Understanding the Factors Responsible for the Adoption of Green Products by Consumers in the Indian Market

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Abstract: The paper aims towards understanding the factors responsible for the adoption of green products by consumers in the Indian market. A well-structured survey questionnaire was developed and circulated to 327 participants. Various factors associated with the adoption of green products were taken into account. They were analyzed by using descriptive statistics and factor analysis. The paper concludes that 61.2% of the respondents were willing to adopt green products and the 77.1% of the respondents are aware of green products and various benefits associated with them. An effort was made to understand the influence of green labelling on the adoption of green products by consumers. From the survey, it was inferred that green labelling is an important tool used by consumers for verifying and procuring green products. It was also found that factors like "concerns about the environment" and "recommendations from family and friends" significantly influence consumer's purchase decisions about green products.

Keywords: Consumer behavior; Environmental concerns; Green labelling; Green products; Willingness

1. Introduction

Green product is considered a sustainable product which is specially manufactured for minimizing its impacts on the environment during its entire life-cycle and even after its disposal. Green products play a very important role in reducing waste and maximizing resource efficiency. They are manufactured with the help of environmentally friendly procedures and toxic-free ingredients. Green products have some features are produced with the help of non-toxic chemicals and within hygienic conditions. They can be easily recycled and reused. They are also biodegradable, which are generally packed with the help of eco-friendly material. They utilize minimum resources and have zero or reduced carbon and plastic footprint. Green products have extended their reach towards green consumers who prefer only green products.

Green products have higher durability than other conventional products. In addition, these green products consume lesser energy and other resources [1]. They help overcome the problem of maximum utilization of non-renewable resources like fossil fuels and encourage the use of renewable energy resources to satisfy energy needs. Due to technological advancement, today's greener and more sustainable products that have a lesser impact on the environment are likely to work better and more efficiently than other products that might have a higher impact on our environment. Sustainability plays a crucial role in addressing consumers need and now has become an integral aspect of product quality where products need to be green, and brands also need its responsibility towards the environment.

Today consumers are also becoming more conscious about how a company has manufactured that particular product, are they complying all the Environmental norms and regulations while doing the same. The majority of shoppers are now opting for more green products, which ultimately accelerates markets for green products. Companies that manufacture new and improved green products get access to new markets and enjoy increased profits and competitive advantage over others who are manufacturing alternatives that are non-eco-friendly. Some

consumer products giants like Procter and Gamble, Kimberly-Clark, and Church & Dwight's consumer goods are now introducing their new green brands. They are creating awareness among consumers about how their green products can benefit the environment by upgrading their websites and using the latest social media platforms.

Environmental concerns have become essential criteria for consumers for making their purchase decision about green products. It has resulted in the development of eco-friendly products by various organizations. Consumers who know about environmental matters and issues play an important role when evaluating features and multiple benefits associated with green products.

2. Research Gap

A lot of research is done on green products, their functions, their characteristics, consumer behaviour towards the same. Still, a significant amount of research needs to be done to understand the relationship between the behavioural attitude of consumers and their perception towards green products and the factors that motivate them to adopt green products instead of other conventional products that are not eco-friendly.

3. Objectives

Green products are considered sustainable products that help address environmental issues and act as remedies for the same. They have various benefits like they can be recycled, reused, biodegradable, and consume lesser energy than other conventional products. The adoption of these green products majorly depends on various socio-economic and behavioural aspects.

This paper aims towards understanding factors responsible for the adoption of green products by consumers in the Indian market. Also, it will help organizations for the successful positioning of and promotion of green products.

Thus, the three objectives of the study are:

1. To study the influence of factors like consumers' knowledge, awareness, and willingness to adopt green products.

2. To study consumer's perception about green labelling and its influence on their adoption of green products.

3. To study factors like concerns about environment, online promotions and campaigns, and recommendations from family and friends that may influence consumers' purchase decisions about green products.

4. Literature Review

Green products have less environmental impact and are less detrimental to the health of human beings than other conventional products. They have certain selected attributes like energy-efficient, durable, low maintenance requirements, made from non-toxic substances, recycled materials, or renewable energy sources. They can be biodegradable and easily reused either part or whole [1]. Friedman [2] stated that there is a relationship among issues like political, economic, and global environment and further explained that the environment will benefit and the consumer. It will also help in developing economy and market by introducing new green products.

Hopkins and Roche [3] in their paper, stated that the factors like product category and perceived benefits play a vital role while determining whether consumers are willing to pay a higher price for green products. As mentioned by Jansson et al. [4] in their research that the consumers who are inclination towards green products can be classified into various categories like values which they want to perceive from products, their beliefs about products, norms, habits and their affordability for purchasing those products.

