349.102	383			
<b>36. I like the idea of purchasing green product.</b>	Between Groups	8.297	3	2.766	3.260	.022
	Within Groups	322.387	380	.848		
	Total	330.685	383			
<b>37. I have a favourable attitude towards purchasing a green version of a product.</b>	Between Groups	20.390	3	6.797	9.695	.000
	Within Groups	266.399	380	.701		
	Total	286.789	383			
<b>38. I believe that the quality of green products is not as good as other products.*</b>	Between Groups	13.428	3	4.476	3.285	.021
	Within Groups	517.728	380	1.362		
	Total	531.156	383			
<b>38. I believe that the price of green products is usually more expensive than other products.</b>	Between Groups	3.131	3	1.044	.918	.432
	Within Groups	431.858	380	1.136		
	Total	434.990	383			

**Table 8: ANOVA Analysis**

From the above ANOVA table, it is confirmed that taking 'Socio- economic status under factor list and other variables under dependent list, the italicized items show significant difference in mean among the socioeconomic group groups where p value (sig.) < 0.05 (table 8).For p value (sig) > 0.05 (at 95% confidence), we are failed to reject H0, which stands for no significant difference in mean of the groups.

#### **Hypothesis 6.4: Factor analysis and multiple linear Regressions**

Perform factor and multiple regression analyses to identify key variables that influence consumer buying behaviour for green products in India. The validity of factor analysis is assessed by examining the validity of the sample using Kaiser-Meyer-Olkin (KMO) statistics. Table 9 contains KMO values of 0.907, showing the adequacy of sampling and reliability of data.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.907
Bartlett's Test of Sphericity	Approx. Chi-Square	6312.213
	df	595
	Sig.	.000

**Table-9: KMO and Bartlett's Test results for Sample Adequacy**

The results of Bartlett's test show that the values are significant and therefore acceptable. The item is then subjected to principal component analysis using Varimax rotation and Kaiser Normalization to retain factors with eigenvalues greater than 1.

The respondents were asked randomly 35 questions/items on the concept related to environmental attitude from which factor analysis is carried on .The Table-10, below contains information about items and their relative importance, expressed in Eigen values.

## Total Variance Explained

Component	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	11.096	31.702	31.702	11.096	31.702	31.702	5.204	14.869	14.869
2	2.828	8.081	39.782	2.828	8.081	39.782	5.140	14.685	29.553
3	2.071	5.916	45.699	2.071	5.916	45.699	2.315	6.614	36.167
4	1.345	3.842	49.541	1.345	3.842	49.541	1.978	5.652	41.820
5	1.186	3.389	52.929	1.186	3.389	52.929	1.904	5.440	47.259
6	1.122	3.205	56.134	1.122	3.205	56.134	1.798	5.136	52.395
7	1.072	3.062	59.196	1.072	3.062	59.196	1.721	4.916	57.312
8	1.004	2.870	62.066	1.004	2.870	62.066	1.664	4.754	62.066
9	.924	2.639	64.705						
10	.861	2.459	67.163						
11	.793	2.266	69.429						
12	.755	2.157	71.586						
13	.732	2.091	73.677						
14	.698	1.995	75.672						
15	.653	1.866	77.538						
16	.641	1.832	79.370						
17	.618	1.767	81.137						
18	.537	1.534	82.671						
19	.520	1.486	84.157						
20	.505	1.442	85.599						
21	.492	1.405	87.004						
22	.451	1.289	88.293						
23	.436	1.245	89.538						
24	.427	1.220	90.758						
25	.400	1.143	91.900						
26	.397	1.136	93.036						
27	.365	1.042	94.077						
28	.352	1.006	95.083						
29	.330	.943	96.026						
30	.300	.856	96.882						
31	.287	.821	97.703						
32	.263	.751	98.454						
33	.202	.577	99.030						
34	.183	.522	99.552						
35	.157	.448	100.000						

Extraction Method: Principal Component Analysis.

