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How innovation, transparency, and environmental consciousness determine customers' perceptions of eco-labeled products

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Abstract: By promoting a sustainable lifestyle, eco-labeling is an effective marketing tool to advertise products and convey environmental messages, hence it leads to the emergence of eco-labeled products in some recent years. Perceived better quality and higher consumption value are two key reasons for this uprising movement Therefore, to understand the stimuli of these customer perceptions, the present study focuses on investigating the impacts innovation, transparency, and environmental consciousness oncustomer perceptions of eco-labeled products. The term of customer perception was observed under two dimensions: the perceived quality and perceived value of eco-labeled products. An online survey with structured questionnaire was conducted throughout the nation, and PLS-SEM was employed to analyze the collected data. The findings proved the positive and significant impacts of innovation, transparency, and environmental consciousness on both the customer perceived quality and customer perceived value of eco-labeled products. The perceived quality also positively influences the customer over perceived value of consuming eco-labeled products.

Keywords: eco-labeled products, environmental consciousness, innovation, transparency, perceived quality, perceived value,

I. Introduction

Humans constantly must deal with many nerve-wracking environmental problems such as pollution, climate change, or depletion of natural resources. Toxic fumes like carbon dioxide released into the air have taken a severe toll on people's health. The Earth is now in a critical state due to the negative influences of pollution, the melting of glaciers, rising sea levels, and increasing frequencies of droughts and floods. In addition, since the supply of natural resources is rapidly running out and can no longer meet our growing population's demands, the use of natural resources must be optimized. Therefore, sustainable development has become one of the most viable solutions which can be employed to protect the environment. Governments of developed countries have come up with many policies to reduce the environmental effects of product consumption for environmental protection and sustainable development. They used many policies to achieve this aim, such as banning environmentally harmful materials or imposing taxes on unsustainable practices. During the Rio Earth Summit in 1992, the United Nations introduced a global action program for sustainable development named "Agenda 21" at the climate conference. In the conference, eco-labeling was the solution to encourage more sustainable behavior of customers. Until now, many eco-labeledproducts have become more common among consumers from different countries.

Environmental degradation and its problems are ranked one of the top challenges, including economy, healthcare, unemployment, and crime (Paetz et al., 2012). A survey by Vizu Study shows that 74% of Americans think global warming is an important issue (Grant, 2007). Since consumers have realized that their consumption of products may worsen environmental problems, they have switched to more sustainable products. As a result, companies have developed products that are eco-friendlier to meet the market demand. Meanwhile, researchers have identified the patterns in the production and consumption process that do not conform to sustainable development. Such patterns contribute to environmental degradation, especially in industrialized countries (Erskine and Collins, 1997). Many

companies strive to cut down on the overall costs, and they assume that environmental regulations make their costs higher but do not create any business advantage (Porter and van der Linde, 1995). Some even believe that developing eco-labeled products does not offer financial benefits for their businesses. It is possible to balance economic interests and environmental protection if companies use their resources effectively (Porter and van der Linde, 1995).

Vietnam, however, compared to many other countries around the world, the adoption of eco-label is a less common practice among local businesses. As a result, not many Vietnamese consumers have adopted the habit of buying and using eco-labeled products regularly even though they can offer better quality and sustainability. Moreover, keeping up with the trends of "eco-labeling" is a critical challenge for international market competition. Practically, eco-label can significantly benefitconsumers, businesses, and the environment. Despite the government's efforts, only a minor part of businesses has used eco-label on their product package. Given the current situation, the research about customers' perceptions towards eco-labeled products in Vietnam is an absolute necessity if we want to encourage the widespread use of eco-labeled products. Therefore, this paper aims to investigate how Vietnamese customers perceive eco-labeling and what are the determinants of their perception.

