Peer Reviewed Article

© Journal of Nepalese Management & Research (JNMR)
ISSN: 2661-6408
Volume 6, Issue 1, 2024

Impact of Green Marketing on Consumer Buying Behavior:

The Mediating Role of Environmental Knowledge: A Study of Surkhet District

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Received 26 Jul. 2024
Revised 21 Oct. 2024
Accepted 16 Nov. 2024

Key Words:

Green marketing, consumer buying behavior, environmental knowledge, eco-labeling, green advertising, green branding.

DOI :https://doi.org/10.3126/jnmr.v6i1.72093

ABSTRACT

This research addresses a significant gap in the literature regarding the impact of green marketing activities such as eco-labeling, green branding, and green advertising on consumer buying behavior, considering the mediating role of environmental knowledge. The study investigates the level of environmental awareness among consumers in Surkhet, a developing area, and analyzes how these green marketing practices influence purchasing decisions. Findings indicate that educated consumers in Surkhet exhibit high environmental awareness, with green branding and green advertising significantly enhancing consumer buying behavior, while eco-labeling shows no meaningful effect. Additionally, environmental knowledge positively impacts consumer buying behavior and partially mediates the relationship between green marketing initiatives and purchasing patterns. These results align with previous research in other developing countries, highlighting the effectiveness of marketing strategies in shaping consumer decisions. This study offers valuable insights into the interplay between green marketing and consumer behavior, emphasizing the importance of environmental knowledge, and suggesting targeted strategies for policymakers and marketers to promote sustainable practices and environmentally friendly purchasing behaviors.

1. INTRODUCTION

In recent decades, environmental concern has grown significantly, becoming both a major public issue and a key focus of academic research. In the United States and Western Europe, environmental activism has increased notably since the 1970's, leading to greater environmental awareness and more consumers choosing eco-friendly products. This shift has spurred the green revolution, which aims to prevent further environmental damage. Green marketing plays a crucial role in this effort by seeking to reduce environmental impact through various stages such as design, production, packaging, labeling, and consumption (Delafrooz et al., 2014).

Green marketing, also known as environmental marketing, involves a range of activities including product modification, changes in production processes, packaging alterations, and advertising modifications. According to Panda et al. (2020), "Green or Environmental Marketing consists of all

activities designed to generate and facilitate any exchange intended to satisfy human needs or wants such that the satisfaction of these needs and wants occurs with minimal detrimental impact on the natural environment."

Many researchers have investigated the role of consumer behavior in environmental protection. Studies indicate a strong connection between demographic factors, cognitive psychology, personality traits, and attitudes toward environmentally protective actions (Granzin & Olsen, 1991). For instance, Pickett et al. (2013) found that psychological and social factors have a more powerful influence on consumer green behavior than demographic factors. They suggest that by understanding these factors, marketers can develop more effective strategies to encourage green purchasing behavior.

Another study emphasized the role of environmental knowledge in influencing green consumer behavior. Manrai et al. (1997) highlighted that awareness and concern for environmental issues are directly related to a person's purchasing intentions. Individuals who are more knowledgeable about environmental issues are more likely to process information related to eco-friendly products and make environmentally conscious purchasing decisions.

Despite its potential, green marketing is currently not fully achieving its goal of improving the quality of life for consumers while also enhancing the natural ecosystem (Polonsky, 2011). Nonetheless, media coverage of green marketing has increased, reflecting a growing awareness and interest among both personal and industrial consumers in environmental preservation (Rahbar & Wahid, 2011).

Definition of Key Terms

Eco-labeling: Marketers use eco-labeling to indicate environmentally safe production and distribution methods. Studies have shown that eco-labeling positively influences consumer behavior, although trust in these labels can vary (Lin & Chang, 2012; Rashid, 2009).

Green Branding: Green branding enhances brand image through strategies like green positioning, which can be either emotional or functional. Emotional branding, focusing on societal well-being, tends to be more effective than functional branding (Mishra & Sharma, 2010). However, some studies indicate that consumers may doubt the authenticity of green branding efforts (Raska & Shaw, 2012).

Green Advertising: Green advertising promotes eco-friendly content and sustainability. Its effectiveness in influencing consumer behavior varies, with some consumers skeptical of green claims (Alamsyah et al., 2018; Rahbar & Wahid, 2011).