**Table-10: Identification of Factors to know Consumer attitude towards Green buying behaviour**

For the factors where the Eigen value is  $> 1$  are considered as the latent factors for further analysis. Eight factors are extracted which shows 62 % per cent of the variance of the variables.

	Component							
	1	2	3	4	5	6	7	8
1. The increasing deterioration of the environment is a serious problem		.764						
2. If all of us, individually, made a contribution to environmental protection, it would have a significant effect.		.776						
3. The government should take responsibility for environmental protection.		.596						
4. We should pay a considerable amount of money to preserve our environment.						.802		
5. The environmental policies of the main political parties are one issue I consider when deciding how to vote			.693					
6. The environment is one of the most important issues facing the Indian society today.								
7. Everyone is responsible for protecting the environment in their everyday life.		.640						
8. Strict global measures must be taken immediately to stop environmental decline.								
9. The benefits of protecting the environment do not justify the expense involved*.								-.714
10. We should recognise the need to protect the environment today so that future generations will not suffer the consequences.	.734							
11. Citizens should recycle their household waste.	.640							
12. Firms should provide a wide array of green products in the market.								
13. Preserving and protecting the environment should be one of our priorities.								
14. The importance of the environment is frequently exaggerated*.			-.543					
15. Firms should always put profitability before environmental protection*.			-.671					
16. The government should subsidise research on technology for recycling waste products.	.703							
17. The government should provide us first with employment opportunities before focusing on preserving the environment.				-.652				
18. The government should enforce environmental rules and regulations.	.675							
19. Environmental issues are very important to me.		.686						
20. Citizens should urge their neighbours and friends not to use products that pollute the environment.								
21. Recycling should be another option for waste disposal other than the garbage bin.								
22. The government should first enhance citizens' standard of living before focusing on preserving the environment			.563					
23. Personally, I have economic concerns which I consider more important than preserving the environment*.				.679				
24. If things continue on their present course, we will soon experience a major environmental catastrophe in India.		.550						
25. We should do our best efforts to save scarce natural resources from being used up.	.545							
26. It genuinely infuriates me that the government does not provide more help to control pollution of the environment.					.781			
27. Using environmentally-friendly products is for luxury and showing-off not for protecting the environment*.				.700				
28. I would accept paying extra price for environmentally-friendly products to preserve our environment.						.590		
29. I trust that companies producing environmentally friendly products are really providing environmentally safe products.								.536
30. Products which pollute the environment during manufacturing or consumption should be heavily taxed by the government.								
31. Parents should raise and educate future generations to care about preserving the environment.		.566						
32. Schools should require all students to take a course dealing with environment and conservation problems.								
33. The government should communicate environmental rules and regulations to the public through the media.	.636							
34. Industries should recycle their wastes to protect the environment	.698							

35 It is the duty of the media to provide accurate information about the real state of environmental problems

.508

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

A Rotation converged in 15 iterations.

**Table-11: Rotated Component Matrix**

Principal component analysis suggests for eight factors with cumulative variance of more than 62%, and hence accepted. The component matrix shows multiple higher loadings of variables on factors and hence a rotation using varimax rotation with Kaiser Normalization is suggested. The components showing loading 0.5 and above area considered for factor grouping. It is as mentioned below in table- 12:

Items	Component	Name of the factor
10. We should recognize the need to protect the environment today so that future generations will not suffer the consequences. 11. Citizens should recycle their household waste. 16. The government should subsidize research on technology for recycling waste products. 18. The government should enforce environmental rules and regulations. 25. We should do our best efforts to save scarce natural resources from being used up. 33. The government should communicate environmental rules and regulations to the public through the media. 34. Industries should recycle their wastes to protect the environment.	1	<b>Extremely High level of environmental concern</b>
1. The increasing deterioration of the environment is a serious problem. 2. If all of us, individually, made a contribution to environmental protection, it would have a significant effect. 3. The government should take responsibility for environmental protection. 7. Everyone is responsible for protecting the environment in their everyday life. 19. Environmental issues are very important to me. 24. If things continue on their present course, we will soon experience a major environmental catastrophe in India. 31. Parents should raise and educate future generations to care about preserving the environment.	2	<b>High Level of environmental concern</b>
14. The importance of the environment is frequently exaggerated. 15. Firms should always put profitability before environmental protection. 22. The government should first enhance citizens' standard of living before focusing on preserving the environment *	3	<b>Extremely Low level of environmental concern</b>
17. The government should provide us first with employment opportunities before focusing on preserving the environment 23. Personally, I have economic concerns which I consider more important than preserving the environment. 27. Using environmentally-friendly products is for luxury and showing-off not for protecting the environment.	4	<b>Low level of environmental concern</b>

