

# Uncovering green brand equity and word-of-mouth intentions in Vietnam

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## Abstract

The urgent situation of global climate change and the increasing concern for environmental issues across nations are putting pressure on all industries towards green transformation. In this context, green brand equity (GBE) is becoming a trend that attracts the attention of researchers, managers, and policymakers, especially in developing countries like Vietnam. This study aims to investigate the constituents of GBE and evaluate their respective degrees of impact on consumers' word-of-mouth intention (WOMI) in Vietnam. The dataset encompasses 528 consumers of green electronic products. The research employs the Partial Least Squares Structural Equation Modeling (PLS-SEM) technique for data analysis. The results of the study unveil the ascending levels of positive influence that GBE components exert on WOMI, ranking as follows: Emotional value, functional value, green trust, and green satisfaction. Within the internal framework of GBE, the ascending levels of positive impact unfold as follows: Green perceived quality influencing emotional value, green brand image influencing green satisfaction, green perceived quality influencing emotional value, green brand image influencing green trust, and green satisfaction influencing green trust. This research contributes significantly, both from a scientific and practical perspective, by pioneering a multi-dimensional GBE model that incorporates various factors and examines their effects on consumers' WOMI within the unique context of an emerging market.

**Keywords:** Green Brand, Green Brand Equity, Green Brand Management, Word-of-Mouth Intentions, Green Consumption, Vietnam

## Introduction

Nowadays, the urgent state of global environmental issues has ushered in the era of "green strategy", propelling sustainability to the forefront of corporate agendas (Berrone et al., 2017). This phenomenon is not limited to developed nations, consumers in emerging economies are increasingly cognizant and demanding higher levels of environmental responsibility from businesses (Khandelwal et al., 2019). Consequently, enterprises that do not adhere to the legal dimensions of environmental responsibility in their operations risk losing competitive advantages, and in severe cases, facing social boycott (Nguyen et al., 2023). In this context, companies must actively recalibrate their brand management strategies toward the concentrated construction and development of green brand equity (GBE) (Khandelwal et al., 2019).

Research on GBE in developing countries such as Vietnam holds crucial and urgent significance (Hue & Oanh, 2023). Vietnam is an emerging economy with a rapidly developing green market (Willer & Lernoud, 2018). However, recently Vietnam has been grappling with various environmental issues and is one of the countries most vulnerable to climate change (Nguyen et al., 2019). The electronics industry in Vietnam is growing rapidly, with its retail sales volume increasing significantly each year (Yuen, 2020). Nevertheless, electronic products are recognized for having the highest greenhouse gas emissions among household appliances, exerting considerable negative environmental impacts (Jkaybay, 2016). Therefore, there is a need for research into the components of GBE and their effects on consumer behavior in emerging markets like Vietnam.

Numerous studies have highlighted the antecedents of GBE. For instance, Sharma (2023) explored green brand trust and green brand image. Nguyen et al. (2023) examined green brand associations, green brand satisfaction, and green brand trust. Ha et al. (2022) addressed green brand image, green satisfaction, and green trust. Ishaq (2021) proposed a GBE model comprising social influence, sustainability, perceived quality, brand awareness, brand association, and brand leadership. Some studies have demonstrated the potential positive impact of GBE on consumers' intentions and behaviors. For example, GBE has been found to influence purchase intention (Sharma, 2023; Dinh et al., 2023), positive word-of-mouth behavior (Bekk et al., 2016), brand attitudes (Khandelwal et al., 2019; Bekk et al., 2016), and brand loyalty (Nguyen-Viet, 2023; Nguyen-Viet & Nguyen Anh, 2022). To successfully cultivate brand equity, managers must comprehend not only its construction and structure but also its effects on consumer intentions and behaviors in practical contexts (Bekk et al., 2016). To reach consumers and enhance their brand image, brands are depending more and more on word-of-mouth and peer-to-peer communication (Lee & Samanta, 2023).

However, the literature indicates the existence of several gaps. Firstly, it appears that no study has investigated the influence of green perceived value on word-of-mouth intentions (WOMI), further neglecting the separation of functional value and emotional value. Secondly, there seems to be a scarcity of studies that integrate multiple measurement scales to form a comprehensive multidimensional GBE framework and explore their relationships with WOMI. This study addresses these research gaps by constructing a multidimensional GBE analytical framework, which amalgamates numerous factors seemingly disparate across various sources. Notably, functional value and emotional value are distinctively isolated within this framework to evaluate their

influences on WOMI. This study is based on the Theory of Planned Behavior (TPB) by Ajzen (1991). The theory suggests that behavior can be predicted or explained by intentions to perform that behavior, through attitude toward the behavior, subjective norms, and perceived behavioral control. There is evidence to suggest that customers with positive attitudes toward environmental protection often support green brands (Butt et al., 2016; Ottman et al., 2006). Other studies have also shown that individuals' perceptions of the influence of opinions from significant others affect word-of-mouth behavior and willingness to pay premium prices, helping businesses attract new customers (Kim & Han, 2010, Ha et al., 2022). Thus, based on the TPB, it can be assumed that word-of-mouth behavior regarding green brands is shaped by perceptions and behavioral intentions towards those brands.

