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ROLE OF DEMOGRAPHIC FACTORS IN SHAPING GREEN PRODUCT AWARENESS IN KAMRUP METRO DISTRICT OF ASSAM

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ABSTRACT

The global environmental crisis has heightened the importance of green products yet their adoption in developing regions like India remains limited due to low consumer awareness. This study investigates the influence of demographic factors (age, gender, income, and education) on green product awareness among consumers in Kamrup Metro district of Assam, a region with a nascent green market. Using a quantitative and cross-sectional research design, data were collected from 150 adult respondents via a structured questionnaire. Statistical analyses including Mann-Whitney U and Kruskal-Wallis tests, reveal that income and education significantly shape green product awareness, with higher-income and more educated consumers exhibiting greater awareness due to better access to information and resources. In contrast, age and gender show no significant impact, suggesting uniform exposure to environmental information across these groups. These findings highlight the need for targeted awareness campaigns focusing on educated and affluent consumers while addressing economic barriers for lower-income groups. The study contributes to the literature on green consumerism in developing regions and offers practical insights for businesses, policymakers, and environmental advocates to promote sustainable consumption in Assam.

Keywords: Green Product Awareness, Demographic Factors, Kamrup Metro, Green Products

1. INTRODUCTION

The escalating global environmental crisis, characterized by climate change, resource depletion and pollution has intensified the need for sustainable consumption practices worldwide. Green products have been defined as goods designed to minimize environmental harm through eco-friendly materials, production processes and packaging, have become crucial in this transition (Polonsky, 1994). These products range from organic foods to energy-efficient appliances. Green products provide opportunities to consumers to align their purchasing decisions with environmental values but their adoption remains uneven particularly in developing countries. Barriers such as limited awareness, high costs and inadequate distribution channels restrict its widespread adoption (Jain & Kaur, 2004). Understanding the factors that shape consumer awareness of green products is essential for fostering sustainable consumption and informing effective marketing strategies and policy interventions.

India faces significant environmental challenges which includes deforestation, air pollution and waste management issues which underscore the urgency of promoting green consumerism. Within this context, Assam, a northeastern state renowned for its biodiversity and cultural diversity, provides a unique setting for studying green product awareness.

Previous studies have indicated that demographic factors such as age, income, education level and gender affect environmental attitudes and behaviour. Studies suggest that younger people, higher income individuals and people having higher education are generally more environmentally aware since they have more access to information through media, academic exposure or social networks (Straughan & Roberts, 1999). But, the role of gender in this regard has been inconsistent and has produced contradictory conclusions (Mostafa, 2007).

This knowledge gap is particularly critical in Assam where the green market is still nascent and consumer behaviour is influenced by regional factors such as limited retail infrastructure and price sensitivity. Addressing this gap requires a nuanced understanding of how demographic factors interact with contextual variables to shape awareness, enabling stakeholders to design effective awareness campaigns and distribution strategies. Moreover, as Assam's organic tea industry and eco-tourism initiatives gain traction, enhancing consumer awareness of green products could bolster these sectors which would then contribute to both environmental sustainability and economic growth.

This study investigates the role of demographic factors (age, income, education, and gender) in shaping green product awareness among consumers in Assam. The findings are expected to contribute to the literature on green consumerism in developing regions by offering practical insights for businesses, policymakers, and environmental advocates seeking to promote sustainable consumption in Assam.

2. LITERATURE REVIEW

Ottman (1992) explored the dynamics of green consumerism, underscoring the role of awareness in driving demand for environmentally friendly products. In her book, *Green Marketing: Challenges and Opportunities*, she stated that effective awareness campaigns must address both the environmental benefits and practical aspects of green products, such as availability and certifications. Ottman's findings suggested that consumer demographics, particularly education and income, shape awareness levels as these factors influence access to information.

Shamdasani, Chon-Lin, and Richmond (1993) explored green consumerism in Singapore. They found that environmental challenges such as pollution drive consumers' interest in green products. But they suggested that awareness among the consumers is limited due to inadequate marketing and distribution. They also found that younger and higher-income consumers are more aware of green products.

Peattie (1995) offered a comprehensive framework for green marketing, emphasizing that green product awareness encompasses two dimensions: conceptual understanding (e.g., health and environmental benefits) and practical knowledge (e.g., identifying eco-labels). He argued that awareness is a critical antecedent to green purchase intentions but external barriers such as high costs and limited availability often restrict it to translate into buying behaviour. Peattie's review highlights the scarcity of studies on awareness in developing countries noting that cultural and economic factors may amplify awareness gaps.