**Table-12: Naming of the Factors**

Results from the factor analysis indicate that there are only four significant dimensions of environmental attitudes (independent variable) which could explain customer attitude towards green buying behaviour. The four significant factors are named as extremely high level of environmental concern (7 items), high level of

environmental concern (7 items), and extremely low level of environmental concern (3 items) and low level of environmental concern (3 items).

Multiple linear regression analysis is further performed on the independent variables (age, gender, socio-economic status, extremely high level of concern, high level of concern, extremely low level of concern and low level of concern) and dependent variable (green buying behaviour). The result of this regression are shown in Table 13.

Model	Unstandardized Coefficients			Standardized Coefficients		Sig.
	B	Std. Error	Beta	t		
(Constant)	3.184	.168		18.921	.000	
<b>Extremely high level of concern</b>	.114	.023	.221	<b>4.997</b>	.000	
<b>High level of concern</b>	.070	.024	.136	<b>2.977</b>	.003	
<b>Extremely low level of concern</b>	-.102	.023	-.198	<b>-4.376</b>	.000	
<b>Low level of concern</b>	.099	.024	.192	<b>4.183</b>	.000	
<b>socio-economic class</b>	.102	.036	.130	<b>2.796</b>	.005	
Gender	-.042	.047	-.040	-.896	.371	
<b>Age</b>	-.217	.052	-.194	<b>-4.156</b>	.000	

Dependent Variable: Green Buying Behaviour

**Table 13: Result of Regression Analysis**

As highlighted in Table 13, the overall result of the regression model is significant (significant = 0.000) except for gender (0.371). This shows that all factors (except gender) are simultaneously significant for the dependent variable. It proves that consumer attitudes toward the environment contribute significantly to green purchasing behaviour.

### **Cluster analysis for profiling Indian green consumers**

Agglomeration agenda gives an answer for each variety of clusters from 1 to 384. Reading from the bottom upwards, it shows that for one cluster we have an agglomeration coefficient of 1528, for two cluster 1295 and so on etc.

No of cluster	Agglomeration last step	Coefficient	changes
2	1528	1295	233
3	1295	1098	197
4	1098	934	163
<b>5</b>	<b>934</b>	<b>780</b>	<b>154</b>
6	780	712	68
7	712	651	61

**Table -13: Rewrite coefficients to see the changes in coefficient as the number of cluster increases**

A clear demarcation points seems to be here. Changes column enables us to determine “5” as optimum no of clusters.

	Cluster				
	1	2	3	4	5
<b>Extremely high level of concern</b>	- 1.59299	- 1.20718	.37906	.54818	.62262
<b>High level of concern</b>	- 2.39909	.42965	.36106	.28642	- .69818
<b>Extremely low level of concern</b>	-.57305	.18195	.15312	-1.40650	.87375
<b>Low level of concern</b>	.51751	-.26288	.77433	-.62651	- .80964