This article aims to explore the components of GBE and their level of influence on the WOMI of consumers towards green electronic products in Vietnam. The subsequent sections of the article encompass the following: Section Two delves into the theoretical background, section Three presents the methodology, section Four delineates the research findings, section Five offers discussions and implications, and the final section provides the conclusion and limitations.

## Theoretical background

### Green brand equity and its components

Brand equity encompasses brand names, symbols, or value additions that aid consumers in distinguishing between brands (Aaker, 1991). This consumer-based approach to brand equity subsequently laid the foundation for numerous scholars to build upon, leading to the conceptualization of GBE and its constituent elements.

GBE is defined as the impressions, perceptions, and understanding of a brand in the memory of customers, pertaining about concerns for sustainability and environmental friendliness (Chen, 2010). GBE is also regarded as an amalgamation of perceptions, influences, and behaviors that consumers exhibit towards a brand's environmental commitments and concerns, which elevate the brand's value (Li et al., 2019).

GBE comprises a set of interrelated components, and examining the relationships between these factors is necessary for brand value development (Buil et al., 2013). Numerous studies have proposed various structures for GBE. Chen (2010) introduces a GBE framework encompassing green brand image, satisfaction, and trust. Yoo et al. (2000) and Buil et al. (2013) measure GBE using aspects like brand awareness, brand association, perceived quality, and brand loyalty. Kang & Hur (2012) posit that GBE comprises four components: green satisfaction, green trust, green influence, and green loyalty. Ng et al. (2014) address green perceived value and green brand image. Akturan (2018) suggests that GBE is linked to green brand associations and brand credibility. Ishaq (2021) proposes GBE components such as social influence, leadership ability, perceived quality, sustainability, and brand awareness. Building upon these prior studies, this article explores key GBE structures, including green brand image, green satisfaction, green trust, green perceived quality, and green perceived value.

Green brand image is regarded as “a set of perceptions of a brand in a consumer’s mind

that is linked to both environmental commitments and environmental concerns” (Chen, 2010). It reflects consumers' associations with a brand's ability to fulfil environmental-friendly requisites (Khandelwal et al., 2019). A robust green brand image can attract new customers, recapture lost customers, and contribute to sustainability (Sharma, 2023).

Green satisfaction reflects the state of contentment experienced by consumers when a brand meets environmental needs and desires (Chang & Fong, 2010; Chen, 2010). It is described as a pleasurable sensation stemming from the product's ability to meet consumers' expectations in an environmentally safe and sustainable manner (Martinez, 2015). Satisfaction occurs when a product delivers the anticipated features desired by customers. Conversely, dissatisfaction arises when a product falls short of their expectations (Ha et al., 2022).

Green trust implies the willingness to rely on a brand based on trust or expectations stemming from its ability to carry out environmentally friendly activities (Chen, 2010). The readiness to depend on a green product that customers trust relies on the environmental performance of the product itself (Martinez, 2015).

Green perceived quality pertains to customers' assessment of a brand's or product's excellence or superiority in terms of environmental friendliness (Chang & Chen, 2014). It enhances the product's value for consumers, providing a reason to purchase and distinguishing the brand from competitors (Chang & Chen, 2014; Nguyen-Viet, 2022). Green perceived quality serves as the bedrock for establishing and sustaining a psychological bond in the process of building and maintaining brand trust (Atulkar, 2020; Madadi et al., 2021).

Green perceived value involves customers' overall evaluation of a product's ability to meet their eco-friendly needs (Chen & Chang, 2012). It holds significant importance, potentially instigating customers' intentions to reuse and generating positive word-of-mouth effects (Chen, 2016). Consumers perceive value as a trade-off between the costs incurred and the benefits received (Kim & Kim, 2005). Thus, creating greater benefits for customers enhances their relationship with the green brand; conversely, customers' perceptions of the green brand contribute to the formation and development of GBE (Li et al., 2019).

According to Sweeney & Soutar (2001), perceived value may include emotional and functional value. Emotional value involves the emotional states that a product or brand evokes in consumers, such as happiness, relaxation, comfort, and pride. Functional value is related to a product's ability to perform functions, features, or performance that customers expect from it. Like this, Bhattacharya et al. (2009) contend that functional and psychosocial benefits can be distinguished between a brand's advantages for stakeholders. According to Winit & Kantabutra (2017), functional benefits are observable advantages that are closely connected to goods and services. They consist of financial rewards, welfare, and facilities, among other things. Psychosocial benefits are intangible or intrinsic, pertaining to an individual's mental or psychological health, social standing, and well-being. A brand should provide both functional and emotional benefits because each type of benefit leads to different levels of the relationship between the brand and stakeholders, influencing the perceived reputation and brand equity of the business as perceived by customers (Eberle et al., 2013; Wang, 2013;

Winit & Kantabutra, 2017).