II. Literature review

2.1 Eco-label

Eco-label has become an effective tool to convey environmental concerns to customers (Clemenz, 2010). According to Fuerst&Shimizu(2016) and Rashid (2009), eco-label takes a symbol, mark, or label to ensure that the effects of a product on the environment are less significant compared with others. According to Sønderskov&Daugbjerg (2011), eco-label indicates environmental performance and prevents customers' confusion over environmental claims. Businesses can make use of credible labels to give customers cues on the quality of eco-labeled products and promote the attributes of such products, hence the opportunity to build premium brands (Moon et al., 2002; McCluskey and Loureiro, 2003).

Eco-label has five characteristics (UNCTAD, 1994) including: (i) the set of criteria for eco-labels is voluntary and put forward by a third party, (ii) the products with eco-label on them impact the environment to a smaller extent during their entire cycle, (iii) independent experts select the product categories and determine the criteria, (iv) both the criteria and the selection thresholds are published publicly, and (iv)If companies want to use eco-label on their products during a specific period, they must pay the fee and application costs.

The two main functions of eco-labels are information function and value function (Suki, 2013). Information function helps customers become aware of the features and characteristics of the products, such as quality and color. An eco-labeled product serves the value function by giving customers a sense of value while using the products. In addition, the use of eco-label is highly recommended due to their ecological effectiveness, ability to convey the organizations' in-depth messages to customers, and added value and innovation (Nguyen and Le, 2020).

Eco-label has become increasingly common in many parts of the world, such as Australia ("Dolphin-safe" label), South Korea (Energy Efficiency Grade Label), United States ("Energy Star" label), or Europe (the "Blue Angel" in Germany and the "Nordic Swan" in Scandinavia). The eco-labeling system in each country is different in terms of the number and the issuance procedure of eco-label. In Vietnam, an eco-labeling scheme called "Vietnam Green Label" was established and organized by the Ministry of Natural Resources and Environment in 2009. The main aim of the eco-labeling scheme is to enhance the sustainable use of natural resources and environmental protection by encouraging sustainable production and consumption patterns (Pham, 2007). The criteria development procedure includes five phases: defining the product/service category, drafting criteria, consulting stakeholders (enterprises, consumers, experts), revising draft criteria, promulgating criteria. Businesses should comply with this set of criteria to use the eco-label on their products during a fixed period without any application cost and license fee. However, only a small number of companies have been granted certification to use eco-label on their products.

2.2 Perceived Quality

According to Zeithaml (1988), perceived value is customers' awareness of a product's overall excellence or superiority. Zeithaml (1988) also stated five characteristics of perceived quality: (i) is different from the actual quality of products, (ii) is a higher-level abstraction compared to a specific attribute of a product, (iii) sometimes bears a resemblance to attitude, (iv) is a judgment usually made within a customer's evoked set. Many scholars have built the concept of perceived quality from a green perspective. Chen and Chang (2013) defined perceived quality as customers' evaluation of a product's quality regarding environmental factors. Perceived quality has a vital role in customers' decision-making process of purchasing a product. It influencescustomers' purchase intention and customers' trust. According to Chaudhuri (2002), perceived quality is an essential indicator of customers' satisfaction as purchase intention can be

enhanced if customers think highly of a product's quality. In addition, since customers usually evaluate a product based on the incomplete amount of information, they have access to, their trust is usually formed by their perception of quality towards a product or a brand (Kardes et al., 2004).