**Table -14: Final Cluster Centres**

### Interpretation of clusters by component values

**Cluster 1** is very far from Profile 2 (-2.39) and more similar to Profile 4 (0.5175).

Cluster Name **Non-Green Consumer**

**Cluster 2** is very far from Profile 1 (-1.2078) and more similar to Profile 2 (0.42965).

Cluster Name **Light Green Consumer**

**Cluster 3** is very far from Profile 3 (.15312) and more similar to Profile 4 (.54819).

Cluster name. **Apathetic Green Consumer**

**Cluster 4** is very far from Profile 3 (-.35008) and more similar to Profile 1 (.37610).

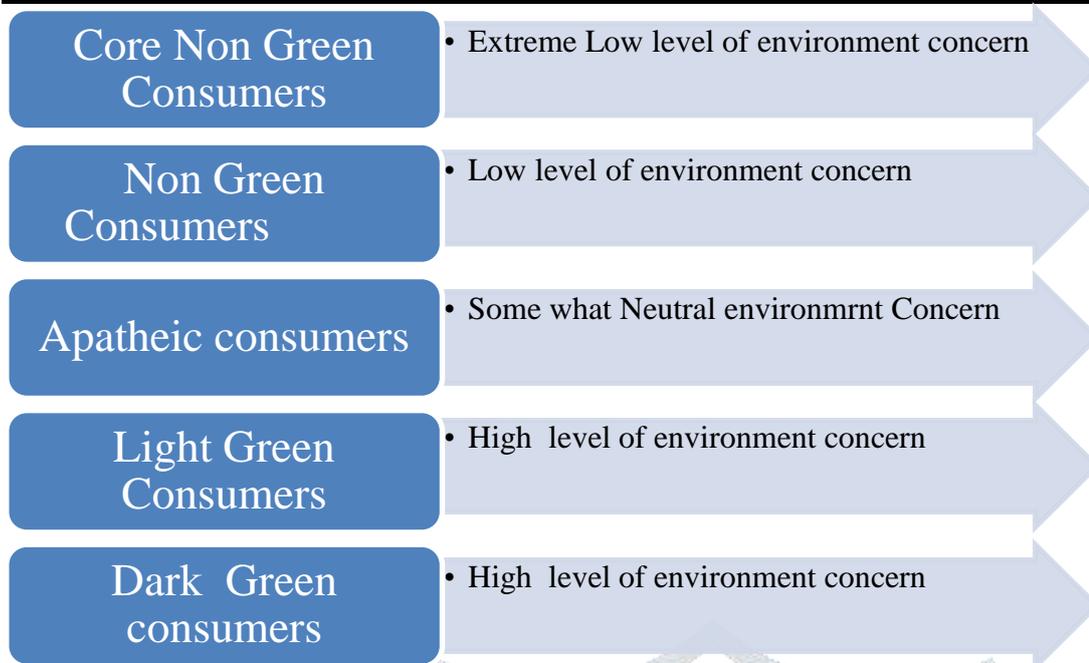
Cluster Name **Dark Green Consumers**

**Cluster 5** is very far from Profile 4 (-.80) and is similar to Profile 3 (.873).

Cluster Name **Core Non-Green Consumer**

### Club Membership-

- 22 respondents have been classified in cluster1- *Non green consumers*
- 82 respondents have been classified in cluster 2- *Light green consumers*
- 142 respondents have been classified in cluster 3 *Apathetic green consumers*
- 64 respondents have been classified in cluster 4 *Dark green consumers*
- 74 respondents have been classified in cluster 5 *Core Non green consumers*



**Figure-2: Classification of Indian Consumer on the basis of their Environmental Attitude**

	Cluster		Error		F	Sig.
	Mean Square	df	Mean Square	df		
<b>Extremely high level of concern</b>	60.911	4	.367	379	165.778	.000
<b>High level of concern</b>	50.399	4	.476	379	105.791	.000
<b>Extremely low level of concern</b>	49.092	4	.494	379	99.321	.000
<b>Low level of concern</b>	42.582	4	.559	379	76.226	.000

**Table -15: Anova Analysis**

ANOVA analysis shows that all factors mean differ significantly across the four clusters at level of significance at .05.

**Discussion**

Result from hypothesis 1 suggests that age is a significant factor to decide consumer environmental attitude and green buying behaviour and Indian younger consumers are found to be more environmental conscious than older people (table 16). These results are consistent with study by Jolibert and Baumgartner (1981) who postulated that French green consumers are younger. According to Lustigman (1994) younger people are more involved in purchasing green products. Rice, et al. (1996) also suggested that green consumers in Thailand have tendency to be younger.