2. LITERATURE REVIEW

The American Marketing Association workshop defined ecological marketing as the study of the positive and negative aspects of marketing activities on pollution, energy depletion, and non-energy resource depletion (Henion & Kinnear, 1976). Green marketing has evolved through three distinct eras. The first, ecological green marketing, lasted from the 1960s to the early 1970s and focused on external environmental problems like air pollution (Peattie & Crane, 2005). The second era, green environmental marketing, began in the late 1980s and introduced new concepts such as clean technology and sustainability, extending its focus to all services and manufacturing methods, including tourism.

The ecological movement in the United States gained momentum in the 1960s, leading to the creation of the Environmental Quality Council (CEQ) and the Environmental Protection Agency (EPA) in the

1970s, alongside several environmental laws (Carroll, 2015). Ethical consumers noted that a small percentage of the world's population consumes a disproportionate number of resources. Over time, environmental regulations were gradually integrated, beginning in countries like West Germany, the Netherlands, and Scandinavia (Huang et al., 2014).

Chan (2004) argued that the market's lack of adequate green products and services contributes to the low attention towards green marketing. In contrast, in countries like Iran, green products are commonly available, reflecting consumer interest in environmental issues through their purchasing behavior. Economic factors can also impact the prioritization of environmental concerns. For example, during recessions, economic issues often overshadow environmental considerations (Kalafatis et al., 1999).

Affordability is a key driver for consumers choosing green products. A survey in India found that higher-income consumers are more likely to prefer green products, while lower-income consumers often find them out of reach due to premium pricing (Boztepe, 2012; Purohit, 2012). Behavioral theories have been employed by researchers to link consumer attitudes with purchasing decisions. However, Ottman (2017) argued that the relationship between green behavior and consumer attitudes is weak. Studies in various countries, including Turkey, indicate that consumers often struggle to define "green" products, complicating their purchasing decisions Albayrak et al. (2011).

In various countries, factors such as income class, social norms, gender, age, education, and environmental protection behavior significantly influence the purchase of green products (Lin & Chang, 2012; Purohit, 2012). Psychological and social factors are generally more influential than demographic factors in shaping consistent green purchasing behavior (Pickett et al., 2013). Other motivators for purchasing green products include animal welfare, health, and the quality of organic products (Dangelico & Vocalelli, 2017). Lin and Huang (2012) observed that increasing regulatory demands and consumer expectations for green products are driving companies to adopt green manufacturing and marketing practices. Purohit (2012) similarly noted that social norms compel consumers to prefer green products, influencing their purchasing behavior. However, it is unclear how these trends translate to the Nepalese market, especially considering potential demographic influences.

Moreover, Boztepe (2012) highlighted that in Turkey, social pressure plays a significant role in encouraging consumers to buy green products, although this pressure varies with demographic factors. Alalei and Jan (2023) similarly found that factors such as gender, age, education, and income significantly affect consumer behavior toward green products in Korea. These demographic variables create a gap in the literature, specifically regarding their influence on green product purchases in the Nepalese market.

However, there is a gap in empirical studies specifically examining how these factors operate in the Nepalese context, leaving room to explore this through the following hypothesis:

H1: Green marketing has a significant positive relationship with consumer buying behavior for green products in Surkhet.

Marketers use eco-labeling to demonstrate that their products are produced and distributed using environmentally safe and sustainable methods. Kumar et al. (2012) found that in Hong Kong's construction sector, eco-labeling is widely used by marketers and positively influences consumer buying behavior, encouraging consumers to purchase higher-quality products at premium prices. Rashid (2009) also found eco-labeling to be an effective factor in Malaysia, showing that ecological manufacturing methods promote green products and shape consumer purchase intentions. However,

some studies show mixed results, as consumers often recognize eco-labels but do not always trust or rely on them for decision-making (Szmigin et al., 2009). This presents a gap in empirical research is how well do eco-labels influence consumer behavior in Surkhet, Nepal, where environmental awareness and trust in certifications may vary?

H2: Eco-labeling has a significant positive relationship with consumer buying behavior for green products in Surkhet.

Green branding has been shown to enhance brand image by appealing to both emotional and functional consumer needs (Suki, 2013). Michaud and Llerena (2011) found that emotional branding, particularly themes related to environmental protection, can be more effective than functional branding. In Malaysia, green brand positioning significantly influenced consumer buying behavior (Suki, 2016). However, Raska and Shaw (2012) raised skepticism about its effectiveness, suggesting that consumer trust in green branding plays a critical role. Given the limited focus on emotional versus functional branding in developing countries, this study will address the gap by examining how green branding impacts consumer behavior in Nepal.

