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The Impact of Brand Green Plashing Behavior on Customers' Green Loyalty and Green Word of Mouth Intention

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ABSTRACT

Based on the group's research and synthesis, it can be seen that research articles on domestic brand greenwashing behavior are still very limited and have not been exploited much, while the trend is to pay attention to environmental issues. of businesses and consumers is increasing rapidly. Linked to research practices in Vietnam, the team has included a number of new factors in the model such as: green confusion, green brand loyalty, green word-of-mouth intention, environmental knowledge and concern. about environment. In addition, the novelty of the group's research is that it approached the problem in the field of green cosmetics instead of focusing mainly on household electrical appliances, organic food, and tourism like previous studies. . Besides, SPSS 26 and SEM 24 are typical quantitative research methods that the team used to help increase the scientificity of the research results.

Keywords: Green loyalty, brand, green brand

1. Introduction

Negative environmental changes have encouraged consumers to pay more attention to green consumption, and have led to changes in consumer needs and behavior. Thanks to the popularity of environmental movements, at businesses, the number of sales of "green" products has also increased significantly. Even many customers are willing to spend a large amount of money and accept a higher price than usual for "green" products (Chen, 2008). A close, environmentally friendly lifestyle is given more attention because not only does it stem from responsibilities but also because users also expect personal benefits from "green" products (Marchand and Walker , 2008). In addition, increasing pressure on businesses to be transparent in information and performance indicators related to environmental activities also comes from the government and other organizations such as investors and organizations (Chen and Chang, 2012b; Kim and Lyon, 2015; Marquis, Toffel and Zhou, 2016).

Advertising terms such as “green”, “eco”, “natural”, “environmentally friendly”, “sustainable” and “earth-friendly” are increasingly mentioned in practice. . The increase in “green” marketing has led to the phenomenon of “greenwashing” (Majláth, 2017). Some businesses have adjusted their "green" related strategies with the idea of "greenwashing" (or pretending to be "green"), these are simply "green" statements and not there are truly “green” actions. These businesses rely on vague statements about the environment as well as their environmental protection practices to deceive consumers. By presenting itself as a "green" business even though it is not actually "green", customers can easily "fall into the trap" and think that the business is conducting "green" activities. This results in customers' suspicion of companies' fraudulent behavior (Balmer, Powell and Elving, 2009), and consumer behavior is also significantly affected by this behavior. "greenwashing".

In fact, it can be considered “strange and new” to mention the term “brand greenwashing”. In Vietnam, this topic has not been exploited much, while in developed countries such as China and the United States, it is very developed and given much attention. Therefore, studying the overall effects of "brand greenwashing" in general and studying its effects on loyalty and word-of-mouth intention for green brands in particular is a new and quite important direction. in the current and future context in Vietnam. Realizing the urgency of the problem, the group hopes to contribute recommendations to limit the situation of "brand greenwashing"; At the same time, it helps businesses move towards an environmentally friendly image.

Therefore, the authors reviewed and selected the study on "The impact of brand greenwashing behavior on customer loyalty and green word-of-mouth intention"

2. Content

2.1. Study overview

Chen's (2010) study on factors that promote green brand equity also mentioned studying factors affecting green brand equity such as green brand image, green satisfaction and green trust. Similarly, studies by Chen (2010), Chen (2013) introduced four new variables "green brand image, green satisfaction, green trust and green brand equity" and developed a framework Research and build a clear structural model to continue discussing, researching and

evaluating the correlation of variables with each other. Thereby, it shows that green brand image, green satisfaction and green trust have a positive relationship with green brand equity. Additionally Chen et al (2012) provide a customer confusion and perceived risk as a way to stimulate the trust-building process in the current greenwashing trend.

Based on attitude-behavior-context theory, Zhang and colleagues (2018) have proposed a mechanism to evaluate the impact of greenwashing awareness on green purchase intention by evaluating the intermediate role of greenwashing awareness. The duration of green word-of-mouth intention plays a moderating role of green concern. On that basis, it shows that greenwashing has a negative effect on green purchase intention, and green word-of-mouth intention acts as an intermediate variable in this relationship. Besides, as environmental concern increases, this has been defined as "a positive attitude toward environmental protection" (Crosby et al., 1981) and has an influence on increase shopping activities, green word of mouth. Besides, many other researchers have found a positive relationship between environmental knowledge and environmentally friendly behavior (Babin et al., 2005; Kim and Choi, 2005). Crosby and colleagues (1981) argue that ecological concern serves as a premise for implementing corporate social responsibility in business activities. Indeed, an individual's ecological concerns begin with his or her own fundamental beliefs or values.