### **Word-of-mouth intention**

Word of mouth can be regarded as informal communication among consumers about a brand's products (Torres et al., 2012). Puriwati & Tripopsakul (2022) contend that word of mouth is a form of non-official information transmission between non-commercial communicators and recipients regarding goods and services. Consequently, within the scope of this study, word-of-mouth intention can be understood as an individual consumer's intention to informally convey information to others about a green brand. It is influenced by the communicator's attitude towards that brand (Bekk et al., 2016).

Word of mouth typically rapidly convinces recipients due to the credibility of communicators, who are individuals they can trust, such as experts, colleagues, neighbors, friends, and relatives (Puriwati & Tripopsakul, 2022). It yields substantial benefits as it can propagate marketing virally through numerous individuals with enthusiasm and voluntariness (Aditi et al., 2023). Compared to advertising, it is often assessed by consumers as more easily acceptable and reliable (Godes & Mayzlin, 2004). Consequently, word of mouth stands as one of the most potent and intriguing consumer behaviors (Kiecker & Cowles, 2002), influencing a brand's potential to increase profitability (Babin et al., 2005).

### **Hypothesis development**

Brand image contributes to the formation of customer preferences, thus influencing their satisfaction (Ha, 2021). Experimental studies have demonstrated that brand image affects consumer satisfaction in various industries (Chen, 2010; Bekk et al., 2016; Ha et al., 2022; Shanti & Joshi, 2022; Nguyen-Viet, 2023).

Green brand image has been demonstrated to enhance trust and influence consumer purchasing decisions (Shafique & Khan, 2020). This influence stems from its capacity to mitigate consumer risk and simultaneously increase purchase intentions during the decision-making process (Chen, 2010). Previous studies have found a positive relationship between green brand image and green trust (Chen, 2010; Ray & Sharma, 2020; Nguyen-Viet, 2022; Sharma & Choubey, 2022).

Satisfaction with a brand often leads to a positive attitude toward the brand, consequently fostering trust (Jamshidi & Rousta, 2021). According to Kang & Hur (2012), overall satisfaction, as a comprehensive perception of the consumer's product experience with a brand, results in the development of trust in that brand. In the context of green marketing, green satisfaction has been empirically demonstrated to have a positive impact on green trust (Ha, 2020; Kang & Hur, 2012; Wang et al., 2018).

The three components of GBE, namely green brand image, green satisfaction, and green trust, have been established by Bekk et al. (2016) to impact consumers' attitudes and word-of-mouth behavior through an experimental study in Germany. However, apart from Bekk et al. (2016), it appears that there have been no studies thus far providing evidence for the relationships among GBE components and WOMI.

Based on the aforementioned analyses, the following hypotheses are proposed:

- H1** Green brand image positively influences green satisfaction.
- H2** Green brand image positively influences green trust.
- H3** Green brand image positively influences word-of-mouth intention.
- H4** Green satisfaction positively influences green trust.
- H5** Green satisfaction positively influences word-of-mouth intention.
- H6** Green trust positively influences word-of-mouth intention.

Green perceived quality has been empirically demonstrated to influence customer perceived value, subsequently potentially elevating purchase intentions (Ng et al., 2014). Several studies have revealed a connection between antecedents of green brand experiential quality and customer value, which not only leads to purchase intentions but also augments brand loyalty (González-Mansilla et al., 2019; Hameed et al., 2019). Green perceived quality provides consumers with a credible rationale to choose a specific brand's product over competitive alternatives (Aaker, 1991). Consequently, perceived quality can serve as a precursor to consumer behavioral intentions through its mediating role in perceived value (Wang et al., 2020).

Green perceived value has been demonstrated by several researchers to contribute to enhancing GBE or stimulating consumer product purchasing behavior (Chen & Chang, 2012; Ng et al., 2014; Vazifehdoust et al., 2013). Vazifehdoust et al. (2013) reveal that consumers' intention to purchase products from a green brand is formed by their positive attitude and green perceived value towards that brand.

Some studies have shown a positive relationship between perceived values and brand-supportive behaviors. According to Winit & Kantabutra (2017), perceived benefits can impact different levels of quality in the relationship between stakeholders and businesses, leading to enhanced reputation and brand value for the business. Vargo et al. (2007) also argue that psychological or emotional value not only increases consumer satisfaction but also helps build better relationships between them and the brand. Puntasen et al. (2012) find that the emotional benefits provided by a brand to stakeholders play a crucial role in developing strong relationships between it and customers and other stakeholders. Winit & Kantabutra (2017) indicate that utilitarian benefits, as well as hedonic and eudaimonic happiness, affect brand equity through the mediating roles of satisfaction, trust, commitment, and identification. Winit & Kantabutra (2022) demonstrate that psychological benefits enhance brand equity via stakeholder trust more than functional benefits.