Straughan and Roberts (1999) examined environmental segmentation by focusing on green consumer behaviour in the United States. They found that younger, more educated and higher-income consumers exhibit higher green product awareness mainly driven by access to environmental information. Their study highlighted the importance of demographic profiling in green marketing as these factors predict both awareness and purchase intentions.

Zelezny, Chua, and Aldrich (2000) analysed gender and age differences in environmental attitudes and behaviours across multiple countries. Their study found that younger consumers consistently show higher green product awareness which was attributed to greater exposure to environmental education and media. Gender differences are less clear with females showing slightly higher environmental concern in some contexts but not universally. Education emerged as a significant factor with higher-educated individuals demonstrating greater awareness due to better access to environmental information. Their findings highlight the need for region-specific studies to understand how demographic factors interact with local contexts.

Chan (2001) examined green purchase behaviour in developing countries with a focus on China. He found that green product awareness is lower in developing nations due to limited environmental consciousness and insufficient marketing infrastructure. Chan's study identified age and education as key predictors of awareness with younger and more educated consumers exhibiting higher environmental knowledge. However, he noted that awareness does not always translate into behaviour suggesting external constraints like price sensitivity.

Tanner and Kast (2003) explored the factors promoting green food consumption in Switzerland. Their study found that education and income are key drivers of green product awareness with higher-educated and wealthier consumers

demonstrating greater knowledge of organic and eco-friendly products. They also noted that younger consumers are more receptive to green marketing campaigns possibly due to greater environmental consciousness fostered by media and social influences. Their findings suggest that awareness campaigns should focus on practical information such as product availability and certifications to bridge knowledge gaps.

Jain and Kaur (2004) investigated green marketing in India by focusing on barriers to green product adoption. Their study revealed that low consumer awareness is a primary obstacle, driven by inadequate environmental education and limited marketing efforts. They found that demographic factors particularly education and income significantly influence awareness with more educated and affluent consumers showing greater familiarity with green products. Jain and Kaur noted that in India, awareness is often superficial, lacking practical knowledge about certifications or purchase locations. Their work highlights the need for targeted interventions to enhance awareness among diverse consumer segments.

D'Souza, Taghian, Lamb, and Peretiatko (2007) investigated the role of demographics in green consumer behaviour by focusing on environmental label awareness. Their study found that education and income positively correlate with awareness as these factors enhance consumers' ability to interpret eco-labels. Gender effects were found to be inconsistent with no clear pattern across contexts. D'Souza et al. argued that demographic segmentation is essential for effective green marketing particularly in developing countries where awareness varies widely.

Mostafa (2007) analysed gender differences in green purchase behaviour in Egypt. He found that education and age significantly predict green product awareness with younger and more educated consumers showing greater environmental knowledge. Gender differences are less pronounced though females slightly favour green products due to higher environmental concern. Mostafa's study suggests that access to information such as through media mediates demographic effects.

Abdul-Muhmin (2007) explored environmental attitudes and green purchase intentions in Saudi Arabia. His study found that education and income significantly influence green product awareness. Younger consumers too showed higher awareness due to greater exposure to global environmental trends through media. Gender differences were found to be minimal and suggested that awareness campaigns should focus on educational and economic factors rather than gender-specific strategies.

Cherian and Jacob (2012) explored green marketing in India. Their review indicated that while Indian consumers are increasingly getting aware of green products' environmental benefits but practical knowledge remains limited specially in less urbanized areas. They identified education as a critical factor with higher-educated consumers demonstrating greater awareness. They also noted that income influences willingness to engage with green products among the Indian consumers.

The reviewed literature establishes that green product awareness is crucial for sustainable consumption which is influenced by demographic factors such as age, gender, income and education. However, few studies focus on developing regions like Assam where unique socio-economic and cultural contexts may shape awareness differently. This study addresses this gap by examining how age, income, education, and gender shape green product awareness in Assam.

3. OBJECTIVES

The study aims to achieve the following objective:

- To examine the influence of demographic factors (age, gender, income and education) on green product awareness in Kamrup Metro district.

3.1. HYPOTHESES

The following hypotheses have been formulated aligning with the objective of the study:

- H1: Green product awareness differs significantly among different age groups in Kamrup Metro district.
- H2: Green product awareness differs significantly among different genders in Kamrup Metro district.
- H3: Green product awareness differs significantly amongst different income levels in Kamrup Metro district.
- H4: Green product awareness differs significantly amongst different educational qualifications in Kamrup Metro district.

4. RESEARCH METHODOLOGY

This section outlines the methodological framework employed to investigate the influence of demographic factors on green product awareness in Kamrup Metro district, Assam.