Na (2022), the study discussed the influence of brand greenwashing factors in the use of green products in Ho Chi Minh City with two intermediate variables: green brand image and green word of mouth. .

At the same time, other research articles such as Anh (2021) analyzed the relationship between the variables green perceived risk, green brand, green satisfaction, green trust and green brand loyalty in Vietnam. . Other extensive studies have been conducted such as (Dinh, 2018); (Trang and Hao, 2014) also contributed many theoretical bases for this research.

2.2. RESEARCH METHODS AND DATA

Qualitative research:

Through the research process, the research team collected secondary data sources to identify gaps in research and add new features to the research model..

Quantitative research:

Quantitative research method is the main method deployed by the team in this research article. By conducting an online survey, the team has collected a set of data to meet the needs of processing and analysis. The team conceived and designed the research questionnaire and sent it to Vietnamese consumers via an online Google Form questionnaire. The questionnaire was surveyed with the goal of collecting information and data on the current status of using green cosmetic products in Vietnam, thereby assessing the level of understanding of greenwashing behavior of the survey subjects. At the same time, we present the intermediary factors that affect green brand loyalty and green word-of-mouth intention of consumers. The group uses questions through the use of a scale rated from 1 to 5 - the Likert scale. So that survey respondents can understand the group's ideas, all question content is summarized and adjusted to the easiest way to understand. Respondents will make their choice through their level of agreement. The questionnaire was posted on places such as forums and groups on social networking sites in the form of links. The group mainly focuses on convenient sampling and quick cumulative sampling in groups with many members, many different ages and high interaction..

Scale of factors

Based on Vietnam's reality, to ensure the accuracy of the responses, a number of appropriate variables were selected by the authors and the statements were reinterpreted more clearly. The research team also designed and built a complete questionnaire with 9 main concepts and including 43 observed variables.

The criteria evaluated in the proposed model are measured by the Likert scale, with the scale rated from level 1 to 5 (from 1 - Strongly disagree to 5 - Strongly agree) and are applied. applied to 9 official scales for 9 variables in the model that were selected by the team and included in the survey along with other variables. This scale is widely used in sociological behavioral science research. The remaining variables used to classify respondents such as occupation, income, age, etc. were measured through nominal scales.

a. Greenwashing

Table 1: Brand greenwashing behavior scale

Sign	Vietnamese	Source
GW1	X's brand deceives me with wording about features related to environmental protection.	Chen et al (2020)
GW2	X's brand deceives me with pictures or graphics about features related to environmental protection.	
GW3	X's brand deceived me with unclear environmental claims.	
GW4	X's brand is exaggerated or overstated about its environmental protection function.	
GW5	X's brand hides important information, making environmental claims seem better than they actually are.	

b. Green confusion

Table 2: Green Confusion Scale

Sign	Vietnamese	Source
GC1	Because many products have very similar environmental characteristics, it is often difficult to detect X.	Walsh et al., (2007); Walsh and Mitchell, (2010)
GC2	It is difficult to recognize the difference between X and other products in terms of environmentally friendly features.	
GC3	When I bought X, there were so many products I could buy that I was really confused about their environmental characteristics.	
GC4	When buying X, there were so many products that it was difficult for me | Decide which product to choose regarding the characteristics Environmentally friendly point.	
GC5	When buying X, I rarely feel fully informed about environmental features.	
GC6	When I bought X, I felt uncertain about its eco-friendly features.	

c. Green brand image

Table 3: Green brand image scale

Sign	Vietnamese	Source
GI1	X's brand is considered the best benchmark for environmental commitments.	Chen (2010)
GI2	X's brand specializes in building an environmentally friendly reputation.	
GI3	X's brand is successful in its environmental performance.	
GI4	X's brand is famous for its concern for the environment.	
GI5	X's brand is trustworthy when they promise to become environmentally friendly.	

d. Green trust

Table 4: Green Confidence Scale

Sign	Vietnamese	Source
GT1	I feel that X's environmental reputation is generally trustworthy.	Chen and Chang (2012)
GT2	I feel the X's environmental performance is generally reliable.	
GT3	I feel X's environmental claims look| generally trustworthy.	
GT4	X's environmental concerns meet my expectations.	
GT5	X keeps its promises and commitments to the environment.	