H3: Green branding has a significant positive relationship with consumer buying behavior for branded green products in Surkhet

Green advertising, which promotes environmentally friendly practices, has become an essential tool for influencing consumer perceptions and behaviors (Rahman et al., 2009). However, studies have shown varying results, with some consumers, particularly in developing countries, being skeptical of green claims (Soon & Kong, 2012). In contrast, research conducted in Surkhet showed that media-based green advertising positively impacts consumer buying behavior (Habib et al., 2010). However, limited empirical evidence exists that examines whether green advertising remains effective when compared to other green marketing elements:

H4: Green advertising has a significant positive relationship with consumer buying behavior for green products in Surkhet.

Environmental knowledge, which encompasses an understanding of environmental issues and green products, has been shown to positively influence green buying behavior. For instance, Matthes and Wonneberger (2014) found that higher levels of environmental knowledge in developed countries like the US and Austria are linked to pro-environmental purchasing decisions. However, Kianpour et al. (2014) showed that in India, environmental knowledge significantly impacts green product purchases, although the effects are less pronounced in less developed countries. In Nepal, empirical research on the link between environmental knowledge and green product purchasing is sparse, leaving a gap that this study aims to fill.

H5: Environmental knowledge has a significant positive relationship with consumer buying behavior.

Environmental knowledge may also act as a mediator between green marketing and consumer buying behavior, as seen in previous studies (Khare et al., 2013). However, the mediating role of environmental knowledge in the Nepalese context has not been sufficiently explored.

H6: Environmental knowledge mediates the relationship between green marketing and consumer buying behavior.

2.1 Theoretical framework

With the help of the literature discussed in the previous sections, the theoretical framework presented in figure 1 has been formulated:

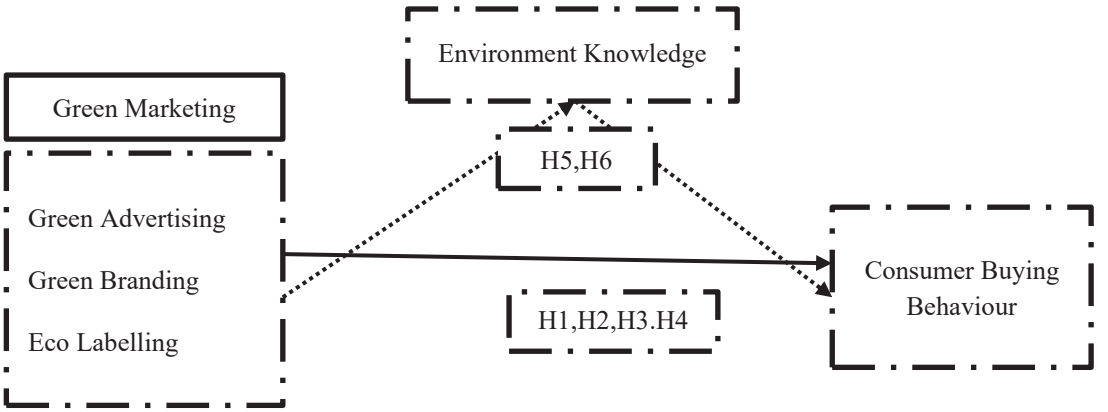


Figure 1: Theoretical Framework of the Study

The framework demonstrates that green marketing serves as the primary variable, evaluated through components such as eco-labeling, green branding, and green advertising. The methodology has been applied to assess both the direct and mediated effects of these elements on consumer purchasing behavior.

3. RESEARCH METHODOLOGY

This study utilized the positivism philosophy, which enabled the researcher to test hypotheses from previous studies through statistical analysis. This approach facilitated the formulation of key assumptions based on the study's objectives and allowed for the testing of these hypotheses by developing tools that use quantitative methods to measure phenomena in consistent and replicable ways (Saunders et al., 2007).

This study employed a quantitative approach to test the causality between variables and to address the research hypotheses and questions. This approach aligns with the positivism philosophy and suits the descriptive and explanatory nature of the research, where literature is reviewed, variables are explained and described, and hypotheses are tested (Marczyk et al., 2010). Data was collected and analyzed numerically and statistically, with a survey completed by 296 respondents.

Primary data was collected through surveys to test the hypotheses, while secondary data was gathered from literature on green marketing and consumer behavior, including academic papers, textbooks, and journals. The study employed non-probability quota sampling to select the sample, ensuring equal chances of inclusion for individuals in the population. The sample size was determined by first calculating the adjusted size for an unlimited population and then establishing an initial sample size for a pilot study.

