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Green Brand knowledge and green consumption intention: Moderating role in food and beverage industry in Hanoi, Vietnam

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Abstract

This study aims to investigate the key factors influencing green consumption intention within Hanoi's food and beverage industry. Data were collected from 211 consumers in Hanoi using a structured questionnaire. Exploratory factor analysis and multiple regression analysis were employed to analyze the data. The results indicate that green brand knowledge has the most significant favorable influence on green purchase intention, followed by green brand attitude, green brand image, and green brand positioning. However, green brand knowledge does not moderate the relationships between green brand attitude and purchase intention. This research provides valuable insights into the determinants of green consumption intention in Hanoi's food and beverage sector. These findings offer actionable insights for food and beverage businesses seeking to enhance their green branding strategies and promote sustainable consumption in emerging markets.

Keywords: Food and Beverage Industry, Green Brand Knowledge, Green Brand Positioning, Green Consumption Intention, Vietnam.

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Transparency: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee of VNU University of Economics and Business (Ref. No. 2428/QD-DHKT).

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1. Introduction

The escalating global awareness of environmental protection and sustainable development has brought corporate social responsibility (CSR) to the forefront, significantly influencing consumer behavior, particularly in the realm of green purchasing intentions [1-3]. Moreover, there are some studies that imply that green brand image and trust can mediate between corporate social responsibility and green purchase intention; green brand positioning and green brand knowledge are crucial elements that drive green purchase behavior [4]. Additionally, cultural values are an indicator of green purchase behavior in emerging markets such as Vietnam [5-7].

As the food and beverage (F&B) industry expands, especially in emerging markets like Vietnam, the potential for green branding becomes increasingly evident [8]. The F&B sector is not merely fulfilling basic nutritional requirements but also providing diverse culinary experiences [9]. However, despite this potential, the adoption of green branding strategies within Hanoi's F&B industry remains inconsistent and limited, with only about 12% of businesses currently adhering to green standards [10]. This is further compounded by recent food safety scandals, which have heightened consumer health concerns, emphasizing the urgent need for green brands [11].

While factors like green brand positioning, green brand knowledge, and green brand image have been extensively studied in other markets, their application and testing within the Vietnamese F&B industry remain limited [1]. A significant research gap exists concerning the moderating role of these factors on the relationship between green brands and purchase intentions, particularly within local contexts. This study aims to address this gap by exploring the influence of green brand factors, such as attitude, positioning, image, and knowledge, on customers' green consumption intentions in Hanoi's F&B industry. Specifically, it investigates the moderating role of green brand knowledge, an aspect not thoroughly examined in previous research. This is crucial for understanding the local context and provides a nuanced analysis of consumer behavior.

This research not only seeks to analyze the correlations between these variables but also aims to propose solutions that will assist Vietnamese firms in attracting potential customers through effective green branding strategies. By focusing on the moderating role of green brand knowledge, this research will contribute to the existing body of knowledge on green consumer behavior in Vietnam, enriching the theory of green branding and its impact on purchase behavior. The findings will provide practical insights for F&B businesses in Hanoi, enabling them to refine their marketing strategies, develop suitable products and services, and ultimately enhance their competitiveness in the market.

The structure of this paper is as follows: Section 2 will review the pertinent literature, Section 3 will detail the research methodology, Section 4 will present the findings, Section 5 will discuss the implications of the research, and Section 6 will conclude the paper.

2. Literature Review

2.1. Green Brand

The literature review begins by conceptualizing the term "brand," defining it as an intangible asset of a business that is crucial in establishing customer loyalty. According to Aaker [12], a brand is not merely a name or symbol but rather a composite of elements that distinguish a business from its competitors. A strong brand can retain customers and maintain market stability. Meanwhile, Kapferer [13] suggests that a successful brand also generates economic value and fosters customer loyalty through positive emotional engagements, attracting customers via both product quality and brand attachment. From a strategic management perspective, Keller [14] views branding as an essential tool for positioning a business within the minds of consumers. Kotler, et al. [15] emphasize branding's role in building an overall marketing strategy, defining it as a strategic asset that aids in customer relationship management and securing a competitive advantage in the market. Generally, the concept of a brand encompasses physical, emotional, and strategic factors, contributing to differentiation, loyalty, and sustainable business development.