e. Green Brand Equity

Table 5: Green Brand Equity scale

Sign	Vietnamese	Source
GBE1	I feel justified in buying products from brand X over another brand because of its environmental commitments even if it is in the same category.	Chen (2010)
GBE2	I would still prefer to buy products from brand X even if another brand has the same environmentally friendly features as brand X.	
GBE3	I would still prefer to buy products from brand X if | The environmental performance of another brand is as good as brand X.	
GBE4	If another brand has environmental concerns that are similar to X's brand in any respect, it may seem smarter to buy from X's brand.	

f. Green brand loyalty

Table 6: Green brand loyalty scale

Sign	Vietnamese	Source
GL1	I am willing to repurchase X's brand due to its environmental performance.	Chen et al (2020)
GL2	I prefer to buy X's brand over other brands because of its eco-friendly function.	
GL3	I rarely consider switching to other brands because of the brand's environmental credentials.	
GL4	I intend to continue buying X's brand because it is environmentally friendly.	

g. Green WOM (Green word of mouth)

Table 7: Green Word of Mouth Scale

Sign	Vietnamese	Source
GWOM1	I would highly recommend X to others because of its eco-friendly image.	Chen et al (2014)
GWOM2	I will say positive things about X to others because of its environmentally friendly functionality.	
GWOM3	I would encourage others to buy X because it is friendly | with the environment.	
GWOM4	I would recommend X to others because of its eco-friendly performance.	

h. Environmental Knowledge

Table 8: Environmental knowledge scale

Sign	Vietnamese	Source
EK1	I know more about recycling than most people.	Skarmeas and Leonidou (2013)
EK2	I understand environmental phrases and symbols on product packaging.	
EK3	I am very knowledgeable about environmental issues.	
EK4	I am confident that I know how to choose products and packaging that help reduce the amount of waste released into the environment.	

k. Environmental Concern

Table 9: Environmental Concern Scale

Sign	Vietnamese	Source
EC1	I care very much about the environment.	Kilbourne et Pickett al (2008); Maichum et al (2016); Paul et al (2016)
EC2	Humans are seriously abusing the environment.	
EC3	I am willing to reduce my consumption to contribute | environmental protection.	
EC4	Major political changes are needed to preserve | protect the natural environment.	
EC5	Major social changes are needed to protect the natural environment.	
EC6	Laws against environmental pollution should be enforced more strongly.	

Source: Compiled by the author research

Select sample, collect data

Based on the existing analysis, the team selected a research sample from 18 to over 40 years old from the general population because this age group is assessed for their need to use cosmetic products and their interest in cosmetics is gradually increasing. At the same time, the group also selected criteria such as occupation, age, gender, etc. to conduct a survey of respondents to show the differences in consumer shopping behavior.

The research team collected data by sending questionnaire links to friends and relatives on personal Facebook pages. In addition, the research team also posted to Facebook groups with environmental topics such as "Nature-loving community - intention to protect the environment", "Vietnamese health & environmental protection group" , “Environmental Protection Association”, “Environmental Safety (EHS),...

To be able to control the honesty of the respondents and match the question, the team asked a number of screening questions in the questionnaire, specifically: "Have you ever used green cosmetics?" . If the respondent chooses the answer "Never", they will not continue to participate in the survey; If the respondent chooses the answer "Ever", the form will move to section 3 (general information) and continue to participate in the survey.

After the data collection process, the team compiled a total of 515 responses in 3 months of investigation (from December 2022 to March 2023). After eliminating votes that did not meet the requirements (never used green products, incomplete answers, etc.), the team selected 414 votes that met the requirements to include in further research.

Analyze and process data

After the data was fully collected by the research team, we began coding and then saving it into an Excel file. Next, the team analyzed the data obtained on SPSS 26 software through two factors: Cronbach's Alpha reliability analysis and EFA discovery factor. The purpose of these two analyzes is to help eliminate variables that do not meet the standards. After completing SPSS analysis, with SEM software application, 24 groups conducted CFA analysis with the purpose of verifying the effects of each remaining variable on green brand loyalty and green word-of-mouth intention of customers. row. Finally, use SPSS 26 to evaluate the role of moderating variables.

