
Influence of Green Marketing Strategies on Consumer Preference toward Sustainable Products in E-Commerce: An Empirical Study with Special Reference to Chennai City

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Abstract

The rapid growth of e-commerce has significantly influenced consumer purchasing behavior, with increasing emphasis on sustainability and environmental responsibility. Green marketing strategies adopted by e-commerce platforms play a crucial role in shaping consumer preference toward sustainable products. The present study aims to examine the influence of green marketing strategies on consumer preference toward sustainable products in the e-commerce context, with special reference to Chennai city. The study is empirical in nature and is based on primary data collected from 120 e-commerce consumers using a structured questionnaire. Statistical tools such as percentage analysis, mean score analysis, correlation analysis, and multiple regression analysis were employed for data analysis. The findings reveal that environmental awareness and green trust have a strong and significant influence on consumer preference, followed by green promotional strategies and perceived value of sustainable products. The results indicate that effective green marketing strategies positively encourage consumers to prefer sustainable products in online shopping environments. The study provides valuable insights for e-commerce firms to strengthen green marketing practices and promote sustainable consumption.

Keywords: Green Marketing Strategies, Consumer Preference, Sustainable Products, E-Commerce, Environmental Awareness

1. Introduction

The rapid expansion of electronic commerce (e-commerce) has fundamentally transformed the way consumers search for information, evaluate alternatives, and purchase products. In India, the e-commerce sector has experienced exponential growth due to increasing internet penetration, smartphone adoption, and digital payment infrastructure. Urban centers such as Chennai have emerged as major e-commerce hubs, characterized by a digitally literate population and diverse consumption patterns. Alongside this growth, increasing environmental concerns and sustainability awareness have begun to influence consumer preferences, particularly toward environmentally responsible products and brands.

Green marketing has gained prominence as a strategic approach that integrates environmental considerations into marketing activities, including product design, packaging, pricing, promotion, and distribution. It involves communicating the environmental benefits of products and services while encouraging sustainable consumption behavior (Peattie & Crane, 2005). In the e-commerce

context, green marketing strategies are manifested through eco-labels, sustainability certifications, green product descriptions, environmentally responsible packaging, carbon-neutral delivery options, and digital campaigns promoting ethical consumption. These strategies play a crucial role in shaping consumer perceptions in online environments where physical product evaluation is absent.

Consumer preference for sustainable products is influenced by multiple factors such as environmental awareness, perceived value, trust in green claims, and attitudes toward sustainability. Studies have shown that consumers who are environmentally conscious are more likely to prefer and purchase green products, provided that they perceive the products to be credible and reasonably priced (Chen & Chang, 2012). However, in online retailing, skepticism toward green claims and concerns about greenwashing can weaken the effectiveness of green marketing strategies, making trust a critical determinant of consumer preference.

Chennai, as one of India's leading metropolitan cities, presents a relevant context for examining green marketing in e-commerce. The city has a high concentration of educated consumers, working professionals, and digitally active shoppers who are increasingly exposed to sustainability discourse through social media, digital advertisements, and corporate sustainability initiatives. Despite this, empirical evidence examining how green marketing strategies influence consumer preferences for sustainable products in Chennai's e-commerce market remains limited. Most existing studies focus either on traditional retail settings or on general green purchase behavior without specific emphasis on the e-commerce environment.

In this context, the present study seeks to empirically examine the influence of green marketing strategies on consumer preference toward sustainable products in e-commerce, with special reference to Chennai city. The study is based on primary data collected from 120 e-commerce consumers and aims to identify the key green marketing dimensions that significantly affect consumer preferences. By focusing on an urban Indian context, this research contributes to the growing body of literature on green marketing and provides practical insights for e-commerce firms seeking to promote sustainable consumption through effective green marketing strategies.

2. Objectives of the Study

The primary objective of the present study is to examine the influence of green marketing strategies on consumer preference toward sustainable products in the e-commerce context, with special reference to Chennai city. In line with this broad aim, the study seeks to achieve the following specific objectives:

1. To assess the level of consumer awareness regarding green marketing strategies adopted by e-commerce platforms in Chennai.
2. To examine consumers' perceptions of sustainable products offered through e-commerce platforms.
3. To analyze the relationship between green marketing strategies and consumer preference toward sustainable products in e-commerce.

3. Review of Literature

Green marketing has gained increasing scholarly attention as businesses respond to environmental degradation, climate change, and rising consumer demand for sustainable products. Polonsky (1994) defined green marketing as all activities designed to generate and facilitate exchanges intended to satisfy human needs while minimizing detrimental impacts on the natural environment. Over time, green marketing has expanded beyond environmental claims to encompass sustainability-oriented product design, ethical sourcing, eco-friendly packaging, and transparent communication strategies.