However, to date, there seems to be no study that examines the direct relationship between green perceived value and WOMI. Furthermore, the number of studies that distinguish between functional value and emotional value when assessing their impact on GBE in general remains quite limited. Besides, the relationships of these values or benefits with consumers' intentions or behaviors in practice (such as word of mouth or purchasing, repurchasing behavior) are yet to be empirically validated. Therefore, this study pioneers the exploration of the relationships between functional value, emotional

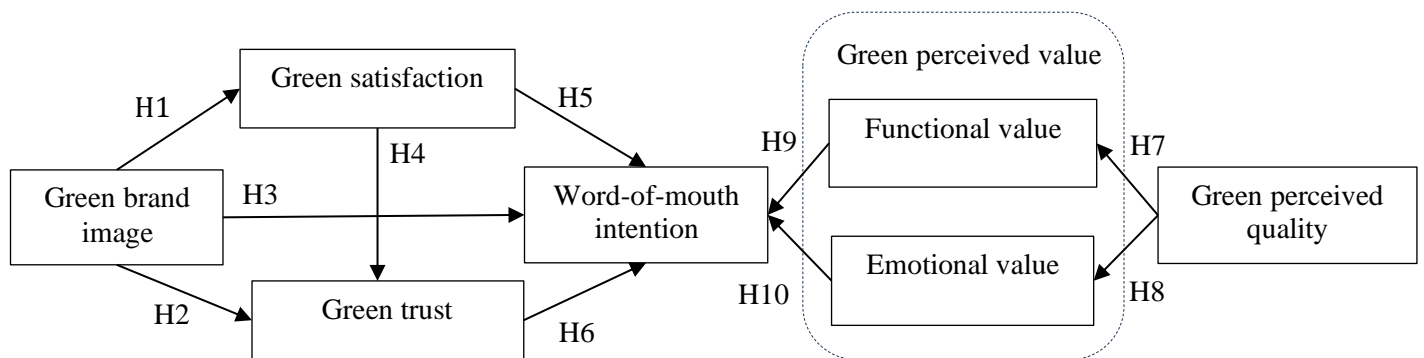
value, and WOMI. The following hypotheses are proposed:

- H7** Green perceived quality positively influences functional value.
- H8** Green perceived quality positively influences emotional value.
- H9** Functional value positively influences word-of-mouth intention.
- H10** Emotional value positively influences word-of-mouth intention.

In summary, there is still a significant lack of research on the factors of GBE influencing consumer reactions, specifically WOMI. Therefore, we aim to provide empirical evidence regarding the impact of various components of GBE on WOMI. Particularly, the relationship between green perceived value and WOMI is examined for the first time.

Based on the aforementioned arguments, we propose the research model as follows:

**Figure 1: Analytical framework**



## Methodology

### Research design

The questionnaire was introduced by explicating the concept of GBE. In addition to personal information questions, the questionnaire encompassed seven concepts with a total of 26 items. The items pertaining to green brand image were tailored from the works of Cretu & Brodie (2007) and Dolatabadi et al. (2016). The items associated with green satisfaction were drawn from the research of Chen (2013) and Wang et al. (2018), whereas those concerning green trust were modified from Butt et al. (2017) and Chen (2010). The author developed the items for green perceived quality and WOMI, as well as conceptualized the notions of functional value and emotional value. Details of the questionnaire are presented in the Appendix.

The convenient sampling method was applied to maximize the reach of users of green electronic products. The survey targeted consumers of green electronic products in Vietnam. The inclusion criterion for selecting participants is individuals who have previously used green electronic products in Vietnam, encompassing all ages,



occupations, education levels, incomes, genders, and locations of residence and work. The exclusion criterion is individuals who have never used green electronic products. A combination of offline techniques and the Google Form platform were used to collect data for this study in Vietnam between January and March of 2023. Prior to the formal survey, a preliminary questionnaire was reviewed and refined by two experts and subsequently pilot-tested by 20 participants.

The total number of questionnaires distributed was 602, and the number of observations obtained was 542, accounting for approximately 90%. After excluding invalid responses due to incomplete information and identical answers (such as selecting the same value of 5 for all answers), we obtained 528 final observations for data processing. This meets the minimum sample size requirement for PLS-SEM, which is 100 or more (Henseler et al., 2009). Regarding the participants' gender, there were 170 males (32.2%), 355 females (67.2%), and 3 individuals (0.6%) with other genders. In terms of age, 417 individuals (79%) were under 30 years old, 78 individuals (14.8%) were between 31 and 40 years old, 27 individuals (5.1%) were between 41 and 50 years old, and 6 individuals (1.1%) were over 50 years old. As for income, a total of 350 individuals (66.3%) reported an income below 300 USD, 108 individuals (20.5%) had an income ranging from 300 to 640 USD, and 70 individuals (13.3%) had an income above 640 USD.