		Cluster Name				
		Non green consumer	Light green consumer	Apathetic Green consumer	Dark green consumer	Core Non green consumer
Age	20-39	7%	17%	44%	18%	14%
	40-59	2%	32%	18%	15%	33%

**Table -16: Indian Green Consumer profile and Age**

**In case of gender**, there is no significant relation of consumer's environmental attitude and green buying behaviour. However, various studies have shown that there are significant differences between men and women in attitudes towards the environment (Brown and Harris, 1992; Tikka et al. 2000) and general attitudes towards green shopping (Mostafa, 2007). However, Eagles and Muffitt (1990) found no gender differences in their attitudes towards the environment. Samdahl and Robertson (1989) did not consider the link between ecological attitudes and gender to be important. Also, D'Souza et al. (2007) suggests that there was no gender difference in the attitudes of respondents towards the green label.

**Socio-economic status** no doubt has a significant role to decide the consumer environmental attitudes and green purchasing behaviour. Study is also found that consumers belong to upper and upper middle class have high level of concern towards environmental problem than lower class people (table 17).

Socio-Economic status		Cluster Name				
		Non green consumer	Light green consumer	Apathetic Green consumer	Dark green consumer	Core Non green consumer
	Lower	32%	12%	19%	18%	19%
	Lower Middle	15%	11%	19%	0%	55%
	Upper Middle	4%	22%	36%	20%	18%
	Upper	1%	27%	51%	12%	9%

**Table -17: Indian Green Consumer Profile and Socio-Economic Status**

For Hypothesis 4, the results show that there is a significant link between consumer attitudes towards the environment and green purchasing behaviour. This is based on a survey by Tanner and Kast (2003), and while a survey by Chen and Chai (2010) does not show anything, consumers' positive attitude towards environmental protection is the purchase of green foods. A significant correlation between consumers' attitudes towards the environment and their attitudes towards green products. However, this study shows that consumer attitudes towards environmentally friendly products are facilitated by positive consumer attitudes towards environmental issues.

As for hypothesis 4, the result shows that there is a significant relationship between consumers' attitude towards environment and green buying behaviour. It supported from the study by Tanner and Kast (2003) where the green food purchases were strongly facilitated by positive attitudes of consumer towards environmental protection, while contrasted the study by Chen and chai (2010) which result indicated no significant relationship between consumers' environmental attitude and their attitude on green products. However, present study has shown that consumers' attitudes on the green products are facilitated by the positive attitudes of consumers towards environmental issues.

## Conclusion

Unlike developed countries, Indian consumers are just at the stage of green awakening. India is facing various Environmental issues and consumers are just beginning to push the need for going green. Though, Indians from upper and middle economic class is getting more aware about the Green marketing, still it need to reach the masses which require a real commitment from all of us.

Present study examines the impact of environmental attitude, gender, and age and socio- economic status of consumers on their green buying behaviour. It found that there are five groups of green consumers with different levels demographic profile and different attitude towards environmental problem. These consumer groups are termed “Dark green consumers”, “Light Green Consumer”, “Apathetic Green consumers”, “Non green consumers” and “core Non green consumers” on the basis of their environmental concern (figure 2) .

Current study is clearly indicated that differences in green purchase behaviour are related to differences in some characteristics, such as age and socio-economic status. Consumer groups like “Apathetic Green consumers”, “Non green consumers” and “core Non green consumers” consider that green products are too costly and have insufficient benefits compared to traditional products. These groups found economic factors to be more important than environment issues and are more concerned about the economic cost associated with green products. Marketer, government and NGO need to educate such consumer groups to engage in green purchasing behaviour. Marketer must develop lower priced green products alternatives to attract consumers and increased their participation in environmental issues. Marketing strategies aimed at changing attitudes appear to be necessary to convince marketers to adopt green purchasing behaviour in this group.

The results from this study would attract companies involved in promoting green products in India and such companies would be able to better analyse the behavioural patterns of these consumers and develop green products and packaging that meets consumer needs and expectations.



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