Next, the review addresses the concept of a "green brand", recognizing its importance amid increasing awareness of environmental protection and sustainable development. Bhattacharya and Sen [16] assert that green branding significantly reduces negative environmental impacts across various aspects of production and consumption. According to Ottman [17] green brands empower consumers to make more responsible and environmentally conscious purchasing choices. Chen [18] indicates that growing consumer concerns about environmental issues enhance the appeal and purchase intention of green brands. Green branding serves not only to differentiate products but also to cultivate a positive image of social and environmental responsibility. In addition, in the study of Dangelico and Vocalelli [2] it is argued that green branding plays an important role in spreading sustainable values and changing consumer behavior, thereby promoting a greener economy. With the authors' views on the concept of green branding, this study uses the concept of green branding according to Ottman [17] emphasizing that green branding not only aims to meet consumer needs but also contributes to creating a solid foundation for sustainable development in society.

2.2. Green Consumer Intention

The literature review then explores the concept of "green consumer intention", acknowledging it as a vital element in the study of consumer behavior. Ajzen [19] defines purchase intention as the level of a consumer's willingness to buy a particular product, influenced by attitude, subjective norms, and perceived behavioral control. Purchase intention is not only an indication of demand but also an overall assessment of the value delivered by a product. Dodds, et al. [20] define purchase intention as the tendency or ability of consumers to decide to buy a product based on perceived quality, perceived value, and satisfaction with price. While, Schiffman and Kanuk [21] argue that purchase intention is closely related to the final purchase decision of consumers, and is often influenced by factors such as advertising, promotions, or recommendations from friends and family. They also indicate that the consumer decision-making process is complex and purchase intention can change

based on the situation. In addition, Morwitz, et al. [22] argue that purchase intention is also a very effective tool for predicting consumer behavior. When purchase intention is accurately measured, it helps businesses predict market demand and thereby adjust production and distribution strategies. The review further focuses on green purchase intention, noting that Chen and Chang [23] define it as the desire to choose environmentally friendly products. This intention is driven not only by environmental awareness but also by the perceived value and benefits, including economic and social factors. Joshi and Rahman [24] assert that consumers with high environmental awareness often exhibit a stronger commitment to green products. The presence of communication campaigns and policies promoting sustainable consumption can further influence green purchase intentions. Thus, the perspectives on green consumer intentions emphasize the importance of environmental awareness, personal factors, and social influence [22].

2.4. Theory Models

Finally, the review briefly examines theoretical models relevant to the study. The Theory of Reasoned Action (TRA), developed by Fishbein and Ajzen [25], suggests that an individual's behavior is determined by his or her intention to perform the behavior. This intention is formed by two main factors: attitude toward the behavior and subjective norms. Attitude refers to how an individual evaluates their behavior, while subjective norms are the influences of society or important people around them. When an individual has a positive attitude and feels social pressure to support the behavior, the likelihood of performing the behavior increases. TRA is often applied in consumer studies, helping to explain purchase intentions, especially for environmentally friendly products [26]. The Theory of Planned Behavior (TPB) was developed by Ajzen [19] from the Theory of Reasoned Behavior (TRA). The TPB adds the element of perceived behavioral control, arguing that the intention to perform a behavior depends not only on personal attitudes and subjective norms but also on the level of emotional control. Perceived behavioral control is indicated as the belief in overcoming barriers to performing the behavior. The TPB is often applied in consumer and marketing research, especially to predict sustainable purchasing and consumption behavior, including green products [19]. These models are crucial for understanding consumer behavior, especially in the context of environmentally friendly products. This revised section provides a more thorough and academically rigorous examination of the literature, enhancing the overall quality of the manuscript.

2.5. Food and Beverage Industry

The Food and Beverage (F&B) industry includes the production, processing, packaging, and distribution of food and beverages to consumers, playing an important role in global economic development. According to Kotler, et al. [15] the F&B industry not only meets basic nutritional needs but also provides rich culinary experiences associated with different cultures. On a large scale, this industry includes everything from the agricultural supply chain to food processing and distribution services at restaurants, hotels, and cafes [27]. This industry is growing thanks to the advancement of technology and the explosion of e-commerce, which enhances the productivity of operations and increases flexibility to meet customers' demands [28].

In addition to its economic role, the F&B industry also has a strong impact on consumer habits and public health. Consumers today increasingly prefer clean, safe, and sustainably sourced products, such as organic, non-GMO foods, and products low in fat, sugar, or salt [29]. This forces businesses in the F&B industry to continuously improve their products and production methods to meet market demand while complying with food safety and environmental protection regulations. F&B businesses increasingly focus on minimizing environmental impacts and improving green and sustainable production processes to maintain customer trust and compete effectively in the global market.