3.1 Reliability and validity

Reliability and validity are essential in both qualitative and quantitative research, with higher levels requiring consistency in data collection (Robinson, 2016). In this study, self-administered questionnaires ensured individual responses, and Cronbach's Alpha was used to assess reliability, producing a value of 0.827 for 26 items, indicating strong internal consistency. Factor analysis was also conducted to verify the scale's validity.

4. RESULTS

From the above table, it is concluded that there is a high level of reliability for the responses for overall Cronbach's Alpha test shows a high level of stability as it values for each variable are more than 82 percent.

4.1 Test of Responses Validity

Validity refers to how well a concept, conclusion, or measurement aligns with the real world and is supported by probability. A measurement tool's validity indicates the likelihood that it measures what it is intended to measure. In essence, validity represents the extent to which a claim accurately reflects reality, often expressed as a percentage.

The One-Sample Test results demonstrate significant differences from a test value of zero for various constructs, each assessed with 295 degrees of freedom (df) and all yielding p-values (Sig. (2-tailed)) of .000, indicating statistical significance. The test statistics were as follows: Advertisement at 76.165, with a 95% confidence interval ranging from 3.4401 to 3.6226; Environmental Knowledge at 69.590, with a confidence interval of 3.3014 to 3.5743; Green Branding at 85.362, with a confidence interval from 4.4488 to 4.5709; Eco-labeling at 74.315, with a confidence interval between 3.7283 and 3.9312; and Buying Behavior at 60.177, with a confidence interval ranging from 3.0269 to 3.2316. These findings collectively indicate that all examined variables significantly differ from zero, reinforcing their importance in the study's context.

Table 1

Descriptive statistics

Variables	N	Mean	Std. Deviation
Consumer buying behavior	296	3.5344	0.68912
Green advertising	296	3.5128	0.76595
Green branding	296	3.5368	0.78492
Eco-labeling	296	3.4507	0.75769
Environmental knowledge	296	3.4233	0.70745
Green marketing	296	3.5001	0.67587

Table 1 contains descriptive statistics for all the dimensions used in this study in the form of their means and standard deviations. The mean values for all variables in the study are higher than 3.0, which indicates that on average, the responses of the sample respondents are closer to agreeing on all the questions used in the questionnaire. The values of standard deviation for all variables are less than 1 which confirms consistent responses, i.e. limited variation in responses, which also proves the normality of the data used (Bryman & Bell, 2015).

4.2 Correlation Analysis

Pearson Correlation analysis was used to assess the strength and direction of relationships between consumer buying behavior (dependent variable), green advertising, green branding, eco-labeling (independent variables), and environmental knowledge (mediating variable). A positive correlation indicates that as one variable increases, so does the other, while a negative correlation shows an inverse relationship. The table presents the Pearson Correlation coefficients and descriptive statistics for these variables.

Table 2

Pearson Correlation coefficient

Variables	Green Advertising	Green Branding	Eco-Labeling	Green Marketing	Environmental Knowledge
Green Advertising	1				
Green Branding	.725**	1			
Eco-Labeling	.598**	.633**	1		
Green Marketing	.712**	.871**	.886**	1	
Environmental Knowledge	.611**	.620**	.455**	.600**	1

**. Correlation is significant at the 0.01 level (2-tailed).

The table 2 presents correlation coefficients between different variables related to green practices, branding, marketing, and environmental knowledge. Each cell in the table represents the strength and direction of the correlation between two variables, with values ranging from 0 to 1. The diagonal cells, where variables are compared to themselves, show a perfect correlation of 1. Correlations between different variables, with signs denoting statistical significance at the 0.01 level (2-tailed), indicating highly significant correlations. For instance, there is a strong positive correlation of 0.725 between green advertising and green branding, suggesting that these two variables are closely related. Similarly, the correlation coefficient of 0.871 between eco-labeling and green marketing indicates a very strong positive correlation. Moreover, the moderate positive correlation of 0.600 between environmental knowledge and green marketing implies a discernible relationship between these variables. In essence, this table offers valuable insights into the interconnectedness of various aspects of green initiatives, branding strategies, marketing efforts, and environmental awareness.