2.3 Perceived value

According to Zeithaml (1988), perceived value is the overall evaluation of product utility based on their perceptions of what they receive and what they sacrifice. What customers receive may vary from volume to high quality and what they sacrifice includes time, effort, money, etc. (Zeithaml, 1988). Chen and Chang (2012) built a concept from a green perspective based on previous research. Perceived value is customers' overall judgment of a tradeoff betweenwhat is gained and what is given about environmental aspects of a product (Chen and Chang, 2012). Perceived value is divided into four categories: functional value, social value, emotional value, conditional value (Sangroya and Nayak, 2017). Functional value is "the perceived utility acquired from an alternative's capacity for functional, utilitarian or physical performance" (Sheth et al., 1991). Social value is "the perceived utility of an alternative resulting from its image and symbolism in association or disassociation with the demographics, socioeconomic and cultural-ethnic referral groups" (Smith and Colgate, 2007). Emotional value is "perceived utility acquired from an alternative's capacity to arouse curiosity, provide novelty, and to satisfy a desire for knowledge" (Sheth et al., 1991). Conditional value is "perceived utility acquired by an alternative as the result of the specific situation or set of circumstances facing the choice maker" (Sheth et al., 1991).

Perceived value is instrumental in maintaining long-term relationships with customers and plays a part in shaping purchase intention (Zhuang et al., 2010). By adding value to a product, companies can increase purchase frequency, quantity and avoid changes in customer behavior (Rust et al., 2004). In addition, perceived value positively affects marketing performance (Sweeney et al., 1999), whereas perceived quality mediates the relationship between extrinsic cues and perceived value (Dodds et al., 1991). The better customers' perception of product quality, the higher their perceived value (Zeithaml, 1988). Grewal et al. (1998) stated that a product's values to customers come from its high quality.

- *H1: Perceived quality has a positive impact on perceived value.*

2.4 Innovation

Innovation can be anything from a product or service to a creative element considered new and original (Porter, 1990). The novelty of a product or service stems from the originality of its technological contents or other contents (Wu and Chen, 2014). As Vrakking (1990), innovation is what differentiates an organization from its competitors. Customers usually assess innovation, and it is a determinant of customers' decision-making (Chang, 2011). Therefore, innovation in this study refers to customers' viewpoint of innovation towards eco-labeledproducts' (2003) classified innovation into product innovation, manufacturing process innovation, and service innovation.

Atuahene- Gima (1995) stated that if customers felt curious about an innovative product, it would be easier to notice the changes in its quality, functions, and benefits. A product that is innovative offers better value and quality to customers (Roberston, 1985). Innovation also enhances the quality of a product and attracts potential customers (Ottenbacher and Gnoth, 2005). The research by Wu and Chen (2014) mentioned the association of innovation with perceived quality. Rogers (1995) claimed that innovation of a product could provide customers with positive value. According to Chen et al. (2016), companies can improve service innovation to generate additional value for products. Innovation leads to improvements in products, production, and service, hence increasing product value (Weerawardena, 2003). Biswas & Roy (2015) and Wu & Chen (2014) confirmed the relationship between innovation and perceived value in a previous study.

- *H2: Innovation has a positive impact on perceived quality.*
- *H3: Innovation has a positive impact on perceived value.*

2.5 Transparency

Transparency refers to the willingness to provide product-related and company-related information to customers (Hung and Wyer, 2009). According to Brunk (2010) and Lavorata (2014), transparency is a business or brand's willingness to provide essential details and information about their environmental policies and the effects on the environment caused by the production process. If a business's commitments and claims about environmental, social, and ethical issues are trustworthy and reliable, customers may have favorable judgments towards the organization and its brands (Brunk, 2010; Lavorata, 2014). To obtain transparency, information should be accessible to customers. Moreover, it should be precise and pertinent (Murphy et al., 2007). Since the price of eco-labeled products tends to be higher than other

products, customers usually need more information about the products to facilitate their decision-making (Lin et al., 2017). Customers usually observe a business's activities to confirm that it considers environmental issues (Parguel et al., 2011). In other words, transparency is vital because it helps customers better understand a business's environmental motives (Reynolds and Yuthas, 2008). The disclosure of a firm's practices can profoundly impact consumers' evaluations of a product, brand, and company (Bhaduri and Ha-Brookshire, 2011). If customers were given clear and relevant information regarding a company's environmental aspects, they would believe that its activities align with its good motives, then improve customer's environmental expectations and perceived value (Lin et al., 2017).