2.6. Developing Hypotheses

2.6.1. Green brand attitudes

Green brand attitudes are an important factor in the formation of green brands. According to Chen [18] this attitude is reflected in consumers' positive evaluation of the brand's environmental protection commitments, including trust, liking, and commitment to sustainable activities [30]. Green brands not only create product value but also attract consumers through awareness of social and environmental responsibility. Green brand attitudes have a direct impact on green product purchase intention. Consumers with positive attitudes toward green brands tend to choose products of that brand because they believe that their purchase actions will contribute to environmental protection [31]. This shows that green brand attitude plays an important role in promoting green consumer behavior and creating trust from consumers [32, 33]. Previous studies have also shown that green brand attitude is one of the factors that have a positive impact on customers' green consumption intention [34, 35]. Therefore, the hypothesis is:

H₁: Green brand attitude has a positive relationship with green product purchase intention

2.6.2. Green Brand Positioning

According to Ottman [17], green brand positioning is the process of building consumer awareness of environmental product characteristics and commitment. Green brands must differentiate themselves from competitors by emphasizing sustainable factors, thereby increasing consumer recognition and trust [30]. Green brand positioning has a tremendous impact on consumers' intention to purchase green products. Chen [18] studies that when a green brand is clearly positioned, consumers will easily perceive the product's environmental value, thereby improving purchase intention. By focusing on building environmental protection and social responsibility, green brands create trust and support from customers, increase revenue, and build a positive image [32, 34]. Thus, the author proposes the hypothesis:

H₂: Green brand positioning has a positive relationship with green product purchase intention

2.6.3. Green Brand Image

Green brand image is how consumers perceive a brand's level of commitment to environmental protection and sustainable development. This image often directly affects consumers' trust and purchase intention for environmentally friendly products [36]. A brand with a tremendous green image will more easily attract and retain consumers because they feel that consuming products from that brand contributes to environmental protection. Many studies have shown that consumers tend to buy products from green brands when their environmental awareness is strong, which increases their intention to buy environmentally friendly products [36]. In summary, it is hypothesized that:

H₃: Green brand image has a positive relationship with green product purchase intention

Green Brand Knowledge

Green brand knowledge is an important factor in building and developing a green brand. According to Chen and Chang [23] green brand knowledge refers to the level of consumer understanding of the environmentally friendly products or services that the brand provides. When consumers have good knowledge about green brands, they tend to trust the brand's environmental commitments and feel comfortable choosing that product. This strongly influences green product purchase intention because consumers tend to support brands for environmental protection [36]. A clear understanding of the characteristics and benefits of green products also increases the likelihood that consumers will choose that product over traditional products [31]. From this, it can be seen that knowledge about green brands plays a coordinating role, directly affecting consumers' green purchase intention. Therefore, based on the above, this study hypothesizes that:

H₄: Green brand knowledge has a positive (same direction) relationship with green product purchase intention.

2.6.4. Green Brand Knowledge Moderator Variable

According to Suki [37] green brand knowledge also influences consumers' attitudes toward green brands. Green brand knowledge reflects consumers' level of understanding of a brand's environmental commitments, information, and values. When consumers have a deep understanding of a green brand, they tend to form more positive attitudes toward that brand [18]. The combination of green brand knowledge and attitude strengthens consumers' trust, thereby enhancing their intention to purchase green products. Consumers not only believe in the brand's environmental commitment but also feel more confident and responsible in choosing environmentally friendly products. Therefore, the proposed hypothesis is:

H_{5a}: Green brand attitude has a stronger influence on green product purchase intention under the influence of green brand knowledge

In addition, many studies have demonstrated that when consumers are clearly aware of a brand's commitment to environmental protection, they tend to support and purchase products from that brand (Quynh, et al. [35]; Suki [37] and Phuong, et al. [33]). Chen, et al. [1] also found that green brand knowledge increases the effectiveness of green brand positioning, as consumers better understand the values and benefits that the brand provides. These studies confirm that the combination of green brand positioning and knowledge has a strong impact on promoting green product purchase intention. Based on that, the author's hypothesis is:

H_{5b}: Green brand positioning has a stronger influence on green product purchase intention under the influence of green brand knowledge.