4.3 Regression analysis

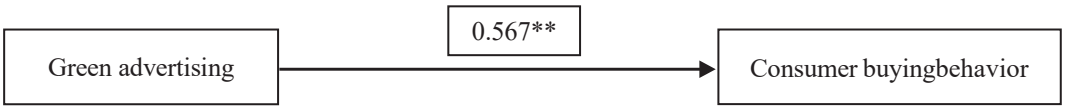
Table 3

Regression statistics

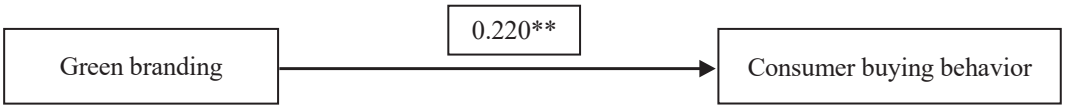
	Beta	T	Sig.	VIF
Green advertising	0.567	10.271	0.000	2.014
Green branding	0.220	3.928	0.000	2.216
Eco-labeling	0.028	0.481	0.631	2.069

Dependent variable: Consumer buying behavior, $p<0.01$

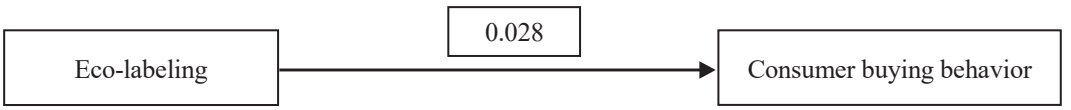
Table 3 contains the results of the regression analysis between three dimensions of green marketing, i.e. eco-labeling, green branding and green advertising, by taking consumer buying behavior as the dependent variable. The results show that B = 0.567, p<0.01 for green advertising, which indicates a significant positive relationship between green advertising and consumer buying behavior. It also points to the acceptance of hypothesis H1. Accordingly, the following regression model can be framed:



The regression result for green branding is B = 0.220, p<0.01. Thus, green branding is also a statistically significant predictor of consumer buying behavior. This leads to the acceptance of H2. However, the degree of influence is low. It suggests formulating the following regression model:



For eco-labeling, B = 0.028 but p>0.01, which is a statistically insignificant relationship of eco-labeling with consumer buying behavior. Thus, eco-labeling is not a predictor of consumer buying behavior which leads to the rejection of H3. It leads to establish the following regression model:



4.5 Mediation Analysis

This section deals with analyzing the impact of the mediator in the relationship between independent and dependent variables. In this regard, Baron and Kenny's (1986) model of mediation has been used. For this purpose, both the direct and indirect impact of green marketing on consumer buying behavior has been analyzed.

Table 4

Linear regression analysis of green marketing

	Beta	**Significance**
Green Marketing		0.000
	0.712	
R2	0.507	
F	301.799	

Dependent variable=consumer buying behavior, p<0.01

Table 6 presents the results of the linear regression analysis between green marketing and consumer buying behavior. The findings, with a coefficient of B = 0.712 (p<0.01), indicate that green marketing has a statistically significant and strong influence on consumer buying behavior. This supports the acceptance of hypothesis H4.

Accordingly, the following regression model can be drawn:

Table 5

Regression analysis of environmental knowledge

	Beta	**Significance**
Environmental Knowledge		0.000
	0.611	
R2	0.373	
F	175.021	

Dependent variable = Consumer buying behavior, $p<0.01$

Table 7 presents the results of the linear regression analysis between environmental knowledge and consumer buying behavior. With a coefficient of B = 0.611 ($p<0.01$), environmental knowledge is identified as a statistically significant predictor of consumer buying behavior, supporting the acceptance of hypothesis H5.

Thus, the following regression model can be formed:

Table 6

Mediation analysis

Predictor	**Step 1**	**Step 2**	**Sig.**
Green marketing	0.712	0.543	0.000
Environmental knowledge		0.266	0.000
R^2	0.507		
F	301.779**		
R^2		0.549	
F		178.288**	

Dependent variable: Consumer buying behavior, $p<0.01$

Following the approach of Albayrak et al. (2011) and Baron and Kenny (1986), a mediation analysis was conducted to determine if environmental knowledge mediates the relationship between green marketing and consumer buying behavior. The initial results showed a direct relationship between green marketing and consumer buying behavior with a coefficient of B = 0.712 ($p<0.01$). When environmental knowledge was included, the relationship between green marketing and environmental knowledge was found to be B = 0.543 ($p<0.01$). We can conclude that environmental knowledge acts as a mediator but does not fully account for the relationship. This is characteristic of partial mediation, where both the independent variable (green marketing) and the mediator (environmental knowledge) influence the dependent variable (consumer buying behavior).

