Green awareness through environmental knowledge and perceived quality

Doni Purnama Alamsyah[a]*, Norfaridatul Akmaliah Othman[b], Muhammed Hariri Bakri[b], Yogi Udjaja[a] and Rudy Aryanto[a]

[a]Bina Nusantara University, Indonesia
[b]Universiti Teknikal Malaysia Melaka, Malaysia

CHRONICLE	ABSTRACT
	Green awareness is worth researching to determine the customer consumption pattern of environment-friendly products. Several research models are showing the importance of green awareness of customer behavior. This paper studies the role of information in marketing decisions related to customer green awareness. Based on the phenomenon of green awareness, this research work aims to study the role of customer green awareness built through eco-label, environmental knowledge, and perceived quality. This experimental research is conducted on 200 supermarket customers who had experience with green products. The data is collected through a questionnaire and analyzed using the Structural Equation Model approach. SmartPLS is conducted to test the research hypotheses. The findings show that there was a relationship between the eco-label credibility of environment-friendly products on the customers' increased environmental knowledge and perceived quality of the products. Besides, both environmental knowledge and perceived quality are identified to play an essential role in controlling green awareness. Eco-label in product attributes is found to be capable of changing the positive side of green awareness. These findings describe a model in developing green awareness through environmental knowledge and perceived quality with the support of environment-friendly product eco-label. The model also can predict customer green awareness and support the green marketing strategy. Therefore, further research works on green customer behavior are welcome, as green customer behavior must impact on the implementation of green marketing strategies. Also, we may predict the customer behavior of environment-friendly products, and implement better business strategies.

1. Introduction

Customer awareness of eco-friendly products in the world nowadays has gained popularity (Rizwan et al., 2014). This trend triggered by customer growing worries of the conventionally-produced products manufactured with additives that damage the environment as well as, in the long term of consumption, cause health problems (Suki et al., 2016). Besides, due to global warming concerns, customers are more aware of the goods and services with adverse effects on the environment (Tsai et al., 2014). One of the movements of customer awareness of eco-friendly products is known as "green consumerism" (Chen & Chang, 2012). This movement has thrived well in advanced countries, even in Asia, such as in Malaysia and Singapore (Alamsyah et al., 2018; Rahim et al., 2012). Eco-friendly products introduced in Indonesia start the 2000s (Alamsyah & Syarifuddin, 2017). The impact of this awareness was the abundant availability of products labeled as eco-friendly. However, the products offered were not entirely eco-friendly, as many products still carried with them adverse effects on the environment (Anderson et al., 2016). In Indonesia, only the purely organic products that are eco-friendly and healthy for long-term consumption are promoted (Alamsyah et al., 2017; Rahmi et al., 2017). This condition is because of the chemical-free production process using organic products such as organic vegetables (Grajkowski et al., 2007). One of the organic, eco-friendly

products that received specific labels such as "halal label" (permissible in Islam) is "*Organik Indonesia*" (Alamsyah et al., 2017). The label is known as eco-label; describes that the products with this label are manufactured in the eco-friendly production process and, therefore, they are safe for long-term consumption. The eco-label, as one of the green marketing strategies conducted by product attributes (Rashid, 2009), is known as powerful enough to inform customers about eco-friendly products that they developed a better understanding of the perceived quality of this kind of products. It is well noted that the customer's perceived quality has a substantial influence on customer awareness of eco-friendly products and interests in purchasing the products (Wang & Tsai, 2014). In Indonesia, eco-friendly products such as organic products are commonly sold in supermarkets (Alamsyah et al., 2017). These products are usually presented in more attractive packaging than that of conventional products, i.e., with eco-label attributes. These attributes suggest strongly that the products are chemical-free and eco-friendly (Atănăsoaie, 2013). The eco-label on organic products in Indonesia comes in some different terms, such as fresh, natural. Still, the government issued the official eco-label attribute that is known as "*Organik Indonesia*" (Alamsyah et al., 2018). Eco-label attribute is put on eco-friendly products to educate customers on the existence of these products (Shewmake et al., 2015). Subsequently, their environmental knowledge would increase and, at the same time, improve their green awareness of products in consumption (Rashid, 2009). Nevertheless, eco-friendly products like organic products have not received adequate attention in Indonesia. Allegedly this was caused by the customers' low awareness of eco-friendly products (Alamsyah et al., 2017) while it is well-known that customer's interest in buying eco-friendly products is influenced by customers' green awareness (Mourad et al., 2012). The information justifies the importance of evaluating customer green awareness of eco-friendly products.