Proposed research model: Based on the synthesis of outstanding research results on green brands and the impact of green brands on customers' intention to purchase green products in the food and beverage industry, the author proposes the following research model:

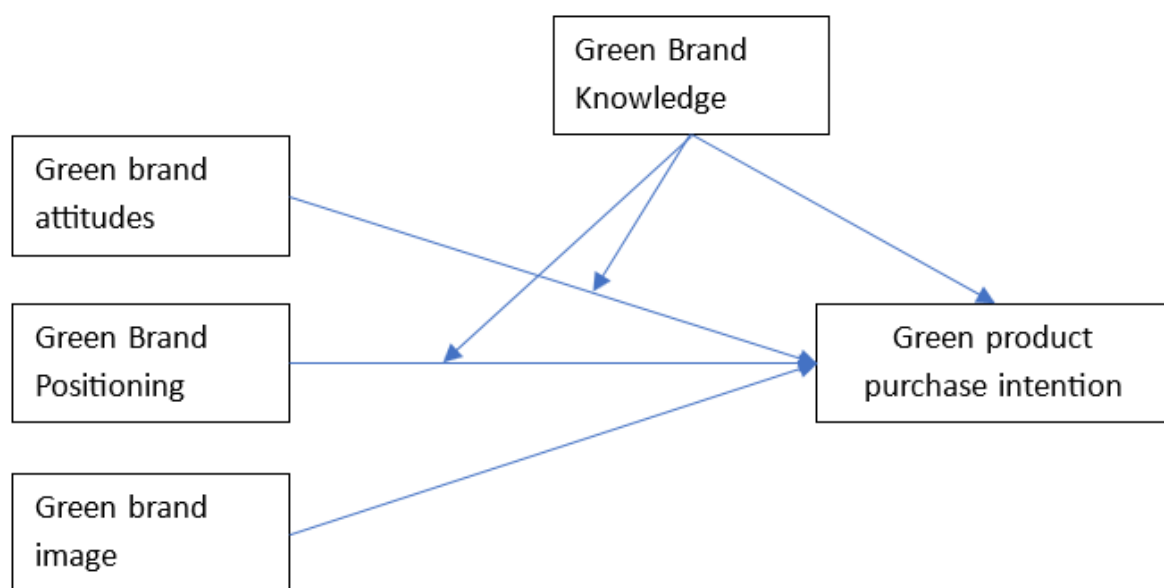


Figure 1.

Proposed research model on green brand factors influencing green consumption intention in the food and beverage industry in Hanoi

3. Research Methodology

3.1. Questionnaire Development

The study utilized a structured questionnaire to gather data, developed based on the theoretical framework and previous studies related to green brands and green purchase intentions [17, 18, 37], to ensure validity and reliability within the Vietnamese context. All constructs were measured using a 5-point Likert scale, ranging from "Strongly Disagree" to "Strongly Agree." The following variables were included: (1) Green Brand Attitude: Assesses consumers' positive beliefs, trust, and feelings towards green brands and their environmental commitments. (2) Green Brand Positioning: Measures consumers' perceptions of the differentiation and positioning of green brands in the market, focusing on the highlighted green attributes. (3) Green Brand Image: Evaluates the overall impression of the brand, including its credibility, responsibility, and consistency in green practices. (4) Green Brand Knowledge: Measures consumers' awareness and understanding of green products, environmental activities, and information related to the green brand. (5) Green Purchase Intention: Assesses consumers' intentions to purchase and use green products in the future, reflected in their willingness to choose and recommend green products. Table 1 details the specific observed variables used to measure each factor.

Table 1.

Proposed scale.

Factors	Coding	Observed variables	Source
Green Brand Positioning	GBP1	Quality is important when I buy green products.	Chen, et al. [1] and Siyal, et al. [38]
	GBP2	Price is important when I buy green products.	
	GBP3	I know about the brand through advertising.	
	GBP4	Green products suit my personal needs.	
	GBP 5	I like to buy green products that are environmentally friendly.	
Green brand attitudes	GBA1	I believe that using green products will help reduce pollution and improve the environment.	Huang, et al. [34]; Suki [37] and Siyal, et al. [38]
	GBA2	I believe that using green products will help limit the waste of natural resources.	
	GBA3	I think consuming green products is a good idea.	
	GBA4	I feel that the environmental claims of green products are generally credible.	
	GBA5	I personally feel good about using sustainable green products.	
Green brand image	GBI1	Brand is considered the best benchmark for environmental commitments.	Huang, et al. [34] and Chen [18]
	GBI2	Brand is very professional in building reputation for environmental protection	
	GBI3	Brand is considered successful in environmental protection	
	GBI4	Brand is prominent in environmental activities	
	GBI5	Brand is trusted in sustainable environmental development	
Green Brand Knowledge	GBK1	I have heard of green products	Suki [37] and Huang, et al. [34]
	GBK2	I know that green products are related to environmental protection	
	GBK3	I buy green products because they bring more benefits to the environment than other products.	
	GBK4	Green products can bring long-term benefits	
	GBK5	The environmental protection performance of green products meets my expectations	
Green product purchase intention	GPPI1	I intend to buy green products because I care about the environment	Chen [18]; Ottman [17] and Suki [37]
	GPPI2	I will buy green products even if other products meet the same features	
	GPPI3	I will consider green products before purchasing in the future	
	GPPI4	I will encourage and recommend people to buy green products	
	GPPI5	I will continue to use green products in the future	