- *H4: Transparency has a positive impact on perceived quality.*
- *H5: Transparency has a positive impact on perceived value.*

2.6. Environmental consciousness

Environmental consciousness refers to an individual's awareness and understanding of environmental problems and their environmental behavior (Lin and Niu, 2018). Dunlap and Jones (2002) defined environmental consciousness as how individuals are aware of environmental problems, show their support to solve such problems and express their willingness to commit to environmental solutions. Environmental consciousness may come from one's own beliefs, characteristics, and environmental concerns (Franzen and Meyer, 2010). In other words, an environmentally conscious consumer is wary of the impact of raw materials and product consumption on the deterioration of the environment (Franzen and Meyer, 2010). Law et al. (2017) pointed out that environmental consciousness brought about positive changes to customers' attitudes towards the environment and accelerate their buying behavior. When customers are environmentally conscious, they will form a reasonable opinion of the quality of eco-labeled products, thinking that consuming such products can improve the environmental quality (Tsay, 2009).

- *H6: Environmental consciousness has a positive impact on perceived quality.*
- *H7: Environmental consciousness has a positive impact on perceived value.*

III. Research methodology

3.1 Research design

Customers' perception consists of customerperceived value and customer perceived quality. They are essential factors that profoundly affect purchase intention. Most researchers have given insights into the connections between the two factors and purchase intention. Many among them even examined the determinants of perceived value and quality. These include perceived innovation (INN), transparency (TRAN), and environmental consciousness (EC).

Figure 1 shows the relationships between innovation (INN), transparency (TRAN), environmental consciousness (EC) and perceived value (PV), perceived quality (PQ). The proposed model is established based on the research by Wu and Chen (2014), Lin et al. (2017), and Ariffin et al. (2016).

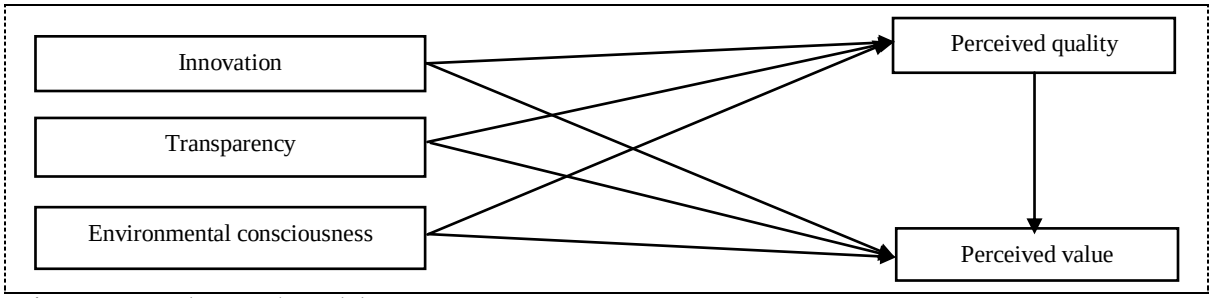

Fig. 1: Proposed research model

To execute the analysis, we used the partial least squares path modeling (PLS-SEM), Microsoft Excel, and Smart PLS 3.3. PLS-SEM consists of the evaluation of the measurement model and structural model. Examining the measurement model analyzes Cronbach's Alpha (CA), internal composite reliability (CR), convergent validity (CV) and discriminant validity (DV) (Henseler et al., 2009). As for the structural model, its purpose is to verify the hypotheses using the data on the path coefficient, R-square (R2) and predictive relevance (Q2).

3.2 Measurement constructs

The measurement constructs were adopted from research by different scholars and researchers. The measurement constructs in this study are "Innovation – (INN, 5 items)", "Environmental consciousness – (EC, 5 items)", "Transparency (TRAN, 4 items)", "Perceived quality – (PQ, 3 items)", "Perceived value (PV, 4 items)".