Biswas and Roy [5] explained price sensitivity, which has a high impact on choice preference for green products. In addition to this, social value parameters play a vital role in sustainable consumption behaviour. Maichum et al. [6] stated in their research that consumer's concern about the environment has a positive influence on the purchase of green products. In addition to that, their environmental knowledge does not influence their decision to purchase green products.

Ottoman stated that consumers would prefer products if their top priorities like good quality, convenience, and availability are fulfilled. Green products should be able to reduce impacts on the environment that consumers are facing. They ascertain the properties of green products with the help of various key performance indicators concerning quality [7]. Many research has been done to identify factors of green products that significantly influence purchase decisions to formulate required strategies by keeping in mind the consumers' desire and motives [8]. Paul et al. [9] explained in his research that in developed countries, consumers are more conscious about environmental issues than consumers in other developing countries. There is a significant impact on the purchase of green products because consumers are less aware of green products and the gap between their attitude and behaviour as concluded by Ohtomo and Hirose [10].

Bloch et al. [11] has explained in his research that the consumer decision-making process consists of different stages which are related to their purchase intensions. Firstly, it is necessary to recognize their requirements and create awareness of issues associated with their purchase or fulfilling essential needs or wants, which will change

their mindset towards purchasing green products. Baker and Ozaki [12] stated that the information related to green consumption collected from internal research, for example, feelings and past experiences of consumers, is very low; hence, there is a need for high external search activities to collect extended information on green products. Byron [13] in his study found that consumers are evaluating alternatives for selecting the best one that fulfils their needs and solves their problem. They reconsider the product they want to perceive, which will create their loyalty for the brand.

Young et al. [14] in his research, stated that consumers consider values they will receive from green products while making their purchase decision. Searching for alternatives is based on consumer's requirements and their criteria, and this happened because of the value provided by and awareness created for the green products also their decisions might be based on product knowledge and recommendations from family, friends, or past experiences. There is an emerging need for green products in India because of increased consciousness about the environment [15].

Mostafa [16] stated in his research that purchase behaviour for green products is related to consumption, which can benefit the environment, be easily reused, and help preserve ecosystems. There is social consciousness about conserving and protecting the natural resources for the benefit of people, as explained by Bennett et al. [17] in 2008. Blackwell et al. [18] indicated that consumers think buying green products is represented by their purchase intentions.

Laroche et al. [19] indicated in his research that consumers are willing to pay higher prices for green products. Also, it may turn into a huge opportunity for companies and governments who are desiring to make changes in policies concerning green products. There are a number of factors that may impact consumers' buying decision process, including environmental knowledge, quality, perceived price, and concerns about the environment according Thogersen [20]. Dantas et al. [21] indicated that consumers' preference for green products can be highly dependent upon packaging as packaging attributes can convince consumers to buy green products.

According to Mahenc [22], a high price on green products is associated with environmental performance since their less polluting property results in increased cost for producing them. Contrary to this, D'Souza et al. [23] stated that there is a negative perception about green products. Consumers are not willing to buy green products if they have low quality and are charged at a premium price as compared to traditional products.

According to Kaenzig et al. [24], there is an impact of environmentally preferable features of the product on consumer's preference, intension, and willingness. In his research, Fisher et al. [25] stated that gender and income significantly impact consumer's green purchase behaviour. According to Gerpott and Mahmudova [26], consumers associated with pro-environmental initiatives are more inclined towards green products.

Teisl et al. [27] have stated in his study that there is a positive impact of eco-labelling or green stickers on consumers' behaviour for adopting green products. Due to the demand for green products from a large proportion of the population, the inclusion of green labels on product specifications may provide an incentive to manufacture and market their products by showing eco-friendly features. According to Thogerson [28], most consumers consider green labelling on eco-friendly products. Grankvist et al. [29] explained that eco-labels or green stickers provide information about environmental outcomes from green products that may influence consumers' preference for these products over other conventional products that are not eco-friendly in nature.

Lee [30] stated that recommendations from family and friends were found as the top predictor for the adoption of green products by both male and female consumers as it directly or indirectly impacts consumer behaviour towards green products. Cohen [31] has explained that green advertisement plays an important role in transforming consumers' knowledge into buying green products. It positively impacts consumers to become more environmentally oriented.

According to Schuhwerk and Lefkoff-Haugis [32], green advertising has positively affected consumers with less concerns about the environment. Green advertising can impact the attitude of individuals towards advertising green products and change their perception towards environment, as mentioned by Kim et al. [33]. According to Leonidou et al. [34], green advertising can be used as an effective tool by companies concerning environmental marketing, which will help them achieve a competitive advantage on sustainability ground. Online green marketing promotions and campaigns are a way for many businesses to promote their products. However, how effectively these online promotions and campaigns will impact consumers to adopt green products must be studied in depth [35].