### **Data analysis techniques**

This study employs the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach. PLS-SEM is a flexible method that can be applied across various fields of study such as management, economics, and social sciences (Rigdon, 2013). PLS-SEM can estimate complex models containing multiple latent structures, indicators, and constructs without imposing assumptions about data distribution (Hair et al., 2021). PLS-SEM is particularly suitable for exploratory models (Hair et al., 2010). This study is exploratory in nature, without reliance on any foundational theory, involving a complex analytical framework with numerous independent variables, certain constructs, and items evaluated experimentally. Therefore, the utilization of PLS-SEM is appropriate for addressing the research objectives.

The concepts are encoded as follows: IMA = green brand image, TRU = green trust, SAT = green satisfaction, QUAL = green perceived quality, FVAL = functional value, EVAL = emotional value, WOMI = word-of-mouth intention.

The data analysis is conducted in two steps, as proposed by Hair et al. (2019). The first step involves evaluating the structural model, followed by assessing the measurement model. The bootstrap technique is employed to evaluate the statistical significance of the relationships posited in the model. The software SmartPLS version 3.3.3 is utilized for data analysis.

## **Results**

### **Evaluation of the measurement model**

Firstly, the quality of the observed variables was assessed using the factor loadings.



According to Hulland (1999), variables with factor loadings lower than 0.7 are considered insignificant in the model. After running the initial model, three observed variables, namely IMA3, QUAL5, and SAT1, were eliminated due to their factor loadings being below 0.7. Table 1 presents the remaining observed variables, all of which meet the requirements.

Subsequently, the scales were evaluated for reliability and convergence. Table 1 displays the Cronbach's Alpha for the scales all exceeding 0.7, ensuring good scale reliability (Fornell & Larcker, 1981). The Composite Reliability (CR) for the scales all surpass 0.7, and the Average Variance Extracted (AVE) values all exceed 0.5, thereby confirming adequate convergent validity for the scales (Fornell & Larcker, 1981).

**Table 1: Convergent validity and reliability.**

Constructs	Items	Loadings	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
EVAL	E_VAL1	0.893	0.876	0.876	0.924	0.801
	E_VAL2	0.897				
	E_VAL3	0.896				
FVAL	F_VAL1	0.882	0.874	0.881	0.922	0.799
	F_VAL2	0.897				
	F_VAL3	0.902				
IMA	IMA1	0.798	0.824	0.825	0.883	0.655
	IMA2	0.807				
	IMA4	0.821				
	IMA5	0.809				
QUAL	QUAL1	0.834	0.842	0.843	0.894	0.678
	QUAL2	0.812				
	QUAL3	0.827				
	QUAL4	0.821				
SAT	SAT2	0.863	0.827	0.829	0.897	0.743
	SAT3	0.854				
	SAT4	0.869				
TRU	TRU1	0.903	0.881	0.883	0.927	0.808
	TRU2	0.906				
	TRU3	0.888				
WOMI	WOMI1	0.892	0.882	0.882	0.927	0.810
	WOMI2	0.902				
	WOMI3	0.906				

The discriminant validity of the scales was assessed using the Heterotrait-Monotrait Ratio (HTMT). Table 2 reveals that all HTMT values are below 0.85, thus ensuring discriminant validity (Henseler et al., 2015).

**Table 2: Heterotrait-Monotrait Ratio.**

	Eval	FVAL	IMA	QUAL	SAT	TRU	WOMI
Eval							
FVAL	0.846						
IMA	0.278	0.249					
QUAL	0.786	0.737	0.296				
SAT	0.322	0.252	0.798	0.305			
TRU	0.274	0.271	0.812	0.311	0.807		
WOMI	0.763	0.744	0.547	0.622	0.613	0.621	

**Evaluation of the structural model**

Firstly, a multicollinearity assessment was conducted. According to Hair et al. (2010), if the variance inflation factor (VIF) is less than 5, multicollinearity is not a concern. Table 3 illustrates all variables in the model meet this requirement.

**Table 3: Inner VIF values**

	Eval	FVAL	IMA	QUAL	SAT	TRU	WOMI
Eval							2.356
FVAL							2.312
IMA					1.000	1.771	2.192
QUAL	1.000	1.000					
SAT						1.771	2.220
TRU							2.388
WOMI							

Next, to test the hypotheses, the study employed the bootstrapping technique with 1,000 samples as suggested by Hair et al. (2010). Table 4 presents the results of the hypotheses and the magnitudes of the effects of independent variables on dependent variables.