The innovation construct was developed from the previous study by Betz (2003). Meanwhile, the environmental consciousness construct was found in the research by Alsmadi (2007). The transparency construct was formed based on the items in the study of Eggert and Helm (2003). The perceived quality construct was closely adapted from the scales of Petrick (2002). Lastly, the perceived value construct was adapted from the research by Sweeney and Soutar (2001).

All the items were translated and slightly modified to suit the practical context of this research in Vietnam, then a group of language experts validated the translation. We decided to use a five-point Likert scale to measure the respondents' answers. We consulted several respondents' feedback in a pretest, and after removing problematic indicators, there were a total of 22 items left (APPENDIX 1).

3.3 Data collection and sample profile

The survey was carried out in Vietnam, and the target audiences were those aware of eco-labeled products. Over the two months, the questionnaire was distributed to 500 respondents via different online platforms, including Facebook, Email, Zalo, Telegram. In the end, we were able to collect 365 valid answers which can be used for analysis.

Table 1 provides the data on the descriptive demographical profile of respondents. Whereas males only make up 45.5% of the participants, a slightly higher number of 54.5% of surveyors are female. The most recorded age groups are the 18-24 and 25-34 with 38.6% and 32.6%, respectively. Most of the answers were collected from either students (36.7%) or office workers (45.5%). According to the responses, 35.9% of the respondents have an income ranging from 7,000,000 to 10,000,000 VND, which is followed by 24.7% whose salary is 5,000,000 – 7,000,000 VND. More than half of the valid answers (66.6%) come from surveyors living in the Northern region of Vietnam, while 23.6% are from respondents in the Southern region.

146 people chose to buy eco-labeled products less than once per week, while 119 made a purchase less than once per month. 71 out of 365 surveyors answered that they purchased these products at least once per month. When asked where to purchase products, 254 people answered that they often bought eco-labeled products via the Internet. Meanwhile, the respondents who frequently visited medium and small-sized shops and supermarkets are 149 and 74, respectively.

Table 1: Demographical descriptive profile of respondents (n=365)

Demographic variables	Category	Frequency	Percentage (%)
Gender	Male	166	45.5%
	Female	199	54.5%
Age	<18	36	9.9%
	18-24	141	38.6%
	25-34	119	32.6%
	35-44	58	15.9%
	>44	11	3.0%
Occupation	Student	134	36.7%
	Office worker	166	45.5%
	Business owner/freelancer	36	9.9%
	Unemployed	23	6.3%
	Others	6	1.6%
Income	<3,000,000 VND	41	11.2%
	3,000,000-5,000,000 VND	51	14.4%
	5,000,000-7,000,000 VND	90	24.7%
	7,000,000-10,000,000 VND	131	35.9%
	10,000,000-20,000,000 VND	43	11.8%

	>20,000,000 VND	9	2.5%
Household	Nothern region	243	66.6%
	Central region	36	9.9%
	Southern region	86	23.6%
Frequency of purchase	Less than once per week	146	40.0%
	At least once per week	29	7.9%
	At least once per month	71	19.5%
	Less than once per month	119	32.6%
Location of purchase	Supermarkets	74	15.5%
	Medium and small-sized shops	149	31.2%
	Internet	254	53.2%

IV. Data analysis and results

4.1 Measurement model assessment

Assessment of measurement model includes analysis of internal consistency reliability, convergent validity, and discriminant validity. Four criteria test internal consistency reliability and convergent validity: (1) factors loadings, (2) Cronbach's Alpha (CA), (3) Composite reliability (CR), and (4) Average variance extracted (AVE). According to Hair et al. (2018), outer loadings of the indicators and composite reliability should be significant and higher than 0.70. The minimum value of Cronbach's Alpha should be 0.06 (Hair et al., 2014). The value of AVE should be higher than 0.05 (Hair et al., 2018).