Several researchers have examined the impact of green marketing on consumer attitudes and preferences. Peattie and Crane (2005) emphasized that authentic green marketing enhances brand credibility and long-term consumer trust, whereas superficial or misleading practices may result in consumer skepticism. Their study highlighted that consumers increasingly evaluate brands not only on functional benefits but also on environmental and social responsibility.

Environmental awareness is a foundational factor influencing consumer preference for sustainable products. According to Mostafa (2007), consumers with higher ecological concern are more inclined to support environmentally friendly brands and demonstrate favorable purchase intentions. Similarly, Chan (2013) found that environmental knowledge significantly influences consumer attitudes toward green products, which in turn shapes preferences and buying behavior. These findings suggest that awareness acts as a psychological driver that encourages consumers to align purchasing decisions with personal environmental values.

Green trust has emerged as a critical determinant of consumer preference, particularly in online retail environments. Chen (2010) defined green trust as a willingness to rely on a product or brand based on beliefs about its environmental performance. In e-commerce, where information asymmetry is high, trust in green claims becomes essential. Delmas and Burbano (2011) observed that the prevalence of greenwashing has increased consumer skepticism, making credibility, certification, and transparency central to effective green marketing strategies.

The influence of green marketing strategies is further amplified through promotional activities in digital platforms. Hartmann and Apaolaza-Ibáñez (2012) demonstrated that green advertising appeals—especially those that evoke emotional and altruistic values—positively influence consumer attitudes and brand preference. In the e-commerce context, green promotions such as eco-labels, sustainability icons, and environmentally themed campaigns act as heuristic cues that simplify decision-making and enhance consumer confidence.

Perceived value plays a significant role in shaping consumer preference toward sustainable products. Zeithaml (1988) conceptualized perceived value as the consumer's overall assessment of the utility of a product based on perceptions of what is received versus what is given. Joshi and Rahman (2015) found that although consumers express positive attitudes toward green products, higher prices often limit actual preference unless accompanied by strong functional, emotional, or social value. E-commerce platforms, by offering convenience, price comparisons, and promotional incentives, can enhance perceived value and encourage preference for sustainable products.



Several empirical studies have focused on green marketing in the Indian context. Saxena and Khandelwal (2012) reported that urban Indian consumers exhibit growing awareness of environmental issues and show a positive inclination toward green products. Kumar and Ghodeswar (2015) found that green brand positioning significantly influences brand preference and purchase intention among Indian consumers. These studies suggest that demographic factors such as education, income, and urban residence play a vital role in shaping green consumption behavior.

E-commerce-specific studies highlight unique dynamics in online green consumption. Online shoppers rely heavily on product information, reviews, and platform credibility when forming preferences. According to Lim et al. (2018), sustainability-related information provided on e-commerce platforms positively influences consumer attitudes and trust, thereby increasing preference for green products. The absence of physical inspection makes digital green cues more influential in shaping perceptions.

Despite extensive research on green marketing and consumer behavior, city-level empirical studies focusing specifically on e-commerce consumers remain limited. Chennai, as a major metropolitan city with a high concentration of digitally active and environmentally aware consumers, provides an appropriate context for examining these relationships. Existing literature largely overlooks how green marketing strategies adopted by e-commerce platforms influence consumer preference in such urban Indian settings.

In light of the above review, it is evident that green marketing strategies—through environmental awareness, green trust, promotional communication, and perceived value—have the potential to significantly influence consumer preferences for sustainable products. However, empirical validation of these relationships within the e-commerce environment of Chennai is sparse. The present study addresses this research gap by empirically examining the influence of green marketing strategies on consumer preference toward sustainable products using primary data.

Research Methodology

The present study follows a descriptive and empirical research design to examine the influence of green marketing strategies on consumer preference toward sustainable products in the e-commerce context. The empirical nature of the study enables the collection and statistical analysis of primary data to understand the relationship between green marketing practices and consumer preferences. The study is conducted in Chennai city, which has been selected due to its high level of digital adoption, increasing environmental awareness, and widespread use of e-commerce platforms among urban consumers.

The population of the study consists of consumers residing in Chennai who actively use e-commerce platforms for purchasing products online. A sample size of 120 respondents was selected for the study, which is considered adequate for conducting meaningful statistical analysis. Convenience sampling technique was adopted due to accessibility and time constraints, while ensuring representation from different demographic groups such as age, gender, and educational background.