**Table 4: The results of hypothesis testing**

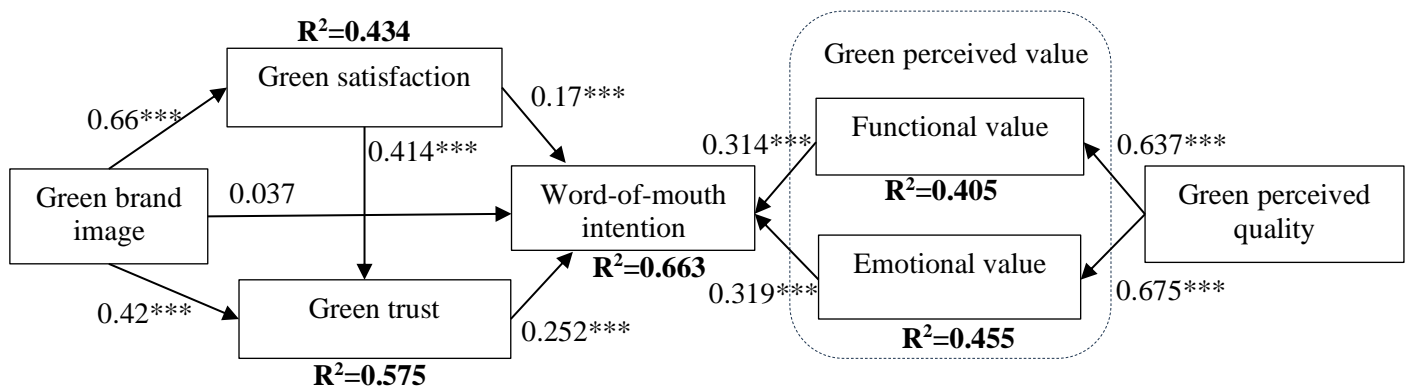
Hypotheses		Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values	Results
H1	IMA -> SAT	0,660	0,660	0,037	17,851	***	Supported
H2	IMA -> TRU	0,420	0,418	0,052	8,141	***	Supported
H3	IMA -> WOMI	0,037	0,035	0,051	0,715	0,474	Not supported
H4	SAT -> TRU	0,414	0,415	0,051	8,099	***	Supported
H5	SAT -> WOMI	0,170	0,170	0,045	3,757	***	Supported
H6	TRU -> WOMI	0,252	0,253	0,050	5,030	***	Supported
H7	QUAL -> FVAL	0,637	0,638	0,035	18,427	***	Supported
H8	QUAL -> EVAL	0,675	0,676	0,035	19,526	***	Supported
H9	FVAL -> WOMI	0,314	0,315	0,037	8,409	***	Supported
H10	EVAL -> WOMI	0,319	0,320	0,037	8,572	***	Supported

Note: \*\*\*Significant at 1% level

The P value results indicate that except for hypothesis H3, which is not accepted due to a p-value greater than 0.05, all the remaining hypotheses are accepted as their p-values are less than 0.05.

The original sample values indicate the positive impact strengths of the dependent variables on WOMI from the strongest to the weakest as follows: Emotional value, functional value, green trust, green satisfaction (corresponding to hypotheses H10, H9, H6, H5). The order of positive impact strengths of the dependent variables on other independent variables within the GBE framework, from the strongest to the weakest, is as follows: Green perceived quality influences emotional value, green brand image influences green satisfaction, green perceived quality influences emotional value, green brand image influences green trust, and green satisfaction influences green trust (corresponding to hypotheses H8, H1, H7, H2, H4). These findings are synthesized in Figure 2.

**Figure 2: The results of the model evaluation**



\*\*\*Significant at 1% level.

The R<sup>2</sup> is used to analyze the explanatory power of independent variables on dependent variables (Hair et al., 2019). The R<sup>2</sup> values in Figure 2 indicate that the independent variable QUAL explains 45.5% of the variation in EVAL, QUAL explains 40.5% of the variation in FVAL, IMA explains 43.4% of the variation in SAT, the independent variables collectively explain 57.5% of the variation in TRU, and the independent variables collectively explain 66.3% of the variation in WOMI.

This study employed the f<sup>2</sup> index to assess the effect size of each independent variable on the dependent variable. The results are presented in Table 5.

**Table 5: Effect size (f<sup>2</sup>)**

	EVAL	FVAL	IMA	QUAL	SAT	TRU	WOMI
EVAL							0.129
FVAL							0.128
IMA					0.771	0.235	0.002
QUAL	0.839	0.684					
SAT						0.229	0.039
TRU							0.080
WOMI							

According to Cohen (1988), an  $f^2$  value below 0.02 signifies a notably slight impact, whereas a value of  $\geq 0.02$  indicates a minor effect. Moreover, an  $f^2$  value of  $\geq 0.15$  denotes a moderate influence, and when it reaches  $\geq 0.35$ , it represents a substantial impact. Table 5 shows all dependent variables have a small effect on WOMI, QUAL has a strong effect on EVAL and FVAL, IMA has a strong effect on SAT and a medium effect on TRU, and SAT has a medium effect on TRU.

To assess the predictive capability of the model, this study employs the  $Q^2$  (out-of-sample predictive power). The results are presented in Table 6.