Using the PLS algorithm, we decided to remove one item – INN3 from the construct due to its unsatisfactory outer loading result, lower than 0.70. Table 2 suggests that outer loadings are well above 0.07 and AVE values exceed 0.05. Cronbach's Alpha values range from 0.789 to 0.858, indicating that the constructs obtain satisfactory to good reliability (Mackenzie et al., 2011 and Hair et al., 2014). Thus, internal consistency reliability along with convergent validity is confirmed.

Table 2: Internal consistency reliability and convergent validity

Constructs	Measurement item	Factor Loadings	CA	CR	AVE
Environmental consciousness – EC	5 items	0.789-0.836	0.877	0.910	0.670
Innovation - INN	4 items	0.799-0.837	0.838	0.891	0.671
Perceived quality - PQ	3 items	0.838-0.858	0.806	0.885	0.720
Perceived value - PV	5 items	0.789-0.826	0.870	0.906	0.658
Transparency - TRAN	4 items	0.811-0.843	0.844	0.895	0.681

Note: All item loadings are significant at .001 ($p < .001$). CA = Cronbach's Alpha, AVE = Average variance extracted, CR = composite reliability

The discriminant validity, which examines the degree to which items differentiate among constructs or measures distinct concepts, can be assessed by two methods: the Fornell-Larcker criterion and the HTMT ratio (Hair et al., 2018). In this research, the Fornell – Larcker method was used to test the discriminant validity. According to Fornell and Lacker (1981), the value of each construct's square root of AVE should be greater than correlation coefficients. The square root of the AVE of each variable is higher than the corresponding correlation coefficients; as a result, discriminant validity is ensured (Table 3).

Table 3: Discriminant validity (Fornell and Lacker criterion)

	EC	INN	PQ	PV	TRAN
EC	**0.819**				
INN	-0.009	**0.819**			
PQ	0.371	0.364	**0.849**		
PV	0.324	0.352	0.436	**0.811**	
TRAN	0.121	0.144	0.204	0.360	**0.825**

Note: Square root of the AVE on diagonal.

Multicollinearity problems are identified by the assessment of variance inflation factor (VIF). If a VIF value is higher than 5, there may be multicollinearity of formative constructs. Thus, a VIF value lower than 5 indicates no multicollinearity problems in the structural model (Hair et al., 2014). This research shows that the VIF values are below the recommended value of 5, ranging from 1.706 – 2.268. In other words, multicollinearity issues do not exist.

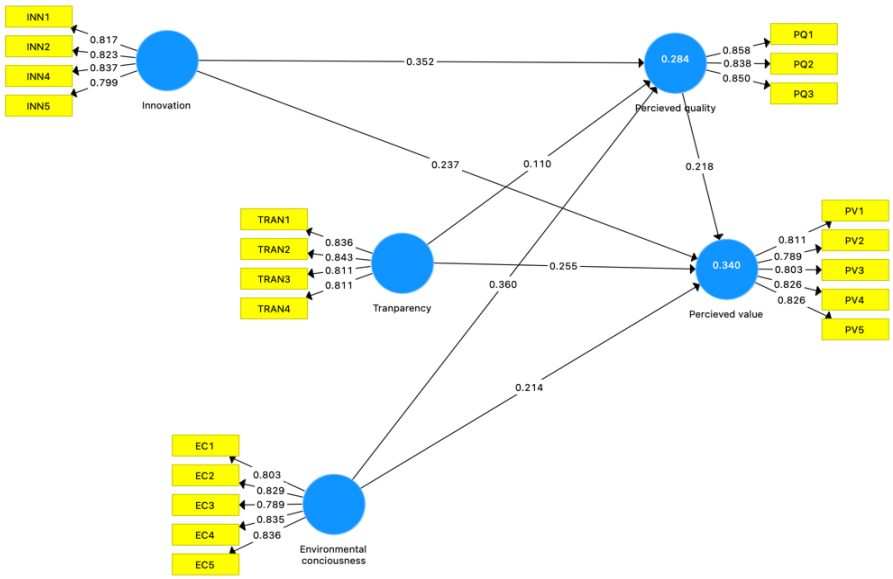

Fig. 2: Measurement model

4.2 Structural model assessment

Before assessing of structural model, we shall evaluate Standardized Root Mean Square Residual (SRMR) to check the model fit. Hu &Bentler (1998) and Hair et al. (2014) stated that SRMR value should be smaller than 0.08 to ensure a good fit. Table 3 shows that the SRMR value is 0.050 (<0.08), indicating the acceptable fit.