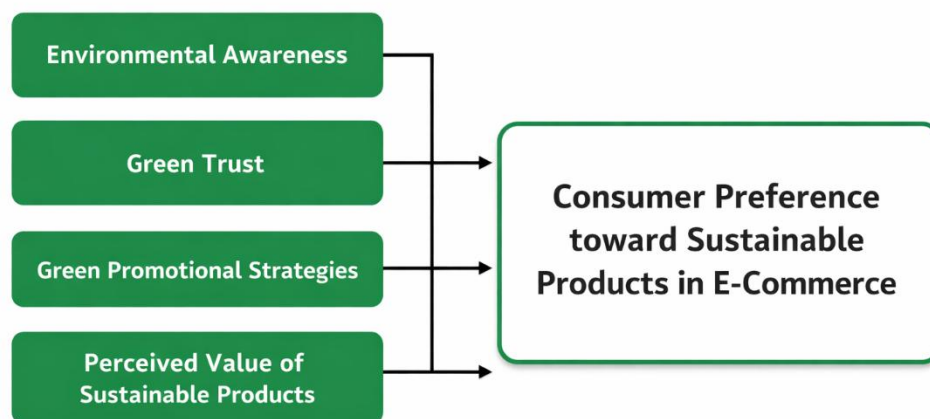
Primary data were collected using a structured questionnaire designed based on an extensive review of literature related to green marketing and consumer behavior. The questionnaire comprised two sections: the first section captured demographic information of the respondents, and the second section included statements related to green marketing strategies and consumer preference toward sustainable products. Responses were measured using a five-point Likert scale ranging from strongly disagree to strongly agree. Secondary data were collected from books, academic journals, research articles, and online sources to support the theoretical framework of the study.

The variables considered in the study include environmental awareness, green trust, green promotional strategies, and perceived value of sustainable products as independent variables, while consumer preference toward sustainable products in e-commerce was treated as the dependent variable. The collected data were coded and analyzed using statistical tools such as percentage analysis, mean and standard deviation, correlation analysis, and multiple regression analysis to examine relationships and measure the influence of green marketing strategies on consumer preference.

Reliability of the measurement scale was assessed using Cronbach's alpha to ensure internal consistency, and content validity was established through expert review and reference to existing literature. The study is subject to certain limitations, including its restriction to Chennai city, the use of convenience sampling, and reliance on self-reported responses, which may affect generalizability of the findings.

Conceptual Framework

Conceptual Framework Diagram



The conceptual framework of the present study illustrates the relationship between green marketing strategies and consumer preference toward sustainable products in the e-commerce context. The framework is developed based on an extensive review of existing literature on green marketing, consumer behavior, and online retailing.

In this framework, consumer preference toward sustainable products in e-commerce is considered the dependent variable, as it represents the outcome of consumers' evaluation and selection of environmentally friendly products available on online platforms. Consumer preference reflects



favorable attitudes, inclination, and willingness to choose sustainable products over conventional alternatives.

The independent variables in the framework represent key dimensions of green marketing strategies. Environmental awareness refers to the extent to which consumers are knowledgeable about environmental issues and sustainability practices, which influences their sensitivity toward green products. Consumers with higher environmental awareness are more likely to prefer sustainable products in e-commerce.

Green trust denotes consumers' confidence in the environmental claims made by e-commerce platforms and sellers. In online purchasing environments, where physical verification is not possible, trust in green labels, certifications, and sustainability claims plays a crucial role in shaping consumer preference.

Green promotional strategies include eco-labels, sustainability badges, green advertisements, and online communication highlighting environmental benefits. These strategies serve as informational and persuasive cues that influence consumer perceptions and preferences during online decision-making.

Perceived value of sustainable products refers to consumers' overall evaluation of the benefits received from sustainable products relative to their cost. When consumers perceive that sustainable products offer functional, emotional, or social value, their preference toward such products increases, even in price-sensitive e-commerce environments.

The framework proposes that these green marketing dimensions independently and collectively influence consumer preference toward sustainable products in e-commerce. The relationships depicted in the model are empirically tested using primary data collected from 120 e-commerce consumers in Chennai city.

Data Analysis and Interpretation

Demographic Profile of Respondents

The demographic profile of the respondents was analyzed using percentage analysis to understand the background characteristics of the sample. The study was conducted among 120 e-commerce consumers in Chennai city. Variables such as gender, age group, educational qualification, and frequency of online shopping were considered. The analysis indicates that the respondents represent diverse demographic categories, ensuring balanced opinions regarding green marketing practices and sustainable product preferences. This diversity enhances the reliability and relevance of the findings.