5. Methodology

This paper aims to identify variables or factors responsible for consumers' adoption of green products in the Indian market. An exploratory research structure was selected as it will be the best fit for the research pattern. A well-structured survey questionnaire was developed and put to the test. Various factors responsible for adopting green products were examined and some of the crucial factors that are major influencers were identified. All the collected data were tabulated and analyzed by using SPSS 25.0 software.

6. Data Collection

The survey questionnaire was developed from a literature review and circulated across India via emails and social media platforms. Participants from different regions, income groups and with varied educational backgrounds have addressed all 14 questions asked in the survey questionnaire. Each question accounted for different aspects that may influence the adoption of green products by consumers. The data was collected from 327 participants, of which 53.8% were male and the remaining 46.2% were female. The minimum age of participants in the survey was 18 years and the maximum age was 70 years. Majority of participants were between age group of 20 to 25 years. So, this survey questionnaire has provided perspective of next generation as well about green products.

In the Table 1, It can be observed that around 61.2% of the population are strongly willing to adopt green products, 0.9% of the population are not willing to adopt green products. Here we can infer that majority of the people are willing to adopt green products over other conventional products. A major percentage of the population from age group 18 to 24 and 25 to 29 are strongly willing to adopt green products.

Table 1. Consumer willingness for the adoption of green product

Sr. No.	I am willing to adopt green products	No of responses (percentage)
1	Strongly Disagree	3 (0.9%)
2	Disagree	5 (1.5%)
3	Neutral	16 (4.9%)
4	Agree	103 (31.5%)
5	Strongly Agree	200 (61.2%)

Source: Primary data collected from the survey

In Table 2, It can be observed that 77.1% of the population are aware of various benefits they will get from green products, which has a major percentage of the people from age group 18 to 24. 21.1% of the population are a little bit aware of various benefits associated with green products. Only a smaller percentage of the people, that is, 1.8% are still not aware of various benefits they will receive if they adopt green products. Hence, we can infer that the majority of the population are aware of various benefits associated with green products. Majorly youths are more aware of the benefits associated with green products.

Table 2. Awareness of various benefits associated with green products

Sr. No.	Are you aware about various benefits associated with green products?	No of responses (percentage)
1	Yes	252 (77.1%)
2	A little bit, not much	69 (21.1%)
3	No	6 (1.8%)

Source: Primary data collected from the survey

From Table 3, we can observe that 68.8% of the population strongly agree that with the help of a green label, they can verify whether a given product is green or not, whereas a smaller proportion of the population i.e., 0.9%, strongly disagree and doesn't consider green label as a criterion to verify whether a given product is green or not. Hence from this, we can infer that majority of the population finds green labelling as a criterion for the adoption of green products, since green labelling signifies that the given product bears environmentally friendly characteristics and provides better alternative to other conventional products which are having harmful effects on human beings. This, also explains that how green labelling certification of products are becoming vital for organizations who want to manufacture green products and promote them in the market.

Table 3. Consumers perception about green labelling for verifying green products

Sr. No.	I feel green labelling will help in order to verify whether it is a green product or not	No of responses (percentage)
1	Strongly Disagree	3 (0.9%)
2	Disagree	3 (0.9%)
3	Neutral	17 (5.2%)
4	Agree	79 (24.2%)
5	Strongly Agree	225 (68.8%)

Source: Primary data collected from the survey

Here factors like environmental concerns, advertisements, online promotions or campaigns, and recommendations from family and friends are considered for analyzing their influence on consumer's purchase

decisions about green products. Hence from Table 4 we can infer that those concerns about the environment and recommendations from family and friends have higher influence on consumer's purchase decisions about green products than any other factors.

Table 4. Consumers perception about green labelling for verifying green products

Sr. No.	Elements	No of responses (percentage)				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Environmental concerns	14	5	20	150	138
2	Advertisements	10	22	55	132	108
3	Online promotions	13	11	51	118	134
4	Recommendations from family and friends	11	9	29	155	123

Source: Primary data collected from the survey

From Table 5, which shows descriptive statistics for factors responsible for consumers' adoption of green products, we can observe that the mean scores for two factors, easily biodegradable and recyclable and reused, have a higher value in comparison with other factors.

