DEVELOPING A MEASUREMENT SCALE FOR THE IMPACT OF KNOWLEDGE SEEKING BEHAVIOR ON CONSUMERS' GREEN CHOICE IN VINH LONG PROVINCE

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Abstract: ***The study focuses on developing and validating a measurement scale for the impact of knowledge-seeking behavior on consumers' green choices in Vinh Long province, within the context of green marketing and sustainable consumption in the Mekong Delta region. Based on a review of theoretical foundations and prior studies, the research integrates two key theoretical frameworks the Theory of Consumption Values (TCV) and the Theory of Planned Behavior (TPB) to explain the mechanism underlying the formation of green choice behavior. The research adopts a mixed-methods approach, including qualitative research through expert interviews and group discussions, combined with a preliminary quantitative survey of 120 consumers. The data are analyzed using statistical techniques such as Cronbach's Alpha, Pearson correlation, and Exploratory Factor Analysis (EFA). The results indicate that the measurement scales demonstrate good reliability and validity, with factor structures consistent with the proposed model. Several inappropriate items were removed to refine the scales. The study provides a scientific foundation for subsequent research and offers practical implications for businesses in promoting green consumption.***

• Keywords: *green marketing; knowledge-seeking behavior; green choice, knowledge-seeking, social value.*

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1. Introduction

Achieving sustainable consumption is the twelfth goal in the United Nations' Sustainable Development Goals (SDGs). The Sustainable Development Goals Report (2022) emphasizes that unsustainable consumption and production patterns are the root causes of three global crises: climate change, biodiversity loss, and environmental pollution (Sustainable & Goals, 2022). Sustainable consumption serves as a typical example demonstrating how approaches from both social sciences and natural sciences can complement and reinforce each other to generate scientific momentum for sustainable development(Matt et al., 2017). Therefore, understanding how consumers make green choices is essential and constitutes the central focus of this study.

The growing awareness that current consumption patterns may undermine the ability of future generations to meet their needs has significantly increased interest in promoting sustainable consumption. As a result, there has been a notable rise in the consumption of environmentally friendly products, commonly referred to as green products (Paul et al., 2016). According to Lin and Huang, green products are those designed to prevent, reduce, or mitigate harmful impacts on water, air, and soil, while also addressing broader environmental issues such as waste, noise, and ecological degradation(Lin & Huang, 2012). Moreover, Medeiros and Ribeiro emphasize that green products provide long-term benefits without compromising product performance, thereby highlighting their dual value in terms of both environmental protection and consumer utility, therefore, understanding consumers' green choice behavior has become increasingly important in the current context.

Many studies have examined the relationship between consumption values and green purchasing behavior; however, few have explored the antecedent factors that may influence the formation of these values (Han, 2020)(Paul et al., 2016). Existing research has not clearly explained the process through which consumers form intentions or how values translate into environmentally friendly behaviors. This raises important questions as to whether these values directly influence green purchasing behavior or operate through a series

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of mediating relationships, and how this process, together with underlying values, is affected by consumers' environmental concerns?

However, for consumers to truly adopt green products, the process of seeking and acquiring knowledge about products, environmental benefits, and social values plays a decisive role. Vinh Long province, as part of the Mekong Delta, a region heavily impacted by climate change faces an urgent need to enhance public awareness and transform consumption behavior. According to the Ministry of Industry and Trade, green production, which aims to minimize negative environmental impacts while optimizing production processes, utilizing renewable energy, and efficiently using resources, has become an essential strategy for sustainable development among many enterprises (Minh Khue, 2026). Green production refers to the process of producing and delivering goods and services in a way that reduces environmental impact, including the use of recycled materials, renewable energy, waste reduction, limited use of harmful chemicals, and optimization of production processes to lower carbon emissions. It not only brings economic benefits but also plays a vital role in protecting public health and ensuring environmental sustainability.

2. Literature review

First, the most common research stream in the field of green consumption focuses on identifying factors that influence consumers' green purchase intentions and behaviors. Studies have shown that factors such as environmental awareness, attitudes, subjective norms, and perceived behavioral control have significant impacts on green consumption behavior. These studies are primarily grounded in the Theory of Planned Behavior (TPB), in which attitudes and environmental awareness are often identified as the most influential determinants of green purchase intention and behavior.