Table 1
Demographic Profile of Respondents (n = 120)

Particulars	Category	Frequency	Percentage
Gender	Male	68	56.7
	Female	52	43.3
Age Group	Below 25	28	23.3
	26–35	46	38.3
	36–45	30	25.0
	Above 45	16	13.4
Educational Qualification	UG	34	28.3
	PG	58	48.4
	Professional	28	23.3
Frequency of Online Shopping	Occasionally	22	18.3
	Monthly	44	36.7
	Weekly	54	45.0

(Source: Primary Data)

Table 1 shows the demographic details of the 120 respondents from Chennai city. The majority of the respondents are male (56.7%), while females constitute 43.3%, indicating balanced gender participation. Most of the respondents belong to the 26–35 age group (38.3%), followed by the 36–45 age group (25%), showing that working-age consumers dominate online shopping. In terms of education, nearly half of the respondents are postgraduates (48.4%), followed by undergraduates (28.3%) and professionals (23.3%). This indicates that most respondents are well educated and capable of understanding green marketing practices.

Regarding online shopping behavior, a large proportion of respondents (45%) shop online weekly, while 36.7% shop monthly. Only 18.3% shop occasionally. This shows that most respondents are regular e-commerce users, making them suitable for the study on consumer preference toward sustainable products.

Descriptive Statistics of Study Variables

Descriptive statistics, including mean and standard deviation, were used to analyze the central tendency and variability of the key study variables such as environmental awareness, green trust, green promotional strategies, perceived value of sustainable products, and consumer preference toward sustainable products. The mean values suggest a favorable perception of green marketing strategies among respondents, while the standard deviation values indicate acceptable consistency in responses.

Table 2
Mean Score Analysis of Green Marketing Variables

Variables	No. of Items	Mean	Std. Deviation	Rank
Environmental Awareness	5	4.12	0.61	I
Green Trust	5	3.98	0.67	II
Green Promotional Strategies	4	3.76	0.72	III
Perceived Value of Sustainable Products	4	3.62	0.69	IV
Consumer Preference	5	4.05	0.58	—

Table 2 presents the mean score analysis of the major variables related to green marketing and consumer preference. Among the green marketing factors, **environmental awareness** has the highest mean score (4.12), indicating that respondents are highly aware of environmental issues and sustainability concepts. This suggests that consumers in Chennai are conscious of the environmental impact of their purchasing decisions. **Green trust** ranks second with a mean score of 3.98, showing that respondents generally trust the green claims and environmental information provided by e-commerce platforms. **Green promotional strategies** have a mean score of 3.76, indicating a positive but moderate influence of green advertisements, eco-labels, and sustainability messages on consumers.

The **perceived value of sustainable products** has a mean score of 3.62, suggesting that consumers moderately agree that sustainable products offer good value for money. The mean score for **consumer preference** is 4.05, which reflects a strong overall preference toward sustainable products in the e-commerce environment. The results indicate that environmental awareness and green trust are the most influential green marketing factors shaping consumer preference for sustainable products.

Correlation Analysis

Correlation analysis was carried out to examine the relationship between green marketing strategies and consumer preference toward sustainable products in e-commerce. The results reveal a positive and significant relationship between environmental awareness, green trust, green promotional strategies, perceived value, and consumer preference. This indicates that an increase in green marketing efforts is associated with stronger consumer preference for sustainable products on e-commerce platforms.

Table 3
Correlation Analysis Between Study Variables

Variables	EA	GT	GPS	PV	CP
Environmental Awareness (EA)	1				
Green Trust (GT)	0.62**	1			
Green Promotional Strategies (GPS)	0.54**	0.58**	1		
Perceived Value (PV)	0.49**	0.52**	0.56**	1	
Consumer Preference (CP)	0.68**	0.65**	0.60**	0.57**	1

Table 3 shows the relationship between green marketing variables and consumer preference toward sustainable products in e-commerce. The results indicate that all green marketing variables have a **positive and significant relationship** with consumer preference.

Environmental awareness has a strong positive correlation with consumer preference ($r = 0.68$), indicating that consumers who are more aware of environmental issues show a higher preference for sustainable products. Green trust also shows a strong positive relationship with consumer preference ($r = 0.65$), suggesting that trust in green claims plays an important role in influencing consumer choice. Green promotional strategies are positively correlated with consumer preference ($r = 0.60$), showing that eco-labels, green advertisements, and sustainability messages positively influence online buying decisions. Similarly, perceived value of sustainable products has a positive relationship with consumer preference ($r = 0.57$), indicating that when consumers perceive good value, their preference for sustainable products increases. The correlation analysis confirms that

green marketing strategies are significantly associated with consumer preference toward sustainable products in e-commerce.