3.2. Data Collection Method

The study employed a convenience sampling method to collect data from consumers at five traditional markets and three large supermarkets in Hanoi. The selection of these locations was based on a list provided by the Hanoi Department of Industry and Trade to ensure representativeness and objectivity. At these locations, the research team directly approached consumers, introduced the study, and asked them to answer the questionnaire. Participation was voluntary, and respondents were assured that their personal information would be protected. A total of 240 questionnaires were collected, of which 211 valid responses were used for analysis.

3.3. Data Analysis Method

The data collected were analyzed using a variety of statistical techniques. Descriptive statistics were used to summarize the demographic characteristics of the sample. Exploratory factor analysis (EFA) was employed to identify the underlying structure of the measurement scales, ensuring that the sample size was suitable for EFA. To ensure the sample size is suitable for EFA [39] and regression analysis [40], the study collected 240 survey questionnaires, of which 211 valid questionnaires were used for analysis. Cronbach's alpha was used to assess the reliability of the scales. Finally, correlation and regression analyses were performed to examine the relationships between the independent and dependent variables and to test the study's hypotheses. The study applied a non-probability sampling method to collect data. Survey objects were selected based on characteristics: gender, age, education level, income, and frequency of food and beverage consumption.

4. Results

4.1. Sample Characteristics

Data were collected through a convenience sampling method from 211 consumers across five traditional markets and three large supermarkets in Hanoi, Vietnam. Descriptive statistics indicate a relatively balanced gender distribution, with 53.6% of respondents being female. The majority of participants were between the ages of 16 and 45 years old (86.7%). A large proportion of the respondents held at least a college degree (96.7%), with varying monthly income levels. The frequency of weekly food and beverage purchases for most respondents ranged from 3 to 7 times (84.4%). Detailed sample characteristics are presented in Table 2.

Table 2.
Descriptive statistical analysis of the research sample.

No.	Characteristics		Frequency (respondent)	Rate (%)
1	Gender	Male	98	46.4
		Female	113	53.6
2	Age	16 - 24 years old	78	37.0
		25 - 30 years old	52	24.6
		31 - 45 years old	53	25.1
		45 years old and above	28	13.3
3	Education	High school or below	7	3.3
		Studying at Secondary/College/University	66	31.3
		Secondary/College/University	95	45.0
		Postgraduate	43	20.4
4	Average monthly income	Under 5 million VND	59	28.0
		From 5 - 12 million VND	40	19.0
		From over 12 million - 20 million VND	69	32.7
		Over 20 million	43	20.4
5	Frequency of food and beverage purchases per week	No	1	.5
		1 - 2 times	27	12.8
		3 - 5 times	61	28.9
		5 - 7 times	75	35.5
		Over 7 times	47	22.3

4.2. Cronbach's Alpha Analysis

The Cronbach's Alpha analysis results indicate that all coefficients meet the required criteria, with Cronbach's Alpha values exceeding 0.6 and corrected item-total correlation coefficients greater than 0.3. Thus, the scales for each factor group are deemed reliable and suitable for conducting Exploratory Factor Analysis (EFA). Detailed results are presented in Table 3.

Table 3.
Cronbach's Alpha Analysis.

Factors	Code	Corrected Item Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Green Brand Positioning	GBP1	0.635	0.808	0.838
	GBP2	0.586	0.821	
	GBP3	0.658	0.801	
	GBP4	0.640	0.806	
	GBP 5	0.692	0.792	
Green brand attitudes	GBA1	0.758	0.843	0.880
	GBA2	0.650	0.868	
	GBA3	0.661	0.866	
	GBA4	0.728	0.851	
	GBA5	0.768	0.840	
Green brand image	GBI1	0.717	0.851	0.879
	GBI2	0.668	0.864	
	GBI3	0.692	0.858	
	GBI4	0.695	0.857	
	GBI5	0.785	0.834	
Green Brand Knowledge	GBK1	0.637	0.828	0.851
	GBK2	0.605	0.835	
	GBK3	0.677	0.817	
	GBK4	0.758	0.795	
	GBK5	0.642	0.828	
Green product purchase intention	GPPI1	0.707	0.853	0.878
	GPPI2	0.667	0.863	
	GPPI3	0.717	0.850	
	GPPI4	0.727	0.848	
	GPPI5	0.733	0.847	