Second, another important research stream emphasizes the role of knowledge and awareness in green consumption. Existing studies indicate that environmental knowledge and understanding of green products positively influence purchase intention by enhancing awareness and strengthening consumer trust. Moreover, knowledge helps reduce perceived risk and improves decision-making capability, thereby promoting sustainable consumption behavior (Lavuri, 2021).

Third, many studies approach green consumption from the perspective of consumption values and green trust. Research findings indicate that emotional value and social value have significant influences on green consumption behavior. In addition, green trust is considered a key mediating factor that transforms awareness and knowledge into purchase intention and environmentally friendly behavior, thereby reducing consumers' skepticism toward green products (Parker & Marais, 2023).

Furthermore, research on green marketing and communication has also attracted considerable attention. Green marketing has a positive impact on consumers' attitudes and purchase intentions. This confirms that environmental communication activities and green marketing strategies play an important role in shaping perceptions and promoting green consumption behavior in society.

In addition, some studies extend the analysis by examining the role of social and cultural factors in green consumption behavior. These studies suggest that factors such as social norms, social responsibility, and cultural values may act as moderating or mediating variables in the relationship between attitudes and green consumption behavior. This research direction helps explain differences in behavior across consumer groups and cultural contexts (Chwialkowska et al., 2020).

3. Research methodology

This study adopts a multi-stage mixed-methods approach, combining both qualitative and quantitative research.

Qualitative Research

Step 1 involves identifying the specific research objective, which focuses on consumers' knowledge-seeking behavior and its impact on green choices in Vinh Long province, as well as developing the theoretical foundation and key influencing factors.

Step 2 examines the effects of dependent variables and mediating factors within the research model, and proposes variables based on literature review, theoretical frameworks, and related studies.

Step 3 conducts qualitative research through interviews with eight experts and fourteen customers to validate the proposed research model and measurement scales derived from the literature. Experts provide insights on the appropriateness of measurement concepts and the relevance of relationships within the model and scales in the research context. The

findings from the qualitative phase serve as a basis for refining the measurement model and developing the preliminary survey instrument.

Quantitative Research

The preliminary quantitative study was conducted with 120 consumers who have engaged in green choices, are interested in sustainable consumption, and possess knowledge related to knowledge-seeking behavior and mediating factors. These respondents are residents of Vinh Long province.

In this study, the author conducted a preliminary assessment using 120 observations and applied a non-probability convenience sampling method. Accordingly, the selected respondents met the following criteria: (1) individuals who have engaged in green consumption in Vinh Long; (2) general consumers included in the survey; and (3) individuals who have experience, interest, and awareness regarding environmental and health related issues. Although convenience sampling may introduce bias, the study mitigates this limitation through several approaches.

First, in addition to direct surveys, the study employs a snowball sampling technique, whereby experienced respondents refer other qualified participants.

Second, although convenience sampling is used, the process is controlled by combining both direct and online questionnaires, thereby reducing potential bias. Relying solely on online sampling may increase bias and limit the generalizability of the findings.

Preliminary Quantitative Research Process

Step 1: After collecting the results of expert interviews on the measurement scales, the author develops a preliminary quantitative questionnaire, including the main contents and respondents' information.

Step 2: Conduct the preliminary survey. At this stage, the author clearly defines the target respondents, sample characteristics, and sample size.

Step 3: Data processing and cleaning. After data collection, the data are coded, entered into SPSS software, and screened to remove noisy data. Two common causes of data noise include: (1) respondents providing inaccurate information in the questionnaire; and (2) errors during data entry into SPSS.

Step 4: Conduct Cronbach's Alpha analysis to eliminate inappropriate variables and retain those with high reliability.

Step 5: Perform Pearson correlation analysis among observed variables within each scale to remove variables that are not correlated or are redundant.

Step 6: Conduct Exploratory Factor Analysis (EFA) to identify underlying factors.

Step 7: Evaluate and finalize the measurement scales for the formal quantitative study. At this stage, the author reviews, adjusts, and decides whether to retain or remove scales that do not meet statistical significance.

The purpose is to determine the measurement scales for the formal study. The preliminary quantitative analysis assesses the reliability of the scales using Cronbach's Alpha, identifies redundant or irrelevant items through correlation analysis among observed variables within each scale, and applies Exploratory Factor Analysis (EFA). The results of this stage provide the basis for establishing the research model and measurement scales for the formal study.