4.6 Hypothesis Testing

Table 7
Hypothesis Testing

Hypothesis	Remarks
H_1: Green marketing has s significant positive relationship with consumer buying behavior for green products in Surkhet.	Accepted
H_2: Eco-labeling has s significant positive relationship with consumer buying behavior for green products in Surkhet.	Rejected
H_3: Green branding has s significant positive relationship with consumer buying behavior for green products in Surkhet	Accepted
H_4:Green advertising has s significant positive relationship with consumer buying behavior for green products in Surkhet	Accepted
H_5: Environmental knowledge has s significant positive relationship with consumer buying behavior for green products in Surkhet	Accepted
H_6: Environmental knowledge mediates the relationship between green marketing and consumer buying behavior.	Partially Accepted

Source: Field Survey, 2023

The table presents the results of hypothesis testing, specifically examining the impact or influence of different factors on purchase decisions. Each hypothesis (H1 to H6) is associated with a p-value, and based on conventional significance levels (often 0.05), the table includes remarks on whether to reject or accept each hypothesis.

5. DISCUSSION

The findings of this study, which investigated the relationship between green marketing dimensions specifically green advertising, green branding, and eco-labeling and consumer buying behavior with the mediating role of environmental knowledge, yield important insights. Both green advertising and green branding exhibited a significant positive correlation with consumer buying behavior, corroborating earlier research (e.g., Paço & Sampaio, 2009; McDonald et al., 2009). In contrast, eco-labeling failed to demonstrate a significant impact, contradicting findings from previous studies (e.g., Sammer & Wüstenhagen, 2006; Hobbs, 2003; Hernández & Martín, 2021). Notably, green advertising emerged as a particularly strong predictor of consumer buying behavior, highlighting its critical role in influencing purchasing decisions.

Within the Surkhet context, it can be concluded that green advertising is notably effective in shaping consumer buying behavior, while green branding and eco-labeling appear to have a diminished effect. Furthermore, the analysis revealed that environmental knowledge positively influences the relationship between green marketing and consumer buying behavior (Young et al., 2020; Valor, 2008), albeit at the expense of reducing the strength of this relationship. This observation suggests that individuals equipped with environmental knowledge may approach green marketing claims with increased scrutiny, leading to potential confusion about the authenticity of various green initiatives. This aligns with Albayrak et al.'s (2011) assertion that environmentally conscious consumers can become "confused consumers," resulting in uncertainty regarding which products genuinely support environmental sustainability.

These findings are consistent with previous research by Leonidou et al. (2013), Jarvi (2010), and Suki (2016), indicating that green marketing initiatives, including green advertising, branding, and eco-labeling, can effectively influence consumer behavior. However, they contrast with arguments from Ottman (2011) and Lee et al. (2012), who posited that consumers in developing countries are less swayed by green marketing due to generally lower levels of environmental knowledge. Thus, this study contributes to the literature by highlighting the nuanced impacts of green marketing practices in developing regions, suggesting that the efficacy of such practices can vary significantly based on consumers' environmental knowledge levels.

5.1 Conclusion

This research addresses a significant gap in the literature concerning the impact of various green marketing activities on consumer buying behavior, both in the context of environmental knowledge and its absence. The central research questions include: What is the level of environmental awareness among consumers in a developing country? How do green marketing practices, such as eco-labeling, green branding, and green advertising, affect consumer buying behavior in this context? Furthermore, does environmental knowledge mediate the relationship between green marketing initiatives and consumer buying behavior?

The study reveals that consumers in Surkhet exhibit a high level of environmental awareness, particularly among educated demographics, including students and office workers. The results indicate that both green branding and green advertising exert a significant positive influence on consumer buying behavior, reinforcing the idea that effective marketing strategies can shape purchasing decisions in developing contexts. Additionally, the analysis shows that environmental knowledge not only has a direct positive effect on consumer buying behavior but also serves as a partial mediator in the relationship between green marketing and consumer purchasing patterns.

These findings resonate with existing research from other developing countries (e.g., Chan, 2004; Rashid, 2009), suggesting that consumer behavior in Surkhet reflects similar dynamics influenced by green marketing initiatives. Therefore, this study contributes valuable insights into the relationship between consumer buying behavior and green marketing in Surkhet, highlighting the role of environmental knowledge. These insights have practical implications for policymakers and marketers, emphasizing the need for targeted strategies that enhance consumer engagement with sustainable practices and promote environmentally friendly purchasing behaviors.

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