Data analysis method:

The analysis method was conducted by the research team based on the following steps: verifying reliability, evaluating the scale and analyzing the linear structural model SEM.

* Cronbach's Alpha reliability analysis:

* EFA exploratory factor analysis

* SEM linear structure analysis

2.3. Research results and discussion

2.3.1. The results of the official research sample are shown in Table 10 below:

Table 10: Description of the research sample

Indicators	Details	Quantity (people)	Percentage
Sex	FeMale	265	64%
	Male	149	36%
Age	18 - 25 year old	263	63,5%
	26 – 35 year old	84	20,3%
	36 – 45 year old	60	14,5%
	> 45 year old	7	1,7%
Job	Student	238	57,5%
	Office staff	66	15,9%
	Worker	22	5,3%
	Business	42	10,1%
	Other	46	11,1%
Income	From 0 - under 5 million	205	49,5%
	From 5 million – under 10 million	95	22,9%
	From 10 million – under 25 million	77	18,6%
	From 25 million - under 35 million	27	6,5%
	Over 35 million	10	2,4%
Area	North	223	53,9%
	Central region	89	21,5%
	Southern	102	24,6%

Source: Survey results of the research team

2.3.1 Green cosmetics that consumers use

The research team first explained the concepts of "Greenwashing" and "green cosmetics", then questions were asked about the use of green cosmetics and finally respondents were asked to name the green cosmetic brand that they use. they are most impressive. Participants were asked to remember the brand name while answering questions later.

With this process, 515 response sheets were obtained by the research team. After eliminating respondents who had never used green cosmetics, we had 414 usable responses.

Table 11: Green cosmetic brands used

Green cosmetics brand	Frequency	Percentage %
Cocoon	193	46,62%
Soft grass	55	13,29%
Klairs	42	10,14%
Innisfree	24	5,80%
Bimore	14	3,38%
Guo	14	3,38%
Green Garden	12	2,90%
Biopharmaceuticals	10	2,42%
NauNau	9	2,17%
BioLAK	6	1,45%
Centella	6	1,45%
Moc An	5	1,21%
The Body Shop	5	1,21%
C'Choi	4	0,97%
Paula's Choice	2	0,48%
Burt's Bees	1	0,24%
Clio	1	0,24%
Rare Beauty	1	0,24%
Dokova	1	0,24%
Hatomugi	1	0,24%
Herbario	1	0,24%
L'Oréal	1	0,24%
Lacir	1	0,24%
Melixir	1	0,24%
Skinna	1	0,24%
Sukiri	1	0,24%
The Nature Book	1	0,24%
Thorakao	1	0,24%

Source: Survey results of the research team

2.3.3. Check the scale

Before analyzing the impact of greenwashing behavior on green brand loyalty and green word-of-mouth intention, the team performed a reliability test for each variable using the Cronbach's Alpha method to eliminate variables. Inappropriate observation.

All variables analyzed in the results (Appendix) show that Cronbach's Alpha coefficient is > 0.7, indicating that the scale is used more deeply in the research. In addition, the CITC variable-total correlation coefficient is greater than 0.3, showing that there is enough basis to perform further analysis, no variables need to be eliminated.

Table 12: Cronbach's Alpha of the criteria shown in the study

Symbol	Variable	Cronbach's Alpha coefficient
GW	*Greenwashing*	0.961
GC	*Green Confusion*	0.933
GI	*Green Image)*	0.885
GT	*Green Trust*	0.883
GBE	*Green Brand Equity*	0.839
GL	*Green Loyal*	0.985
GWOM	*Green Word of mouth*	0.951
EK	*Environmental Knowledge*	0.884
EC	*Environmental Concern)*	0.901

Nguồn: Nhóm nghiên cứu tổng hợp

2.3.4. Exploratory factor analysis (EFA)

After testing the reliability of the scale, the research team decided to temporarily maintain the proposed group model including 9 variables with expected criteria affecting green brand loyalty and transmission intention. customer's green mouth. Put all data into practice on SPSS software with Principal Axis Factoring data extraction method, Promax perpendicular rotation, KMO and Bartlett's test methods to measure the appropriateness and correlation between observed variables..