**Table 6: Out-of-sample predictive power**

	SSO	SSE	$Q^2 (=1-SSE/SSO)$
EVAL	1584.000	1009.942	0.362
FVAL	1584.000	1080.189	0.318
IMA	2112.000	2112.000	
QUAL	2112.000	2112.000	
SAT	1584.000	1078.406	0.319
TRU	1584.000	851.602	0.462
WOMI	1584.000	741.925	0.532

As outlined by Hair et al. (2019),  $Q^2$  values within the range of 0 - 0.25 suggest limited predictive capability, while values ranging from 0.25 - 0.5 indicate a moderate level of predictive ability, values surpassing 0.5 point to a strong predictive capacity. The data presented in Table 6 corroborates that all  $Q^2$  values affirm the model's moderate predictive prowess. Tenenhaus et al. (2005) propose that  $Q^2$  is considered an index to assess the overall quality of the model components, and if all component models have  $Q^2 > 0$ , the overall structural model of the study also achieves satisfactory overall quality.

## Discussion

This study has yielded two primary findings: the relationship between GBE's components and WOMI, and the interrelationships among the factors within the GBE structure.

Firstly, the research results demonstrate that key components of GBE, including green satisfaction, green trust, and green perceived value, influence consumers' intention to engage in word-of-mouth communication about the green brand. This finding is partially supported by the study conducted by Bekk et al. (2016), which indicated that green satisfaction and green trust contribute to enhancing overall GBE, thereby fostering word-of-mouth behavior. However, it is noteworthy that Bekk et al. (2016) and previous studies have not explored the relationship between green perceived value and WOMI. Additionally, it should be highlighted that the study of Bekk et al. (2016) was conducted in a developed context, specifically in Germany, which possesses a more advanced green market compared to emerging economies.

This study could potentially be the first work to distinguish emotional and functional value when investigating their relationships with WOMI. This article might provide

deeper insights into brand development strategies, reinforcing certain previously established findings. For instance, Winit & Kantabutra (2022) demonstrate that psychological benefits might exert a more positive influence on GBE than functional benefits. Bhattacharya and colleagues (2009) argue that the quality of the relationship between a brand and stakeholders will be enhanced when stakeholders achieve more happiness (psychological benefits) rather than functional or utilitarian benefits. However, this study addresses a gap by examining the relationships between these value types and consumers' intention to engage in word-of-mouth communication. It has revealed that emotional value is the most critical factor influencing consumers' WOMI towards green brands in Vietnam. This phenomenon could be attributed to the increasing environmental concerns among consumers in this market, leading them to seek brands that align with their values. When a strong emotional bond is established between consumers and a brand, loyalty and recommendations are likely to ensue. Furthermore, this research also confirms that functional value is another significant determinant of consumers' WOMI, albeit with a lower impact compared to emotional value. This can also be understood within the context of Vietnam, where the robust global trend towards sustainability prompts consumers to seek brands offering products or services that meet their needs and provide good value for their money. When consumers encounter a green brand that fulfils their needs and delivers satisfaction, they are more inclined to recommend it to others.

Green trust and green satisfaction have also been demonstrated as important factors influencing consumers' WOMI towards green brands in Vietnam. This finding finds support in the research conducted by Bekk et al. (2016) in Germany, although it is likely being established for the first time within the context of an emerging market. This observation can be comprehended since in practice Vietnamese consumers' awareness of green consumption has been heightened. Consumers in this market seek brands that they can trust to be environmentally friendly and committed to sustainability, and brands that provide them with satisfactory experiences. When consumers hold satisfaction and trust in a brand, their loyalty towards it is augmented, leading to a higher likelihood of recommending it to others.

Contrary to the findings of Bekk et al. (2016), the positive relationship between green brand image and WOMI was not found in this study. Moreover, it appears that there is a dearth of existing literature examining this relationship. The outcomes of this study suggest that the relationships between GBE components and consumers' intentions or behaviors can exhibit similarities or differences across diverse markets. Therefore, conducting separate investigations into this topic within various national contexts is warranted, and this study has pioneered the examination of the relationships between multiple GBE factors and consumers' WOMI in an emerging market.

Secondly, this study contributes further to the literature on GBE components and their interrelations. The paper has delineated the relationships and the magnitude of their impacts, in descending order, as follows: green perceived quality influencing emotional value, green brand image influencing green satisfaction, green perceived quality influencing emotional value, green brand image influencing green trust, and green satisfaction influencing green trust. These findings find support in prior studies such as Chen (2010), Kang & Hur (2012), Buil et al. (2013), Li et al. (2019), Khandelwal et al. (2019), and Ishaq (2021). Investigating empirically and solidifying these insights within the rapidly evolving context of a burgeoning green market, such as Vietnam, can yield

significant practical implications.