According to Hair et al. (2018), the R2 value presents the dependent variables' variance of independent variables' variance. Moreover, R2 value is used to evaluate the predictive accuracy of the model (Gronemus et al., 2010). The R2 value for perceived quality (PQ) is 0.284, indicating that 28.4% of Perceived value can be explained by innovation (INN), transparency (TRAN), and environmental consciousness (EC). That the R2 value for Perceived value (PV) is 0.340 means 34.0% of perceived value (PV) is explained by innovation (INN), transparency (TRAN), and environmental consciousness (EC).

Stone-Geisser's Q2 value measures a model's predictive relevance (Hair et al., 2018). The testing of Q2, initiated by blindfolding procedures in Smart PLS, shows predictive relevance of a dependent construct if the result is higher than 0. As shown in Table 4, the perceived quality construct has a Q2 value of 0.197, and that perceived value is 0.217. These values demonstrate that perceived quality and perceived value construct both exhibit predictive relevance.

Table 4: R2, Q2, SRMR

	R2	Q2	SRMR
PQ	0.284	0.197	0.050
PV	0.340	0.217	

After evaluating Q2, we shall proceed to the next step- the path coefficients (β values), which reveal the degree of change in the dependent variable for each independent variable (Gronemus et al., 2010). If a β value of one variable surpasses 0.100, it means that one variable has a certain impact on another. Furthermore, its impact is significant when the β value surpasses 0.05. The β values in table 5 show that innovation, transparency, and environmental consciousness all have certain impacts on perceived quality and value since the values are greater than 0.100. The influence of environmental consciousness on perceived value is the strongest (β =0.360), while the influence of transparency on perceived quality is the weakest (β=0.110).

Analyzing f2 is also a part of the assessment process of the structural model. The purpose of f2 is to measure the changes in R2 values if an endogenous variable is eliminated. f2 is also used to evaluate whether substantial changes occur in the

endogenous latent variable. According to Cohen (1988), a f2 value lower than 0.02 indicates no effect, values equal to 0.02 or above indicate small effects, values of 0.15 or higher indicate mediums effects, and values equal to 0.35 or greater indicate large effects. The f2 values in the table represent either small or medium effects and range from 0.052 to 0.179 except for the relationship between transparency and perceived quality (0.016<0.02). Since the p-values are smaller than 0.05, all seven hypotheses are supported.

Table 5: Hypotheses testing

Hypothesis	Path	β	T	f^2	p values	Decision
H1	PQ -> PV	0.218	3.639	0.052	0.000	Supported
H2	INN -> PQ	0.352	8.684	0.169	0.000	Supported
H3	INN-> PV	0.237	4.560	0.071	0.000	Supported
H4	TRAN->PQ	0.110	2.698	0.016	0.007	Supported
H5	TRAN ->PV	0.255	5.576	0.094	0.000	Supported
H6	EC-> PQ	0.360	7.829	0.179	0.000	Supported
H7	EC -> PV	0.214	3.662	0.058	0.000	Supported

Note: β= *Original sample, T = T statistic, f^2 = f square.*

Conclusions

This study examines the relationships among innovation, transparency, environmental consciousness and perceived quality, perceived value towards eco-labeled products. We distributed the questionnaire form and collected 365 valid responses from the respondents living in different areas of Vietnam. By employing quantitative analysis, this study came to several conclusions. Specifically, the determinants of perceived quality and value are innovation, transparency, and environmental consciousness. First of all, innovation is positively related to perceived quality and perceived value. Secondly, transparency has a positive effect on customers' perceptions of a product's value and quality. Thirdly, there is a positive relationship between environmental consciousness and perceived quality as well as perceived value. Perceived quality also has a direct connection with perceived value. The results of this research support previous findings of Biswas and Roy (2015), Wu and Chen (2014),Zeithaml(1988), Lin et al. (2017), andTsay (2009).