Many studies have examined the behavior of green awareness; however, an appropriate model is needed that can support the creation of green awareness. Previous studies have conveyed the importance of consumer knowledge and views on environmentally friendly products in determining green awareness (Gao et al., 2016). Many research works have shown that customer awareness has roots in customer environmental knowledge (Alamsyah et al., 2020; Gao & Tian, 2019; Safari et al., 2018). Environmental knowledge correlates with customer knowledge of the production process of eco-friendly products (Biswas & Roy, 2015) on the well-known notion that eco-friendly products are commonly produced in the eco-friendly manufacturing process. Environmental knowledge is identified as necessary in supporting a company's effort in its marketing strategies based on environmental knowledge (Rahim et al., 2012). These strategies are identified in the environment-themed marketing awareness conducted by many companies. Many of them highlight information on the advantage of their product to the environment in their ads (D'Souza & Taghian, 2005). Indirectly, this helps raise customer awareness on the importance of a sustainable environment. Ultimately, when customer environmental knowledge increases, customer green awareness of eco-friendly products will increase as well. The other impact of customer awareness through green marketing strategies is customer perceived quality (Wu & Chen, 2014). It is well understood that all of the green marketing strategies influence customer perceived quality (Green & Peloza, 2015). Customer perceived quality correlates with customer positive perception that eco-friendly products are better than conventionally-produced products (Wang & Tsai, 2014). On the other side, customer green awareness is also controlled by customer perceived quality (Wu & Chen, 2014).

There have been many research works indicating that it is essential for eco-friendly products to pay attention to customer green awareness and that customer green awareness controls customer purchasing habit of eco-friendly (Rahmi et al., 2017; Rizwan et al., 2014; Suki et al., 2016). This present research work studied the impact of green marketing strategy on customer environmental knowledge and perceived quality in a quest to improve green customer awareness on eco-friendly products. The green marketing strategy used in this study was eco-label on eco-friendly products; thus, the focus of this study was the implication of environmental knowledge and perceived quality through eco-label attributes on products in controlling customer green awareness.

2. Literature review

2.1 Eco-Label of Eco-Friendly Product

Customer behavior towards eco-friendly products is characterized by their attention to the attributes of eco-friendly products, namely eco-label (Atănăsoaie, 2013). They tend to be more selective in choosing the products for their consumption and tend to relate their choice to the impact the products bring on environment sustainability. Eco-label attributes of eco-friendly products means to differentiate eco-friendly products from conventional products (Rizwan et al., 2014). Eco-label then becomes an attribute to attract customers to choose more eco-friendly products (Rashid, 2009). The previous research in line with the idea that eco-label is the best performing product identity that fosters environment sustainability (Atănăsoaie, 2013); this is because the goal of eco-labeling is to improve the quality of the product and the environment. Nowadays, eco-label has been an value added to a product and the image of the selling company (Fuerst & Shimizu, 2016); thus, all of the marketing strategies are aimed at positively improving the company performance. One of the eco-friendly products with an eco-label attribute is organic vegetables (Alamsyah et al., 2017); they have a better production process compared to conventionally-produced vegetables. The information appearing in packaging; the organic vegetable packaging is better than that of the conventionally produced vegetables (Lian et al., 2016). Price is not an issue for customers of eco-friendly products since they consider these products are of premium quality products (Shepherd et al., 2005). They understand that the price corresponds to the benefits and thus not considered as expensive products (Omar et al., 2017).

Eco-label is a symbol attributed to service or goods, informing that the production process is safe to the environment (Atănăsoaie, 2013). Eco-labeled products usually give an assurance of preserved nutrition as no chemical added in the production process (Alamsyah et al., 2017). This condition is undoubtedly different from the conventional products produced by using a chemical such as a pesticide; this lowers the nutrition in the vegetables. In long-term consumption, these might cause health problems such as cancer (Astuti et al., 2000). To this day, there are many eco-label attributes on many eco-friendly products, such as organic vegetables (Alamsyah & Syarifuddin, 2017). Nevertheless, there is only one eco-label officially issued by the Government of Indonesia and usually issued to certified producers of eco-friendly products (Rahmi et al., 2017). Customers may perceive whether the eco-label attributes on certain products correspond to the products. Some eco-friendly products have received recognition from customers such as organic Indonesia, free-pesticide, and freshness. Still, many others have not received recognition from customers that their eco-label is genuinely eco-friendly products (Arsanti & Böhme, 2018). With this customer recognition, customers would be able to understand the advantages and disadvantages of eco-labeled products, as well as the usage of eco-label on eco-friendly products. One key element in customer recognition of eco-labeling is customer trust in the eco-label of eco-friendly products (Sharma & Kushwaha, 2019).