Table 5. Descriptive statistics

Descriptive statistics			
	Mean	Standard Deviation	Analysis N
Purchase frequency for green products	1.68	0.785	327
Awareness about various benefits associated with green products	1.25	0.473	327
Willingness to pay more for green product if green features increase its price	4.19	0.877	327
Eco friendly features	4.20	0.865	327
Recyclable and reused	4.35	0.829	327
Easily biodegradable	4.36	0.882	327
Made from safer and eco-friendly raw materials	4.31	0.859	327
Highly efficient	4.17	0.935	327
Environmental concerns	4.20	0.944	327
Advertisements	3.94	1.021	327
Online promotions or campaigns	4.07	1.028	327
Recommendations from family and friends	4.13	0.929	327

Source: SPSS

The results indicate that factor analysis can be applied to the dataset as the value of Kaiser-Meyer-Olkin Measure is greater than 0.5 and Bartlett's test of Sphericity is significant. After conducting a factor analysis and Kaiser Meyer Olkin and Bartlett's Test as given in Table 6, and principal component analysis as given in Table 7, awareness and willingness to pay more as two principal factors showing 71.654% of the variance. It shows that consumer's awareness about various benefits associated with green products and their willingness to pay more because of the green features of a product are the significant factors motivating them to adopt green products.

Based on the factorial analysis 12 factors have been reduced to 3 components. Factor loadings greater than 0.55 have been considered as a part of the components. The factors "Environmental concerns" and "Willingness to pay more for green product if green features increase its price" are repeating in more than one component and has not been considered based on the cut off of the factor loading. As depicted in Table 8 environmental concerns measures more than one component and has not been considered for further analysis. Here, factors in component 1 depict environmentally friendly properties and features of green product, factors in component 2 depict influencers for adoption of green products. Component 3 depicts factors that show awareness and willingness to pay more for green products. The Varimax Rotation method with Kaiser normalization was conducted using SPSS. It can be inferred from Table 8 component 3 that awareness about various benefits associated with green products and willingness to pay more because of green features of a product is responsible for the adoption of green products by consumers.

Table 6. Kaiser Meyer Olkin and Bartlett's Test

Kaiser Meyer Olkin and Bartlett's Test		
Kaiser-Meyer-Olkin measure of sampling adequacy		0.874
Bartlett's Test of Sphericity	Approx. Chi-Square	2288.053
	df	66
	Sig.	0.000

Source: SPSS

<p style="text-align:center;">**Table 7.** Principal component analysis</p>

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	6.324	39.524	39.524	6.324	39.524	39.524	3.838	23.989	23.989
2	1.980	12.372	51.896	1.980	12.372	51.896	2.940	18.378	42.366
3	1.341	8.379	60.275	1.341	8.379	60.275	2.865	17.909	60.275
4	0.975	6.094	66.369						
5	0.816	5.100	71.469						
6	0.720	4.499	75.968						
7	0.634	3.963	79.931						
8	0.576	3.603	83.534						
9	0.549	3.432	86.966						
10	0.442	2.763	89.729						
11	0.387	2.418	92.147						
12	0.337	2.109	94.256						
13	0.309	1.932	96.189						
14	0.254	1.590	97.779						
15	0.200	1.251	99.030						
16	0.155	0.970	100.000						

<p style="text-align:center;">**Extraction Method: Principal Component Analysis**</p>
<p style="text-align:center;">Source: SPSS</p>

<p style="text-align:center;">**Table 8.** Varimax Rotation method with Kaiser Normalization</p>

Rotated Component Matrix	Component		
	1	**2**	**3**
Recyclable and reused	0.837		
Eco friendly features	0.835		
Easily biodegradable	0.834		
Made from safer and eco-friendly raw materials	0.817		
Highly efficient	0.702		
Environmental concerns	0.557	0.543	
Online promotions or campaigns		0.856	
Advertisements		0.850	
Recommendations from family and friends		0.782	
Purchase frequency for green products			0.812
Awareness about various benefits associated with green products			0.804
Willingness to pay more for the green product if green features increase its price		0.508	0.590

<p style="text-align:center;">Source: SPSS</p>

7. Results and Discussions

7.1 Analysis of Consumer Willingness for Adoption of Green Products

It is observed that around out of 327, 200 respondents are strongly willing to adopt green products, whereas 3 respondents are not willing to adopt the green products from Table 1. Here we can infer that majority of the population are willing to adopt green products over other conventional products. A major percentage of the population from Age group 18 to 24 and 25 to 29 are strongly willing to adopt green products.

7.2 Analysis of Consumer Willingness for Adoption of Green Products

It is observed that out of 327, 252 respondents are aware of various benefits from green products. 69 respondents are little bit aware about various benefits associated with green products. Only a smaller proportion of the population of 6 respondents are still not aware of the various benefits they will receive if they adopt green products. Hence, from Table 2, we can infer that the majority of the population are aware of various benefits associated with green products, and majorly youths are more aware of the benefits related to green products.