Theoretical Framework

The integration of the Theory of Consumption Values (TCV) and the Theory of Planned Behavior (TPB) in this study is appropriate and highly complementary in explaining consumers' green choice behavior. First, TCV helps clarify the origins of consumption motives through various values such as functional, social, emotional, epistemic, and monetary values. These values reflect how consumers evaluate the benefits of green products, thereby influencing their perceptions and attitudes. However, TCV primarily focuses on internal value dimensions and does not fully explain how these factors are translated into actual behavior.

Therefore, TPB is employed to complement this perspective by explaining the process of intention and behavior formation. According to TPB, behavior is influenced by attitudes, subjective norms, and perceived behavioral control, which helps clarify why consumers may have the intention but not necessarily engage in green purchasing behavior. The integration of these two theories enables the development of a comprehensive research framework that not only explains underlying value formation but also clarifies behavioral mechanisms, thereby enhancing the predictive power of green consumption intentions and behaviors.

4. Research results and discussion

4.1. Qualitative Research Results

Measurement Scales

To measure the research constructs in the context of consumers' green product choice behavior, this study adopts and adapts measurement scales that have been validated and widely used in previous studies in the fields of consumer behavior, green marketing, and sustainable development. The use of established scales not only ensures the reliability and scientific validity of the study but also facilitates comparison and alignment with prior research findings.

Specifically, the original measurement scales were selected from studies published in reputable scientific journals (Q1 SSCI). However, due to differences in research context, cultural characteristics, and language, these scales were semantically adjusted and translated into Vietnamese to ensure that respondents could clearly understand and consistently interpret the observed variables.

Table 1: Adopted Measurement Scales

No.	Variable	Original Scale
1	Knowledge-seeking behavior - KSB	Parker et al., 2022 Q1 SSCI - IF 10 Luchs et al., 2010 Q1 SSCI - IF 10.4
2	Emotional value - EV	Parker et al., 2022 Q1 SSCI - IF 10 Sweeney & Soutar, 2001 Q1, SSCI - IF > 10)
3	Social Value - SV	Parker et al., 2022 Q1 SSCI - IF 10 Chwialkowska et al., 2023 Q1 SSCI 8.2 Lin & Huang (2012) Q1 SSCI - IF 10.7
4	Environmental Concerns - EC	Ogiemwonyi & Jan 2022. Q2 ESCI - CiteScore (Scopus): 4.3 Parker et al., 2022 Q1 SSCI - IF 10
5	Health-Related Concerns - HRC	Ogiemwonyi & Jan 2022. Q2 ESCI - CiteScore (Scopus): 4.3. Sony & Fer-guson, 2017. Q1 ESCI - IF 4.6 Chwialkowska et al., 2023 Q1 SSCI 8.2
6	Green Choice - GC	Parker et al., 2022 Q1 SSCI - IF 10 Chwialkowska et al., 2023 Q1 SSCI 8.2

Source: Author's compilation

Expert Interviews

In the process of conducting expert interviews with six academic researchers, the author interviewed two experts directly, one expert via Google Meet, and the remaining three experts through an online questionnaire.

The results indicate that most experts agreed with the proposed measurement scales and research direction; however, they suggested that some items should be reworded to ensure greater clarity and contextual appropriateness.

Focus Group Discussion

Regarding the focus group discussions, the author organized sessions with 14 customers, divided into two groups of seven participants each. Both discussions were conducted online via Google Meet. In Group 1, one participant was unable to attend the session, and in Group 2, two participants were absent; however, these participants still provided feedback through an online questionnaire. The results indicate that most customers agreed with the proposed measurement scales and research direction, although they suggested that the questionnaire items should be simplified to enhance clarity and ease of understanding.

4.2. Quantitative Research Results

A. Research Results

After completing the research model, the author continued reviewing original measurement scales from previous studies to measure the constructs in the model. These scales were then translated and adapted into Vietnamese, and a proposed measurement scale was developed for expert interviews (including six academic experts) and focus group discussions (with 14 customers divided into two groups). Finally, the adjusted measurement scales were established and a preliminary survey was conducted with 120 respondents. This process of review, adaptation, and measurement focused on selecting scales commonly used in studies related to green marketing and green purchase intention, particularly those adopted from international research with strong impact indicators to ensure reliability.