Table 4.
Exploratory factor analyses of independent variables

Items	Factor loading			
	1	2	3	4
GBI5	0.771			
GBI4	0.737			
GBI3	0.720			
GBI1	0.693			
GBI2	0.663			
GBK4		0.666		
GBK1		0.616		
GBK3		0.695		
GBK2		0.694		
GBK5		0.613		
GBA4			0.729	
GBA3			0.700	
GBA2			0.68	
GBA1			0.674	
GBA5			0.658	
GBP2				0.721
GBP3				0.688
GBP4				0.661
GBP1				0.643
GBP5				0.556

4.3. Exploratory Factor Analyses

The Kaiser-Meyer-Olkin (KMO) value of 0.946 (>0.5) demonstrates the suitability of factor analysis for the research data [44]. Bartlett's Test of Sphericity's significance value was less than 0.05, indicating inter-correlation among observed variables. The total variance explained was 65.547% ($\geq 50\%$), affirming the suitability of the EFA model. This indicates that 65.547% of the variance in the observed variables is accounted for, with 34.453% lost. The Eigenvalues test yielded results ≥ 1 for 20 observed variables (independent variables).

The EFA procedure identified four components with a total of 20 items retained. Items with factor loadings below 0.45 and commonalities less than 0.5 were considered for removal. The analysis revealed that 20 items with factor loadings greater than 0.7 were selected (Table 4).

For the dependent variable, the significance level was less than 0.05, supporting the appropriateness of EFA (Table 5). The total extracted variance was 67.356%, with Eigenvalues = 3.368 ≥ 1 , meeting the required criteria. The KMO coefficient was 0.871, satisfying the $0.5 < \text{KMO} < 1$ requirement and Bartlett's test was significant ($p < 0.05$). Thus, the EFA scale for the dependent variable is suitable for further analysis. The results of EFA for independent and dependent variables suggest that the observed variables are both suitable and complete for the study, without needing additions or removals [39].

Table 5.
EFA analysis of scales with dependent variables.

Items	Factor loading
GPPI1	0.668
GPPI2	0.619
GPPI3	0.684
GPPI4	0.696
GPPI5	0.701

The results of EFA testing of independent variables and dependent variables show that the observed variables presented in the research paper are completely suitable and complete, without needing to add or remove any variables.

4.4. Regression Analysis

4.4.1. Correlation Coefficient Analysis

The Pearson correlation coefficients reveal a relatively reasonable relationship between the variables. The correlation coefficients among Green Brand Attitude (GBA), Green Brand Positioning (GBP), and Green Brand Image (GPI) ranged from 0.3 to 0.5, indicating an average correlation with Green Product Purchase Intention (GPPI) [39]. Green Brand Knowledge (GBK) showed a closer correlation with Green Consumption Intention, with a correlation coefficient greater than 0.5. All coefficients were positive, indicating a positive relationship among the variables, consistent with theory. The magnitudes of the correlation coefficients ensure no multicollinearity. The research sample is therefore suitable for testing the relationship between variables. Details are provided in Table 6.

Table 6.
Correlation coefficient analysis.

		GBI	GBK	GBA	GBP	GPPI
GPPI	Pearson Correlation	0.349**	0.565**	0.374**	0.325**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	
	N	211	211	211	211	211

4.4.2. Multivariate Regression Analysis

To test the hypotheses about green brand factors affecting green consumption intentions of customers in the food and beverage industry in Hanoi, the author introduced four independent variables, including green brand image, green brand knowledge, green brand attitude, and green brand positioning, into the regression model with one dependent variable: green product purchase intention, and obtained the following results:

$$\text{YDX} = 0,349*\text{HA} + 0,565*\text{KT} + 0,374*\text{TD} + 0,325*\text{DV}$$

The standardized regression coefficients are presented in the Table 7.

Table 7.
Regression analysis results.

Variables	Coefficients	Sig.
GBI	0.349	0.000
GBK	0.565	0.000
GBA	0.374	0.000
GBP	0.325	0.000
R ² Adjusted	0.68	
R ²	0.686	
F	112.735	

Dependent variable: Green product purchase intention (GPPI).