7.3 Analysis of Consumer Willingness for Adoption of Green Products

From Descriptive statistics as given in Table 5 for factors responsible for consumers' adoption of green products,

we can observe that the mean scores for two factors, easily biodegradable and recyclable and reused, have a higher value in comparison with other factors.

Factor analysis and Kaiser Meyer Olkin and Bartlett's Test using SPSS as given in Table 6 was conducted. It can be observed that after carrying out Principal Component Analysis as given in Table 7, awareness and willingness to pay more as two principal factors showing 71.654% of the variance. Varimax Rotation method with Kaiser normalization was conducted by using SPSS, it can be inferred from Table 8 component 3 (awareness and willingness to pay more for green products) that awareness about various benefits associated with green products and willingness to pay more because of green features of a product is responsible for the adoption of green products by consumers.

7.4 Influence of Green Labelling on Adoption for Green Products

We can observe from Table 3 that 225 respondents strongly agree that with the help of green label, they can verify whether a given product is green or not. In contrast, a smaller proportion of the population i.e., 3 respondents, strongly disagree and doesn't consider green label as a criterion to verify whether a given product is green or not. Hence, we can infer that the majority of the population considers green labelling as a criterion for the adoption of green products, which also explains how vital green labelling certification of products is for organizations that manufacture green products.

7.5 Factors Influencing the Purchase Decision about Green Products

Here factors like environmental concerns, advertisements, online promotions or campaigns, and recommendations from family and friends are considered for analyzing their influence on consumer's purchase decisions about green products. Hence, we can infer from Table 4 that concerns about the environment and recommendations from family and friends have a higher influence on consumers' purchase decisions about green products than any other factors.

8. Conclusions

To find out factors responsible for adopting green products, we first developed a survey questionnaire from literature review and circulated it across India and analyzed this data collected through survey with the help of statistical tool i.e. SPSS.

With the reference to our first objective is to study the influence of factors like consumer's knowledge, awareness, and willingness to adopt green products, it was observed from results obtained that the majority of the population are strongly willing to adopt green products and a major proportion of the population fall between the age group 18 to 24 and 25 to 29 as they are more conscious about the negative impacts of conventional products on the environment and how the adoption of green products will help them to neutralize negative impacts on the it which are arising due to usage of conventional products. It was observed that a smaller proportion of the population is still not aware of green products; hence, more awareness and knowledge sharing sessions can be conducted on green products and environmental issues needs to be created among this smaller proportion of the population by running various campaigns concerning green products.

Factor analysis experiment was conducted in order to ascertain factors which are significantly making an impact on adoption of green products by consumers, along with the help of descriptive statistics, we observed that factors like biodegradable, recyclable and reused have higher mean scores as compared with other factors. However, after conducting the Kaiser Meyer Olkin and Bartlett's Test and Principal Component Analysis results shows that consumers' awareness about various benefits associated with green products and their willingness to pay more because of the green features of a product are the significant motivating factors for them to adopt green products. Here it can be concluded that as consumers are becoming more aware about green products and how these products are beneficial for the environment. Also, they are ready to pay higher price for green products even if green features of these products increase its price, which also indicates that consumers are no longer adopting other conventional products that negatively impact the environment.

Moving on with our second objective is to study consumers' perception about green labelling and its influence on their adoption of green products, further analysis was conducted on green labelling. From the analysis conducted, it was observed that the majority of the population consider green labelling as an important criterion in order to verify whether the given product they are willing to procure is green or not. Here, it can be concluded that consumers have become more aware of the green labelling of products. It is, in turn, indicates green labelling certification is becoming vital for organizations who are manufacturing or willing to manufacture and add green products in their product lines in the future. They can perceive green labelling for successful promotion and positioning of their green products in the market.

Lastly, with reference to our third objective is to study influence of factors like concerns about the environment,

advertising, online promotions and campaigns, recommendations from family and friends on consumers purchase decisions about green products, it was observed from the survey and subsequent analysis conducted that there are two factors viz concerns about environment and recommendations from family and friends were having a significant influence on consumer's purchase decision about green products and motivates them to adopt these products. Hence it can be concluded that consumers want to perceive green products as they have concerns about the environment also, they are considering the opinions given to them by their family and friends while making any purchase decision about these green products. So, organizations may also look at working on promotions like 'refer a friend and earn discount' in order to promote and increase reach of their green products in the market. There is further scope of research in the areas like developing business models for more green products for consumers in the future.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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