*** First EFA analysis for a set of 43 observed variables**

Table 13: KMO and Bartlett's test when running EFA for the first time

KMO		.929
Barlett's	Chi-Square	14061.384
	df	903
	Sig.	.000

Source: Compiled by the research team

Looking at table 13, we see that the data is qualified for analysis because the KMO coefficient here has reached 0.929 > 0.5. The Sig value (0.000 < 0.05) of Bartlett's Test of Sphericity also satisfies the requirement, in addition, the cumulative total variance value is 68.765% > 50% (Appendix) showing that the observed variables have differences. interact with each other in the factors. However, considering the factor loading criteria, the variable GBE1 is eliminated because the factor loading of the variable GBE1 needs to be eliminated. Because they all have factor loadings greater than 0.5, the remaining variables are accepted for use in future analysis..

*** Second EFA analysis for a set of 42 observed variables after removing the GBE1 variable**

Table 14: KMO and Bartlett's test when running EFA the second time

KMO		.927
Barlett's	Chi-Square	13771.926
	df	861
	Sig.	.000

Source: Compiled by the research team

The team conducted a second EFA analysis and the results were that the KMO index reached 0.927 > 0.5, which means that the data is eligible for analysis. Considering the Sig value of the Bartlett test (0.000 < 0.05), it is found that the result meets the condition; total cumulative variance = 69.192% > 50% (according to the appendix), this shows that the observed variables are correlated with each other in the factor. All variables have loading factors greater than 0.5, there are no variables that need to be eliminated. After 2 times of EFA analysis, from 43 observed variables reduced to 42 observed variables extracted into 9 main factors.

Table 15: Rotated matrix of factors

Factor	1	2	3	4	5	6	7	8	9
GC3	**.888**								
GC2	**.885**								
GC4	**.850**								
GC5	**.827**								
GC1	**.766**								
GC6	**.760**								
EC5		**.865**							
EC6		**.864**							
EC2		**.844**							
EC4		**.713**							
EC3		**.678**							
EC1		**.649**							
GT4			**.839**						
GT3			**.788**						
GT2			**.775**						
GT5			**.712**						
GT1			**.707**						
GI2				**.875**					
GI3				**.824**					
GI4				**.777**					
GI5				**.687**					
GI1				**.638**					
GL4					**.848**				
GL2					**.842**				
GL1					**.756**				
GL3					**.755**				
GW3						**.852**			
GW1						**.838**			
GW5						**.820**			
GW2						**.819**			
GW4						**.736**			
EK1							**.850**		
EK3							**.831**		
EK2							**.792**		
EK4							**.754**		
GWOM3								**.898**	
GWOM2								**.876**	
GWOM4								**.856**	

GWOM1								**.834**	
GBE4									**.773**
GBE3									**.674**
GBE2									**.656**

Source: Compiled by the research team

Based on evaluation through Cronbach's Alpha analysis and EFA exploratory factor analysis, 9 factors remain the same and have no changes; from 43 observed variables reduced to 42 variables, eliminating variable GBE1. However, the proposed research model remains the same and does not need to be revised. The research team used it in subsequent research steps.

2.3.5. Confirmatory Factor Analysis (CFA)

The authors continue to re-evaluate the scale using the CFA confirmatory factor analysis method in addition to preliminary evaluation using two methods of checking reliability and exploratory factor analysis.

Comprehensive assessment of indicators in CFA analysis

CFA results showed: Chi-square/df reached 1,597, less than 3; CFI value reached 0.975; GFI 0.903; TLI 0.972. Besides, the RMSEA value at 0.038 is smaller than 0.06 and the PCLOSE value at 1.000 is larger than 0.05. From this result, it can be concluded that the model is considered appropriate and compatible with market data.

After testing the reliability, convergent and discriminant validity of the factors, the authors tested the model's hypothesis. Continue indirect and direct testing of the models

Testing the moderating role of the variable Environmental Knowledge (EK)

a. Moderating the Relationship between Brand Greenwashing (GW) and Green Confusion (GC)

The authors have evaluated the influence of the factor Environmental Knowledge (EK) on the relationship between GW and GC. Then, it was predicted that a moderating role exists and used a moderating variable model with the following items:

Table 16: Components of the regulatory model of the EK variable in the relationship from GW to GC

Green confusion	GC	Dependent variable
Brand greenwashing behavior	GW	Independent variables
Environmental knowledge	EK	Independent variables

Source: Compiled by the research team

Table 17: Testing the moderating role of the EK variable in the relationship from GW to GC