The table describing the regression analysis results shows that the full model with four variables is significant. Adjusted $R^2 = 0.680$ indicates that the independent variables explain 68% of the variation in the dependent variable. The Sig value when analyzing variance (ANOVA) is guaranteed to be less than 0.05, indicating that the model has the ability to explain on a large scale. The regression analysis results show that the four variables GBI, GBK, GBA, and GBP all have a positive and significant relationship with the dependent variable GPPI; the standardized regression coefficients are $\beta_1 = 0.349$, $\beta_2 = 0.565$, $\beta_3 = 0.374$, and $\beta_4 = 0.325$ respectively, and the Sig values are < 0.05 . It is concluded that hypotheses H1, H2, H3, and H4 are supported. Green brand image, green brand knowledge, green brand attitude, and green brand positioning all positively influence green product purchase intention in Hanoi's food and beverage industry.

4.5. Moderator Variable Analysis

4.5.1. The Relationship Between Green Brand Attitude and Green Purchase Intention is Moderated by Green Brand Knowledge

The p-value of the interaction term (Int_1) is 0.768 (> 0.05), indicating that the product of GBP x GBK does not significantly impact GPPI. Thus, Green Brand Knowledge does not moderate the relationship between Green Brand Attitude and Green Product Purchase Intention, leading to the rejection of hypothesis H5a. Detailed results are in Table 8 and 9.

Table 8.

Moderator Analysis Results of the Relationship Between GBA and Green Purchase Intention is Moderated by GBK.

Variables	Coefficients	Se	t	p
Constant	0.000	0.051	0.000	1.000
BGA	0.373	0.051	7.288	0.000
GBK	0.564	0.051	11.019	0.000
Int_1	-0.015	0.05	-0.295	0.768
R	0.677			
R ²	0.458			

4.5.2. The relationship between Green Brand Positioning and Green Product Purchase Intention is moderated by Green Brand Knowledge

The p-value for the interaction term (Int_1) is 0.3807 (> 0.05), indicating that the product of GBP x GBK does not impact GPPI. It is concluded that Green Brand Positioning does not moderate the relationship between Green Brand Attitude and Green Product Purchase Intention, leading to the rejection of hypothesis H5b. Detailed results are provided in Table 9.

Table 9.

Green Brand Positioning and Green Product Purchase Intention moderated by Green Brand Knowledge.

Variables	Coefficients	Se	t	p
Constant	0	0.053	0.000	1.000
DV	0.319	0.053	6.037	0.000
KT	0.566	0.053	10.754	0.000
Int_1	-0.046	0.045	-1.021	0.381
R	0.654			
R ²	0.428			

The findings of the study confirm the suitability of the theoretical model for understanding how green brands influence green product purchase intention within Hanoi's food and beverage industry. Hypotheses H1, H2, H3, and H4 were supported, whereas H5a and H5b were rejected. This study provides practical implications for food and beverage enterprises and contributes to the theoretical development of green brand studies.

4.6. Discussion

This study has elucidated the factors influencing consumers' green purchase intentions within the food and beverage industry in Hanoi. The findings reveal that green brand knowledge, green brand attitude, green brand image, and green brand positioning all positively impact green purchase intention. Notably, green brand knowledge emerged as the most influential factor, followed by brand attitude, brand image, and, lastly, brand positioning. These factors, when combined, play a crucial role in promoting consumers' decisions to purchase green products in Hanoi.

Green brand knowledge exerts the strongest influence on green purchase intention. When consumers possess a clear understanding of the products and values offered by green brands, they are more likely to decide to purchase these products. According to Siyal, et al. [38] green brand knowledge aids consumers in clearly perceiving the benefits of environmentally friendly products, thereby boosting purchase intentions. However, it is essential to note that overly detailed knowledge can lead to skepticism and greater caution in purchasing decisions, as highlighted in the research by Siyal, et al. [38].

Green brand attitude is the second strongest factor influencing green purchase intention. When consumers hold a positive attitude toward a green brand, they not only perceive environmental values but also appreciate the ethical principles that the brand represents. This aligns with the research of Suki [37] and Huang, et al. [34] research, who found that positive attitudes are important in driving purchase decisions.

Green brand positioning also demonstrates a positive relationship with green purchase intention, although its influence is lower compared to knowledge and attitude. When a brand is clearly positioned with an environmental protection message,

consumers are more likely to recognize and support it. Siyal, et al. [38] showed that brands well-positioned with environmental protection goals have an advantage in attracting consumers concerned about environmental issues. However, the impact of brand positioning is sometimes influenced by industry competition, as emphasized in the study by Lan [41].