Previous research works show that customer understanding of the usage of eco-label on a product poses a positive impact on customer environmental knowledge (Rashid, 2009) since customer indirectly receives information and awareness of eco-friendly products and conventional products through eco-label implementation. Besides, eco-label also improves customer perceived quality (Atănăsoaie, 2013), as they build their perception about the quality of eco-friendly products through eco-label (Rashid, 2009). In turn, it determines customer behavior in selecting the products. It is essential to see the implementation of eco-label on eco-friendly products because it influences customer behavior. The hypotheses of this study are as follows.

H1. Eco-label has a positive correlation in improving customer environmental knowledge.
H2. Eco-label has a positive correlation in improving customer perceived quality.

2.2 Environmental Knowledge of Customer in Green Product

Environmental knowledge is customer knowledge of his or her environment, specifically related to the products to be consumed (Suki et al., 2016). Customers nowadays are more and more selective in choosing a product influenced by their knowledge of the products and the need for healthier products (Rizwan et al., 2014). Environmental knowledge plays an essential role in improving customer interest in purchasing eco-friendly products since improved environmental knowledge also improves customer consumption patterns (Rashid, 2009). This fact has been in the knowledge of marketers of eco-friendly products in Indonesia and these products are sold in strategic places such as supermarkets (Alamsyah et al., 2017). Companies in Indonesia employ green marketing strategies by focusing on environmental issues to improve customer environmental knowledge (Rahmi et al., 2017). Environmental knowledge is a term to refer to customers who know and are aware of environmental issues and solutions (Safari et al., 2018). Consumers who are aware of environmental issues usually are aware of life sustainability since they are embracing a good lifestyle in interaction with the environment (Nicolò, 2015). Includes choosing products to be consumed and recommended to their inner circle (Panzone et al., 2016). Thus, customer environmental knowledge describes the level of customer knowledge of the environment. Customer environmental knowledge is known to influence customer green awareness of eco-friendly products (Mourad et al., 2012); it also knows to influence customer purchasing behavior (Suki et al., 2016). All these suggest that positive customer behavior towards eco-friendly products needs to be developed by companies through green marketing strategy to achieve the company goals: high profits and a more significant market share (Omar et al., 2017). Generally, environmental knowledge of a product is related to the issues of chemical elements in a product, green-house effect, to climate change due to pollution caused by the production process (Lin et al., 2018). All this influence customer awareness of the environment and prompts them to change their lifestyle. Nevertheless, customer environmental knowledge can be measured based on their knowledge of the products with 'No Animal Testing' label (Rashid, 2009), no added chemical element (Suki et al., 2016), eco-friendly production process (Alamsyah et al., 2018), organic product (Joosse & Hracs, 2015), air non-pollutant production process (Jain & Kaur, 2004), eco-friendly waste, fuel-efficient production and no excessive use of packaging (Rashid et al., 2015). Many research works show that these measures frequently used to gauge customer environmental knowledge of eco-friendly products.

Some previous research works showed that customer environmental knowledge influences customer behavior; one of them is green awareness (Gao et al., 2016; Mourad et al., 2012). Thus, companies commit to implement marketing strategies that would positively aim at customer mental knowledge. Based on this theory, it deemed necessary to study the correlation between customer environmental knowledge and customer green awareness. The hypothesis formulated as follows:

H$_3$. Environmental knowledge has a positive correlation in improving customer green awareness.