4.1. RESEARCH DESIGN

This study adopts a quantitative and cross-sectional research design to examine the influence of demographic factors on green product awareness among the residents of Kamrup Metro district, Assam. The design aligns with the objectives of assessing demographic influences and identifying group differences. A structured questionnaire serves as the primary data collection tool.

4.2. POPULATION AND SAMPLING

The target population comprises adults (18 years and above) residing in Kamrup Metro district of Assam. This population is selected due to its diverse demographic profile and access to retail infrastructure which may influence green product awareness. A sample size of 150 respondents is chosen from the population. Convenience sampling method has been employed to recruit participants to access a diverse consumer base and ensuring a broad cross-section of age, gender, income and education levels.

4.3. DATA COLLECTION

A structured questionnaire based on previous studies was developed to measure green product awareness and demographic characteristics. The questionnaire includes two sections: demographic information, green product awareness (a 10-item scale adapted from D'Souza et al., 2007, using a 5-point Likert scale from 1 = Strongly Disagree to 5 = Strongly Agree).

5. DATA ANALYSIS

This section presents the analytical procedures and results used to examine the influence of demographic factors on green product awareness in Kamrup Metro district. Employing statistical techniques such as reliability analysis, descriptive statistics, regression analysis, Mann-Whitney U and Kruskal-Wallis tests, the study evaluates the relationships between age, gender, income, education, and awareness levels.

5.1. RELIABILITY ANALYSIS

This subsection evaluates the internal consistency of the green product awareness scale used in the study. By calculating Cronbach's Alpha, the reliability analysis ensures that the 10-item scale adapted from D'Souza et al. (2007) consistently measures green product awareness among respondents in Kamrup Metro district.

Table 1 Reliability Analysis

Scale	Cronbach's Alpha
Green Product Awareness	0.83

Source: *Author's own.*

Table 1 reports Cronbach's Alpha value of 0.83 which indicates a high level of internal consistency for the item scales of green product awareness.

5.2. DESCRIPTIVE STATISTICS

This subsection provides an overview of the demographic characteristics of the study's respondents from Kamrup Metro district, Assam. It presents the distribution of age, gender, income, and education levels, offering insights into the sample's composition.

Table 2 Demographic Characteristics

Demographic Variables	Category	Frequency	Percentage
Age	18-24	45	30 %
	25-34	50	33.3 %
	35-44	35	23.3 %
	45+	20	13.3 %
Gender	Male	78	52 %
	Female	72	48 %
Income (₹/month)	< ₹20,000	45	30 %
	₹20,000-50,000	60	40 %
	₹50,000-1,00,000	35	23.3 %
	>₹1,00,000	10	6.7 %
Education	Undergraduate	30	20 %
	Graduate	60	40 %
	Postgraduate	50	33.3 %
	Doctorate	10	6.7 %

Source: *Author's own.*

The age distribution shows that the largest group is aged 25–34 years (33.3 %), followed by 18–24 years (30 %), 35–44 years (23.3 %,) and those above 45 years (13.3 %). Gender is nearly balanced with 52 % males and 48 % female respondents, ensuring a representative mix for gender-based analysis. Income levels reveal that the majority earn between ₹20,000–50,000 per month (40 %) followed by those earning below ₹20,000 (30 %), ₹50,000–1,00,000 (23.3 %) and above ₹1,00,000 (6.7 %). Education-wise, 40 % are graduates, 33.3 % are postgraduates, 20 % are undergraduates and 6.7 % hold doctorates. This diverse demographic profile provides a broad foundation for analysing the influence of these factors on green product awareness, capturing a cross-section of the population in Kamrup Metro district.

5.3. HYPOTHESIS TESTING

This subsection presents the results of the Mann-Whitney U test and Kruskal-Wallis test which have been used to examine differences in green product awareness across demographic groups in Kamrup Metro district.

Table 3 Mann Whitney U Tests

Grouping variable	Mean Rank	Mann Whitney U	Z	p-value
Male	75.4	2650	-0.720	0.471
Female	73.7			

Source: *Author's own.*

The mean rank for males is 75.4, slightly higher than for females at 73.7, with a Mann-Whitney U value of 2650, a Z-score of -0.720, and a p-value of 0.471. The p-value, exceeding the 0.05 threshold, indicates no statistically significant difference in green product awareness between males and females. Hence, H2 is rejected.