1. Cronbach's Alpha Analysis Results

The objective of this step is to assess the internal consistency of the measurement scales, in order to determine whether the observed variables within each scale measure consistently and reliably (Hair et al., 2019)yet concise, overview of the considerations and metrics required for partial least squares structural equation modeling (PLS-SEM.

A scale is considered acceptable when the Cronbach's Alpha coefficient is greater than 0.7 and the corrected item-total correlation of each observed variable exceeds 0.3. The analysis results indicate that all measurement scales have Cronbach's Alpha values within the acceptable range, demonstrating high reliability. The detailed results for each scale are presented as follows:

Table 2. Cronbach's Alpha Analysis Results

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
1. Knowledge seeking behavior - KSB					
KSB1	13.52	10.252	0.735	0.846	0.878
KSB2	13.47	9.814	0.750	0.842	
KSB3	13.33	11.401	0.534	0.891	
KSB4	13.50	9.832	0.769	0.837	
KSB5	13.54	10.133	0.765	0.839	

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
2. Emotional value - EV					
EV1	13.97	8.755	0.662	0.866	
EV2	13.75	8.458	0.737	0.848	
EV3	13.85	8.834	0.715	0.853	0.880
EV4	13.85	8.717	0.720	0.852	
EV5	13.82	8.437	0.730	0.850	
3. Social Value - SV					
SV1	15.98	9.167	0.738	0.844	
SV2	15.81	8.476	0.702	0.850	
SV3	15.77	8.987	0.619	0.869	0.875
SV4	15.73	8.701	0.705	0.849	
SV5	15.68	7.899	0.778	0.830	
4. Environmental Concerns - EC					
EC1	14.99	9.605	0.621	0.898	
EC2	15.02	9.143	0.768	0.868	
EC3	14.87	8.923	0.722	0.877	0.895
EC4	14.98	8.495	0.803	0.859	
EC5	14.95	8.569	0.805	0.858	
5 Health-Related Concerns - HRC					
HRC1	14.73	8.533	0.647	0.851	
HRC2	14.54	9.477	0.710	0.833	
HRC3	14.58	9.119	0.771	0.818	0.865
HRC4	14.60	8.847	0.748	0.821	
HRC5	14.58	9.087	0.598	0.860	
6. Green Choice - GC					
GC1	15.42	7.674	0.758	0.880	
GC2	15.43	7.541	0.749	0.882	
GC3	15.43	7.457	0.734	0.886	0.902
GC4	15.43	7.592	0.786	0.874	
GC5	15.30	7.657	0.756	0.881	

Source: Author's calculation

2. Results of Pearson Correlation Analysis among Observed Variables

This analysis aims to examine the correlation between each observed variable and the total scale score, thereby identifying and removing variables with weak or redundant correlations, avoiding multicollinearity, and enhancing discriminant validity among variables.

According to Hair et al. (2010), the ideal correlation coefficients among observed variables should range from 0.3 to below 0.85 to ensure a balance between internal consistency and discriminant validity within the scale. It is also important to note that correlation coefficients exceeding 0.9 may indicate excessive multicollinearity, which reduces the distinctiveness of observed variables within the same scale.

The results of the Pearson correlation analysis in this study show that most pairs of observed variables within each scale have correlation coefficients ranging from 0.3 to 0.85, consistent with the recommended threshold suggested by Hair et al. (2010). No pairs of variables exceed this limit, indicating that the observed variables exhibit a moderate level of association without excessive redundancy and maintain adequate discriminant validity. Therefore, all observed variables are retained for subsequent analyses. These findings provide both theoretical and empirical support for proceeding with Exploratory Factor Analysis in the next stage of the study.

3. Results of Exploratory Factor Analysis (EFA)

In this study, Exploratory Factor Analysis (EFA) was conducted on all measurement scales to ensure the structural validity of the measurement instrument. EFA serves as a preliminary assessment step to identify underlying factor structures, eliminate inappropriate observed variables, and ensure that the scales used possess adequate reliability and validity before proceeding to the formal study with a larger sample.

The EFA results indicate that the observed variables converge well with the initially proposed theoretical constructs. At the same time, the measurement scales demonstrate clear distinctions among factors, confirming both the convergent validity and discriminant validity of the measurement model.