	Impact coefficient is not standardized	**SE**	**t**	**P-value**	**LLCI**	**ULCI**
Constant	2.3479	0.3702	6.3415	0.0000	1.6201	3.0757
GW	0.1751	0.1291	1.3569	1.1756	-0.0786	0.4288
EC	-0.1852	0.1005	-1.8429	0.0661	-0.3828	0.123
Numerical analysis	0.0993	0.0341	2.9130	0.0038	0.0323	0.1663

Source: Compiled by the research team

Table 17 shows that the P-value of the product GW*EK = 0.0038 (< 0.05), therefore the product GW*EK is considered to have a significant influence on the change in the value of GC. From there, it can be concluded that EK has a regulatory role in the relationship from GW to GC.

Unstandardized impact coefficient (coeff) of GW*EK = 0.0993 (> 0.05). Therefore, when EK increases, the impact from GW on GC will increase.

We have the equation for variation of the value of EK presented as follows:

*EK = 2.3479+0.1751*GW -0.1852*EK + 0.0993*GW*EK + ei.*

b. Moderating the relationship between Brand Greenwashing Behavior (GW) and Green Brand Image (GI)

The authors have evaluated the influence of the factor Environmental Knowledge (EK) on the relationship between GW and GI. Then, it was predicted that a moderating role exists and used a moderating variable model with the following items:

Table 18: Components of the regulatory model of EC variables in the relationship from GW to GI

Green brand image	GI	Dependent variable
Brand greenwashing behavior	GW	Independent variables
Environmental knowledge	EK	Regulating variables

Source: Compiled by the research team

Table 19: Testing the moderating role of the EK variable in the relationship from GW to GI

	Impact coefficient is not standardized	**SE**	**t**	**P-value**	**LLCI**	**ULCI**
Constant	2.5113	0.3955	6.3503	0.0000	1.7339	3.2887
GW	0.0664	0.1379	0.4816	0.6304	-0.2046	0.3374
EK	0.3978	0.1073	3.7057	0.0002	0.1868	0.6088
Numerical analysis	-0.0481	0.0364	-1.3213	0.1871	-0.1197	0.0235

Source: Compiled by the research team

Table 19 shows that the P-value of the product GW*EK = 0.1871 (> 0.05), so the product GW*EK is considered to have no impact on the change in the value of GI. From there it can be concluded that EK does not have a regulatory role in the relationship from GW to GI.

2.3.6. Testing the moderating role of the variable Environmental Concern (EC)

a. Moderating the relationship between Brand Greenwashing (GW) and Green Confusion (GC)

The authors have evaluated the influence of the Environmental Concern (EC) factor on the relationship between GW and GC. Then, it was predicted that a moderating role exists and used a moderating variable model with the following items:

Table 20: Components of the regulatory model of EC variables in the relationship from GW to GC

Green confusion	GC	Dependent variable
Brand greenwashing behavior	GW	Independent variables
Environmental concerns	EC	Regulating variables

Source: Compiled by the research team

Table 21: . Testing the moderating role of the EC variable in the relationship from GW to GC

	Impact coefficient is not standardized	**SE**	**t**	**P-value**	**LLCI**	**ULCI**
Green confusion	2.5036	0.4990	5.0168	0.0000	1.5226	3.4846
Brand greenwashing behavior	0.0303	0.1835	0.1653	0.8688	-0.3304	0.3911
Environmental concerns	-0.1936	0.1173	-1.6511	0.0995	-0.4241	0.0369
Green confusion	0.1194	0.0424	2.8178	0.0051	0.0361	0.2028

Source: Compiled by the research team

Table 21 shows that the P-value of the product GW*EC = 0.0051 (< 0.05), therefore the product GW*EC is considered to have a significant influence on the change in the value of GC. From there, it can be concluded that EC has a regulatory role in the relationship from GW to GC.

Unstandardized impact coefficient (coeff) of GW*EK = 0.1194 (>0.05). Therefore, when EC increases, the impact from GW on GC will increase.