Theoretically, this study contributes to the literature of perceived quality and perceived value. The research developed an integrated model that shows the determinants of perceived value and quality, including innovation, transparency, and environmental consciousness. Compared to most studies in this field, this is one difference that does not emphasize the factors affecting perceived value and quality. The findings show that innovation, transparency, and environmental consciousness play an essential part in enhancing customers' perceptions of eco-labeled products.

Practically, this research results suggest the methods that can be used to increase perceived quality and perceived value. Companies and firms need to continue to upgrade their products and innovate them so that customers can gain a sense of novelty while using eco-labeled products, which can boost sales and create a positive word-of-mouth effect. Manufacturers can add creative elements to product design or launch a creative marketing campaign to catch customers' attention and encourage them to buy eco-labeledproducts. Since transparency is critical in that it can affect how customers perceive a product's value, the recommendation is to pay attention to clear product information, effective communication, and details about green practices to enhance transparency by increasingmediaexposure or knowledge of environmental problems. Green marketing strategies and policies can be adopted to improve customers' perceptions. Producers must understand customers' behavioral principles of green consumption to develop suitable strategies for each customer segment. If customers are aware of the importance of environmental protection and environmental problems, they will consider eco-labeled products to be a better choice than regular products. Environmentally conscious customers buy eco-labeled products more often than regular customers, and it is likely that they can maintain a sustainable and healthy lifestyle.

Limitations and future research

In this study, we can still identify some limitations which should be addressed. Since data collection has only been carried out in Vietnam, further research should be done in other countries to generalize the research findings. This research does not specify any kind of product, and different products must be compared in future research to verify the research model and its hypotheses. Due to time constraints and limited resources, the sampling of this research is limited, so the results should be used with consideration and caution. This study only collected and analyzed cross-

sectional data, so no causal relationship should be deduced. Hence, longitudinal studies across more areas are needed to ascertain customers' perceptions towards eco-labeled products and its drivers.

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Appendix 1: Measurement constructs

Perceived quality - PQ

PQ1	The quality of eco-labeled products is reliable
PQ2	The quality of eco-labeled products is high
PQ3	The quality of eco-labeled products is stable

Perceived value – PV

PV1	Eco-labeled products give me extra value
PV2	It's worth to pay more money for eco-labeled products
PV3	Eco-labeled products have high utility
PV4	Eco-labeled products can meet my requirements
PV5	Eco-labeled products give me more benefits than the costs

Innovation – INN

INN1	Eco-labeled products are improvement products
INN2	Eco-labeled products have innovation concepts
INN3	Eco-labeled products are more saving
INN4	The function of eco-labeled products has a great difference
INN5	Eco-labeled products have different designs

Transparency – TRAN

TRAN1	This brand explains clearly how it controls the emissions caused by its production processes that could harm the environment
TRAN2	Overall, this brand provides the information needed to understand the environmental impact of its production processes.
TRAN3	This brand provides relevant information regarding environmental issues associated with its production processes.
TRAN4	The environmental policies and practices of this brand are provided to customers in a clear and complete way.

Environmental consciousness - EC

EC1	I respect all efforts to maintain and preserve the environment
EC2	I respect all efforts to maintain and preserve the environment
EC3	I get annoyed when someone contaminates the environment
EC4	I respect rules and regulations to maintain and preserve the environment
EC5	I always advise others to keep the environment clean