Table 3. Results of Exploratory Factor Analysis

KMO and Bartlett's Test		
Indicator	**Evaluation Criteria**	**Analysis Results**
KMO	≥ 0,5	0.805
Bartlett's Test of Sphericity	< 0,05	2256.024
Eigenvalues	≥ 1	1.475 (Stopped at factor 6)
Total Variance Explained	≥ 0,5	70.154%

In addition, the rotated component matrix is presented as follows:

	Component					
	1	2	3	4	5	6
GC5	0.835					
GC2	0.832					
GC1	0.827					
GC4	0.821					
GC3	0.777					
EC5		0.876				
EC2		0.839				
EC4		0.829				
EC3		0.761				
EC1		0.708				
EV4			0.815			
EV3			0.791			
EV5			0.781			
EV1			0.762			
EV2			0.751			
SV5				0.870		
SV1				0.828		
SV4				0.816		
SV2				0.809		
SV3				0.746		
HRC3					0.833	
HRC4					0.812	
HRC1					0.792	
HRC2					0.752	
HRC5					0.719	
KSB1						0.849

	Component					
	1	2	3	4	5	6
KSB5						0.841
KSB4						0.798
KSB2						0.792
KSB3						0.562

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

Source: Author's calculation

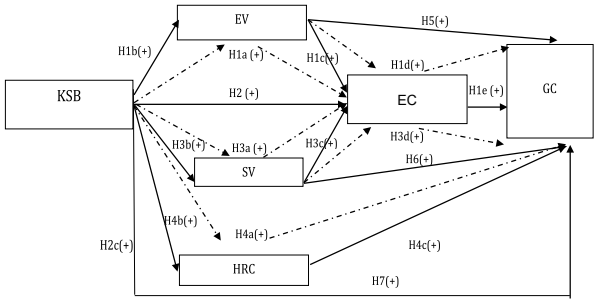
B. Discussion of Research Results

After conducting Cronbach's Alpha analysis, the developed measurement scales were found to be appropriate and capable of accurately measuring the research constructs. Therefore, they were retained for subsequent analyses, including Pearson correlation analysis and Exploratory Factor Analysis (EFA).

The results of the correlation analysis among observed variables in this study indicate that most pairs of variables within each scale have correlation coefficients ranging from 0.3 to 0.85, consistent with the threshold recommended by Hair et al (Hair et al., 2019)yet concise, overview of the considerations and metrics required for partial least squares structural equation modeling (PLS-SEM. No variable pairs exceed this limit, suggesting a moderate level of association without excessive redundancy and ensuring adequate discriminant validity among the variables. Therefore, all observed variables are retained and accepted for subsequent analyses.

The EFA results show that KMO = 0.805 (> 0.5) and Bartlett's Test significance = 0.000 (< 0.05), indicating that Exploratory Factor Analysis is appropriate. Six factors were extracted based on the criterion of Eigenvalues greater than 1, with a total cumulative variance explained of 70.154%.

Figure 1. Proposed Research Model



Through the three analytical techniques applied in the preliminary quantitative stage, from the initial 30 observed variables measuring six constructs, the results indicate that all 30 observed variables are valid and belong to six measurement scales, reflecting the six constructs in the research model. These preliminary quantitative findings provide an important foundation for refining and developing the measurement scales for the formal study with a larger sample size in the proposed research model.

5. Conclusion

The study has successfully achieved its objective of developing and preliminarily validating a measurement scale for the impact of knowledge seeking behavior on consumers' green choices in Vinh Long province, within the context of green marketing and sustainable consumption. By integrating two key theoretical frameworks the Theory of Consumption Values (TCV) and the Theory of Planned Behavior (TPB) the study clarifies the mechanism underlying green choice behavior through factors such as emotional value, social value, environmental concerns, health related concerns, and knowledge seeking behavior.

The results of the preliminary quantitative analysis indicate that the measurement scales demonstrate good reliability and validity through Cronbach's Alpha, Pearson correlation, and Exploratory Factor Analysis (EFA). The observed variables load appropriately onto the proposed theoretical constructs and ensure discriminant validity, thereby confirming the suitability of the proposed research model.

This study not only contributes academically by developing a new measurement scale but also provides an important scientific foundation for future research with larger sample sizes. In addition, the findings offer practical implications for businesses in promoting green consumption by enhancing consumer awareness and providing relevant information.

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