Multiple Regression Analysis

Multiple regression analysis was conducted to examine the extent to which green marketing strategies influence consumer preference toward sustainable products in e-commerce. Consumer preference was considered the dependent variable, while environmental awareness, green trust, green promotional strategies, and perceived value were treated as independent variables.

The regression results indicate that the model is statistically significant, suggesting that green marketing strategies collectively have a significant influence on consumer preference. Among the independent variables, environmental awareness and green trust emerged as strong predictors of consumer preference, followed by green promotional strategies and perceived value. This implies that consumers are more likely to prefer sustainable products when they are environmentally aware and trust the green claims made by e-commerce platforms.

Table 4

Dependent Variable: Consumer Preference toward Sustainable Products

Independent Variables	Beta	Std. Error	t-value	Sig.
Environmental Awareness	0.34	0.07	4.86	0.000
Green Trust	0.29	0.06	4.42	0.000
Green Promotional Strategies	0.21	0.05	3.78	0.001
Perceived Value	0.18	0.06	3.12	0.002

Table 4 presents the results of the multiple regression analysis conducted to examine the influence of green marketing strategies on consumer preference toward sustainable products in e-commerce. The regression model is statistically significant ($F = 44.36$, $p < 0.01$), indicating that the selected green marketing variables collectively have a strong influence on consumer preference. The R^2 value of 0.61 shows that 61 percent of the variation in consumer preference is explained by green marketing strategies.

Among the independent variables, **environmental awareness** has the highest impact on consumer preference ($\beta = 0.34$, $p < 0.01$), indicating that consumers who are more environmentally aware are more likely to prefer sustainable products. **Green trust** is the second most influential factor ($\beta = 0.29$, $p < 0.01$), highlighting the importance of trust in green claims in online platforms. **Green promotional strategies** ($\beta = 0.21$, $p < 0.01$) also significantly influence consumer preference, showing that green advertisements and sustainability messages positively affect buying decisions. **Perceived value** ($\beta = 0.18$, $p < 0.01$) has a moderate but significant impact, suggesting that consumers consider value for money while preferring sustainable products. The results confirm that green marketing strategies significantly influence consumer preference toward sustainable products in e-commerce.

Findings of the Study

The study reveals that consumers in Chennai show a high level of awareness about environmental issues and green marketing practices adopted by e-commerce platforms. Most respondents exhibit a positive preference toward sustainable products, indicating a growing inclination toward environmentally responsible consumption. The analysis shows that environmental awareness and green trust are the most influential factors affecting consumer preference, suggesting that



consumers are more likely to choose sustainable products when they understand environmental benefits and trust green claims. Green promotional strategies such as eco-labels and sustainability messages also have a positive impact, while perceived value plays a moderate but significant role. Overall, the findings confirm that green marketing strategies significantly influence consumer preference toward sustainable products in the e-commerce environment.

Recommendations

Based on the findings, e-commerce platforms should strengthen their green marketing strategies by creating greater environmental awareness through clear and informative content about sustainability benefits. Companies should focus on building green trust by ensuring transparency, using credible eco-certifications, and avoiding misleading green claims. E-commerce firms are also encouraged to enhance green promotional strategies by highlighting eco-friendly features, green packaging, and sustainable delivery options on their platforms. Additionally, offering competitive pricing, discounts, or incentives for sustainable products can improve perceived value and encourage consumers to prefer green products. By adopting these measures, e-commerce platforms can effectively promote sustainable consumption and gain long-term consumer loyalty.

Conclusion

The present study concludes that green marketing strategies play a significant role in influencing consumer preference toward sustainable products in the e-commerce context. The findings indicate that consumers in Chennai are increasingly aware of environmental issues and show a positive inclination toward purchasing sustainable products online. Environmental awareness and green trust emerge as the most important factors shaping consumer preference, highlighting the need for e-commerce platforms to adopt transparent and credible green marketing practices.

The study also confirms that green promotional strategies and perceived value contribute positively to consumer preference, though to a relatively moderate extent. This suggests that while consumers support sustainability, their purchasing decisions are also influenced by clear communication and value for money. Overall, the research emphasizes that effective green marketing is not only beneficial for environmental sustainability but also serves as a strategic tool for e-commerce firms to enhance consumer preference and competitive advantage.

By focusing on authentic green initiatives and responsible marketing communication, e-commerce platforms can encourage sustainable consumption and contribute to long-term environmental and business sustainability.

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