Green brand image also positively impacts green purchase intention, although the level of influence is lower than other factors. Chen, et al. [1] found that a strong green brand image enhances consumers' trust and loyalty to the brand. However, if the brand fails to maintain its authenticity, consumers may lose trust and change their purchase intention, as warned by Lan [41]. Furthermore, both hypotheses H5a, and H5b were rejected, indicating that green brand knowledge does not enhance the impact of green brand attitude and positioning on purchase intention, as initially expected. Although green brand knowledge has a positive influence, it does not strengthen the power of other factors in influencing green product purchase decisions in the food and beverage sector in Hanoi. This suggests that once consumers are aware of green products, additional brand knowledge does not significantly alter their purchase intention. This result is similar to the study by Huang, et al. [34] who also found that knowledge about green brands impacts consumers' attitudes. However, their study also did not find a strong moderating role of this factor in the relationship between brand positioning and purchase intention. This indicates that, even though consumers have a high awareness of green brands, the knowledge factor does not necessarily enhance the influence of brand positioning on purchase decisions.

Additionally, the ANOVA test results reveal differences in green product purchase intention across different income groups. Specifically, higher-income consumers tend to be more likely to choose green products than lower-income groups. This can be explained by the financial capacity of higher-income groups, which allows them easier access to and the ability to pay for green products that are often more expensive due to production costs and environmental standards. Recent studies also show that higher-income consumers often pay greater attention to sustainability factors and are willing to pay more for environmentally friendly products. These findings align with previous research results, such as those of Leonidou, et al. [32], who found a positive association between income and willingness to pay for green products.

5. Conclusion

This study provides valuable insights into the factors shaping green consumption intentions within Hanoi's food and beverage industry. The findings reveal that green brand knowledge, attitude toward green brands, green brand image, and green brand positioning all significantly influence consumers' decisions to choose environmentally friendly products. Among these factors, green brand knowledge emerges as the most influential determinant. However, the research also indicates that green brand knowledge does not act as a mediator in the relationship between attitude, brand positioning, and green purchase intention. This suggests that simply enhancing green brand knowledge is not sufficient to substantially impact consumers' purchasing behaviors. To effectively engage consumers, businesses need to adopt integrated strategies that foster positive attitudes, a strong green brand image, and clear brand positioning.

Specifically, businesses should focus on: (1) Enhancing green brand knowledge through the provision of transparent information about production processes, the origin of raw materials, and environmental certifications, while also educating consumers about the benefits of green products for both the environment and health. This approach aligns with research that emphasizes the importance of clear and accessible information in shaping consumer behavior. (2) Building positive attitudes by ensuring the quality of green products and emphasizing core values related to health and environmental protection. Implementing creative communication campaigns, encouraging a sense of social responsibility, creating positive green shopping experiences, and maintaining customer interactions are also crucial. These initiatives should be guided by studies highlighting the importance of positive consumer perceptions in driving purchase decisions. (3) Strengthening green brand image by demonstrating a clear commitment to environmental protection, participating in community activities, implementing initiatives to reduce environmental impacts, and effectively communicating green activities. This is supported by research suggesting that a strong green brand image enhances consumer trust and loyalty. (4) Implementing effective green brand positioning by clearly identifying outstanding green attributes, conveying a consistent positioning message, differentiating from competitors, utilizing strong communication campaigns, and leveraging product packaging to reinforce the brand's environmental commitment. A clear and consistent brand positioning is essential for consumer recognition and preference.

This research contributes to a more profound understanding of green consumer behavior in Hanoi's food and beverage sector. The findings provide valuable insights for managers and businesses. By concentrating on improving knowledge, fostering positive attitudes, reinforcing the brand image, and ensuring effective positioning of green brands, businesses can attract consumers, enhance sales, and contribute to the sustainable development of the industry. The study also confirms that, for Vietnamese consumers in Hanoi, the influence of green brand knowledge is substantial, which suggests that communication strategies should emphasize this factor.

However, this study acknowledges several limitations. First, the research scope is limited to Hanoi, which may not fully represent green consumption across Vietnam. Variations in culture and socioeconomic conditions across regions might influence consumer awareness and behavior related to green products. Second, the convenience sampling method employed for data collection may limit the representativeness of the sample. Third, the specific focus on the food and beverage industry may restrict the generalizability of the findings to other sectors.

Future research should consider broadening the geographical scope, employing random sampling methods to enhance representativeness, and examining different industries to verify the universality of the model. Furthermore, exploring the influence of other factors such as cultural values, price, government policies, and socio-psychological variables will provide a more comprehensive understanding of green consumer behavior. This could include examining the potential moderating effects of socioeconomic factors on the relationship between brand-related factors and purchase intention, or comparing the

effectiveness of various green marketing strategies across different demographic groups to refine the understanding of the consumer purchase journey.

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