We have the equation for variation in the value of EC presented as follows:

*EC =2.5036+0.0303*GW - 0.1936*EC + 0.1194*GW*EC + ei*

b. Moderating the relationship between Brand Greenwashing Behavior (GW) and Green Brand Image (GI)

The authors have evaluated the influence of the Environmental Concern (EC) factor on the relationship between GW and GI. Then, it was predicted that a moderating role exists and used a moderating variable model with the following items:

Table 22: Components of the regulatory model of EC variables in the relationship from GW to GI

Green brand image	GI	Dependent variable
Brand greenwashing behavior	GW	Independent variables
Environmental knowledge	EC	Regulating variables

Source: Compiled by the research team

Table 23. Testing the moderating role of the EC variable in the relationship from GW to GI

	Impact coefficient is not standardized	**SE**	**t**	**P-value**	**LLCI**	**ULCI**
Constant	0.7383	0.5043	1.4640	0.1440	-0.2530	1.7297
GW	0.4597	0.1855	2.4788	0.0136	0.0951	0.8243
EC	0.7710	0.1185	6.5059	0.0000	0.5381	1.0040
Numerical analysis	-0.1350	0.0428	-3.1516	0.0017	-0.2192	-0.0508

Source: Compiled by the research team

Table 23 shows that the P-value of the product GW*EC = 0.0017 (< 0.05), therefore the product GW*EC is considered to have a significant influence on the variation in the value of GI. From there, it can be concluded that EC has a regulatory role in the relationship from GW to GI.

Unstandardized impact coefficient (coeff) of GW*EK = -0.1350 (<0.05). Therefore, when EC increases, it will reduce the impact from GW on GI.

We have the equation for variation in the value of EC presented as follows:

*EC = 0.7383+0.4597*GW +0.7710*EC -0.1350GW*EC + ei.*

2.3.7. Testing research hypotheses

Table 24: Summary of hypothesis testing results

Hypothesis	Content	Impact coefficient	(β) Sig coefficient (p - value)	Test results
H1	Brand greenwashing behavior has a positive effect on green confusion	0.562	0.000	Accept
H2	Brand greenwashing has a negative impact on green brand equity	-0.058	0.147	Rejected
H3	The act of greenwashing a brand has a negative impact on the green brand image	-0.220	0.000	Accept

H4	Green brand image has a positive influence on green brand equity	0.455	0.000	Accept
H5	Green brand image has a positive influence on green trust	0.570	0.000	Accept
H6	Green confusion has a positive effect on green brand image	0.188	0.009	Accept
H7	Green confusion has a negative effect on green brand equity	-0.075	0.152	Rejected
H8	Green trust has a positive influence on green brand equity.	0.164	0,006	Accept
H9	Green trust has a positive influence on green brand loyalty	0.077	0.235	Rejected
H10	Green trust has a positive influence on green word-of-mouth intention	0.525	0.000	Accept
H11	Green brand equity has a positive influence on green brand loyalty	0.706	0.000	Accept
H12	Green brand equity has a positive influence on green word-of-mouth intention	0.498	0.000	Accept
H13	Green brand loyalty has a positive influence on green word-of-mouth intention	0.447	0.000	Accept
H14	Environmental knowledge moderates the relationship between brand greenwashing and green confusion	0.0993	0.0038	Accept
H15	Environmental knowledge moderates the relationship between brand greenwashing behavior and green brand image	-0.0481	0.1871	Rejected
H16	Environmental concern moderates the relationship between brand greenwashing and green confusion	0.1194	0.0051	Accept
H17	Environmental concern moderates the relationship between brand greenwashing behavior and green brand image	-0.1350	0.0017	Accept

CONCLUDE

The authors proposed a model including 9 factors with 17 research hypotheses. All factors are evaluated and then produce results compatible with collected market data. The evaluation results of the analysis criteria of Cronbach's Alpha - reliability coefficient and EFA - discovery factor are all met in terms of reliability and validity. Specifically, the results are shown as follows:

On the research side, the measurement results obtained by the team contribute to building a foundation that future projects in the same field can rely on. After being supplemented and adjusted to suit the circumstances and practical situation, the scales established and tested in the world and in the country are suitable for the research platform in Vietnam. This can be considered a new direction in research and deserves attention during the period when the national economy moves towards sustainable development.

From a practical perspective, the criteria representing the variables proposed by the research team in the model will be useful for businesses in measuring the influence of brand greenwashing behavior on green word-of-mouth intention. in Viet Nam. Thanks to that, it is possible to form the right recommendations to limit brand greenwashing behavior. Especially in today's economy, corporate benefits must go hand in hand with environmental responsibility. Therefore, building a long-term sustainable development strategy is something that businesses should be careful and pay attention to..

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