Table 4 Kruskal-Wallis Test

Grouping Variable	Mean Rank	Kruskal-Wallis Chi-Square	p-value
Age: 18-24 yrs	72.4	4.23	0.238
Age: 25-34 yrs	74.6		
Age: 35-44 yrs	69.1		
Age: Above 45 yrs	68.2		
Income: Below ₹ 20,000	61.7	11.78	0.008
Income: ₹20,000-50,000	72.9		
Income: ₹50,000-1,00,000	81.3		
Income: Above ₹1,00,000	93.4		
Education: Undergraduate	64.2	15.67	0.001
Education: Graduate	72.5		
Education: Postgraduate	84.1		
Education: Doctorate	95.3		

Source: Author's own.

For age, the mean ranks across groups yield a chi-square of 4.23 and a p-value of 0.238, which exceeds 0.05, indicating no significant differences. Thus, H1 is rejected as age does not significantly affect awareness. For income, mean ranks produce a chi-square of 11.78 and a p-value of 0.008, below 0.05, indicating significant differences. Thus, H3 cannot be rejected as awareness varies significantly with income. For education, mean ranks yield a chi-square of 15.67 and a p-value of 0.001, below 0.05, indicating significant differences. Therefore, H4 cannot be rejected, as awareness differs significantly with education.

6. FINDINGS AND DISCUSSION

The findings of this study provide valuable insights into the influence of demographic factors (age, gender, income, and education) on green product awareness among consumers in Kamrup Metro district of Assam.

The rejection of H1 which stated that green product awareness differs significantly across age groups suggests that age does not play a significant role in shaping awareness in Kamrup Metro district. This is in contrast to studies like Chan (2001) and Straughan and Roberts (1999) which found younger consumers to be more environmentally aware. The lack of age-based differences in this study may reflect the relatively uniform exposure to environmental information across all age groups in Kamrup Metro possibly due to limited green marketing initiatives.

Similarly, the rejection of H2, which hypothesized differences in green product awareness between genders, indicates that gender does not significantly influence awareness in this region. This finding aligns with D'Souza et al. (2007), who noted inconsistent gender effects across contexts, but contrasts with Mostafa (2007), who found females to be slightly more environmentally conscious. The absence of gender differences in Kamrup Metro may be attributed to similar levels of exposure to green product information among males and females, possibly driven by shared media consumption patterns or the nascent state of the green market.

In contrast, the study's acceptance of H3, which posited significant differences in green product awareness across income levels, underscores the critical role of economic resources in shaping environmental awareness. Higher-income groups exhibited greater awareness, as indicated by the Kruskal-Wallis test. This finding corroborates Jain and Kaur (2004) and Cherian and Jacob (2012), who noted that higher-income consumers in India are more likely to be aware of green products due to greater access to information and disposable income. In Kamrup Metro, higher-income consumers may have better access to urban retail outlets or online platforms that stock green products, enhancing their awareness. Conversely, lower-income groups showed lower awareness likely due to price sensitivity and limited access to green product distribution channels.

The acceptance of H4, which hypothesized significant differences in green product awareness across educational levels, further highlights education as a crucial factor. Respondents with postgraduate and doctorate qualifications demonstrated higher awareness compared to those with undergraduate education. This finding is consistent with D'Souza et al. (2007) and Mostafa (2007), who argue that higher education enhances consumers' ability to interpret environmental information such as eco-labels, and increases exposure to sustainability concepts through academic or professional networks.

These findings have important implications for stakeholders aiming to promote green consumerism in Assam. The significant influence of income and education suggests that targeted marketing strategies should focus on higher-income and more educated consumers as early adopters of green products. Awareness campaigns could leverage educational institutions and professional networks to disseminate information about green products with emphasis on their environmental and health benefits. For lower-income groups, addressing economic barriers through subsidies or affordable green product options could enhance awareness and adoption.

The lack of significant differences across age and gender groups suggests that broad-based campaigns rather than demographically segmented ones may be more effective in Kamrup Metro. This approach could involve mass media channels such as local television, radio or social media platforms to reach diverse consumer segments. Given Assam's growing organic tea industry and eco-tourism sector, integrating green product awareness into these initiatives could further enhance their impact, contributing to both environmental sustainability and economic growth.

7. CONCLUSION

This study examined the influence of demographic factors on green product awareness in Kamrup Metro district of Assam. The findings reveal that income and education significantly shape awareness and in contrast, age and gender do not significantly affect awareness. These insights contribute to understanding green consumerism in a developing region like Assam where the green market is emerging. By highlighting the pivotal roles of income and education, the study offers practical guidance for businesses, policymakers and environmental advocates to design targeted strategies that enhance green product awareness, fostering sustainable consumption and supporting Assam's organic and eco-tourism sectors. Future research should explore additional contextual factors and adopt longitudinal designs to further elucidate the dynamics of green consumerism in Assam.

CONFLICT OF INTERESTS

None.

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