In summary, this study provides significant contributions to scientific aspects. It could be the first study to propose a comprehensive and multidimensional GBE model and to examine the influence of its components on WOMI. The relationship between green perceived value, including functional and emotional value, and WOMI has likely been empirically validated for the first time through this experimental research.

### **Practical Implications for Asian Business**

This study is conducted within the context of a developing country in Asia, where there is an urgent call for research on environmentally and socially responsible business behavior (Romero-Colmenares, & Reyes-Rodríguez, 2022). Interestingly, there seems to be a lack of research on this issue within the context of developing countries. Therefore, this work may assist relevant businesses in formulating scientifically sound solutions for the GBE development strategies of organizations and industries. It also enhances the understanding of entrepreneurs regarding the significance of components within GBE and consumers' WOMI, enabling them to devise well-informed resource allocation strategies to compete effectively within the current widespread trend of environmental sustainability.

Specifically, for Asian business managers, the findings of this study offer crucial insights to optimize marketing strategies and brand management. Understanding the significance of GBE factors such as emotional value, functional value, green trust, and green satisfaction can assist businesses in identifying and creating products and services that consumers are seeking. This involves setting prioritized investment policies and rational resource allocation. Additionally, managers can apply information about the interactions among the components within GBE to construct comprehensive brand strategies. A deep understanding of how green perceived quality relates to emotional value, functional value, or how green brand image affects green satisfaction and green trust can help them efficiently adjust these factors to generate customer attraction and trust.

Asian businesses can implement programs to enhance consumer awareness of the values inherent in green products and services through marketing and education. Importantly, companies should focus on crafting marketing campaigns that target consumers' emotions towards green products and services. This can be achieved by utilizing imagery and storytelling to inspire consumers, emphasizing the psychological benefits of the products, rather than solely focusing on functional benefits or product quality. Furthermore, businesses should pay attention to enhancing the quality of green products and services, building consumer trust and satisfaction in the brand. This approach involves continuous improvement in the quality of green offerings, thus fostering consumer confidence and satisfaction in the brand.

In summary, based on this study, Asian business managers can recognize that focusing on GBE factors and their interactions can assist them in devising more effective branding and business strategies, better reflecting the changing needs and desires of environmentally conscious consumers in the market. Moreover, enhancing the components of GBE also amplifies their word-of-mouth intentions, leading to the green

brand achieving a progressively more sustainable value.

In conclusion, this study identified the constituent factors of GBE and their impact levels on WOMI among consumers of green electronic products in Vietnam. Despite its significant theoretical and practical contributions, the study still has some limitations. Firstly, a gap in the literature remains unaddressed, which involves investigating the differences between consumer groups concerning the relationship between GBE and WOMI. Future research might employ multigroup analysis techniques to address this gap. Secondly, although the convenience sampling method facilitates maximum accessibility to customers who have used green electronic products, it has the drawback of potentially reducing the sample's representativeness for the population. Subsequent studies should consider stratified sampling to enhance sample representativeness. Thirdly, the PLS-SEM method could be complemented with a qualitative approach to provide deeper insights into the exploratory nature of this topic. Fourthly, this study was conducted within the context of a developing country, namely Vietnam, focusing on green electronic products. Consequently, caution is needed when extrapolating the findings of this research for application in other contexts or industries.

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## Appendix

### List of constructs and items

Constructs and items	Source
<b>Green brand image</b>	Adapted from Cretu and Brodey (2007),
Environmental reputation	Dolatabadi and
Fit with my environmental needs	Tabaeian (2016)
Environmental promises	
Eco-friendly design	

Made of recyclable materials

**Green satisfaction**

Satisfaction with the brand's environmental commitments

Satisfaction with the brand's concern for the environment

Satisfaction with environmental efficiency affected by the brand

Satisfaction with the brand's environmental friendliness as a whole

**Green trust**

The commitment to environmental responsibility of this brand is credible

The environmental argument of this brand is reliable

The environmental performance of this brand is reliable

**Green perceived quality**

Products of this brand are very durable

Products of this brand are very beautiful

The functions of the product work well with high performance

The product I choose from this brand is of good quality

Every product of this brand is likely of good quality

**Green perceived value (functional value)**

Green functions satisfy my needs.

The benefits of the product have helped me protect the environment.

The product's features meet my expectations for environmental friendliness.

**Green perceived value (emotional value)**

Makes me less worried about the environmental harm to future generations

Makes me feel proud to be a smart consumer.

Makes me happy to be a humane consumer who cares about the environment.

**Green brand equity**

Buy this brand

Prefer to buy this brand because of its environmental performance

Buy this brand because of its environmental attributes

Smarter to purchase this brand

Adapted from Chen (2013), Wang and et al. (2018)

Adapted from Chen (2010), Butt et al. (2017)

Author self-developed the item

Author self-developed the item

Author self-developed the item

Adapted from Yoo et al. (2000), Chen (2010), Dolatabadi and Tabaeian (2016)



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