2.3 Perceived Quality Customer of Eco-Friendly Product

Perceived quality is the positive perspective from consuming toward the product, which has a value, and perceived quality is part of customer perceived value (Tsao, 2013). In the end, perceived quality to be a recommendation for consuming in choose the product (Phillip et al., 2003). Source of perceived in this product from environment, moreover information of the product

or visual campaign of the product (Alamsyah et al., 2018). Eco-friendly product has a relation with information on the product, start from eco-label become the differentiator toward general product until the information which loaded in the flyer of the product (Sharma & Kushwaha, 2019). This condition is retail to the supermarket (Nikhashemi et al., 2016). So, that perceived quality of consumption toward the development of eco-friendly products. The vital thing perspective of consuming is the ability from the greatness of the product, which can minimize the risk of the product (Hung et al., 2014). The eco –friendly product also has a risk, that is the price which is more expensive than the other product, and only the individual consuming who have to get that (Shao & Yang, 2014). The risk of the eco-friendly product can rule out since this product is essential to the environment (Rizwan et al., 2014). When we give the perspective to the product, it always related between positive and negative value (Beneke et al., 2013), this product explains that we have the scale of perceived quality if we recognize the positive value. The scale of positive value can be related to the same product, in order, that value of the product which chooses by the customer is similar to their previous expectation. In the past, sometime researcher equalizes between perceived quality and perceived value in their research (Chen & Hsieh, 2011; Tsao, 2013; Wang & Tsai, 2014). The perceived quality is related to the product, which has a perspective toward value in the product (Hung et al., 2014). The first theory tells that perceived quality is the perspective customer and all of the added value, which has compared with the other product (Kim & Chung, 2011). The information explains that the customer has got a positive perspective if compared with the eco-friendly product; it means that perceived quality is the perspective of the customer, which they get that from other products which more eco-friendly. In this research related to the eco-friendly product, the perceived quality can rate from three aspects, there are warranty, characteristic, and external factors of the product (Alamsyah et al., 2017). If we look at the product deeply about the warranty, it means that the product is more authentic (Shao & Yang, 2014). The eco-friendly product is different from the other product, we can see from the character of the product, there are strength, color, taste, and smell of product (Alamsyah & Syarifuddin, 2017). The positive perspective of the customer about the eco-friendly product can be felt that eco-friendly product is important, such as buy an organic vegetable. One of the important things eco-friendly product is external factors; there are display, size, price, and fresh level of the product (Martínez-Carrasco et al., 2012).

The knowledge customer of product toward perceived quality in the previous study tells those eco-friendly products can develop the green awareness customer (Wu & Chen, 2014). The awareness customer of positive perspectives toward products can give added value to the product from the perspective of customers (Mourad et al., 2012). By reviewing behavior customers on eco-friendly products, the next hypothesis design presented.

H$_4$. Perceived quality has a positive relationship in increasing green awareness customers.

2.4 The Behavior of Green Awareness Customer

The behavior of customer on eco-friendly products is known as green awareness (Gao et al., 2016), this behavior has a significant impact on consumption of customer patterns, which is on healthier products (Suki et al., 2016). The awareness customer of eco-friendly products has increased represented by a behavior known as green consumerism (Bouten & Hoozée, 2013). The behavior supposedly sourced from the level of green awareness customers toward the product and the environment (Paço et al., 2010). This is now known that green awareness customer is capable of changing customer behavior, one of that is becoming a preference for eco-friendly products as well as providing a positive campaign for the importance of eco-friendly products (Mourad et al., 2012). The concern of customers for the products they consume comes from the knowledge consumers have of the products. Especially at this time, the company has given a positive campaign about eco-friendly products through flyers or identity on product attributes (Chang, 2012). The information supports the consumer's level of knowledge of the product and gives its value for eco-friendly products as premium products.

Green awareness customer is known as a knowledge that is recognized by consumers for products based on the performance of products that are eco-friendly Green awareness (Mourad et al., 2012). It can see from the products created by companies that already have an organic label, which is organic vegetables in supermarkets (Alamsyah & Syarifuddin, 2017). The product can create process which does not damage the environment and the benefits of the product when consumed are better than ordinary products. The customer behavior on eco-friendly products is essential to be maintained by the company, and this behavior can be controlled by the company as long as the activities of the company and the creation of products are trusted by the customer with excellent performance for the environment (Mourad et al., 2012). So, it seems that shaping green awareness customer is not easy and needs to improve so that it is valued positively by customer. The information explains that customer perceived quality has an essential role in providing a positive impact on green awareness. Nevertheless, the fact is for producers; green awareness is used to increase customer buying interest in products (Suki et al., 2016; Wu & Chen, 2014). Green awareness of customers in principle is customer recognition of products, prices, and images of eco-friendly products (Suki, 2013). In the product use, consumer's green awareness can assess from behavior related to efforts in obtaining products, knowledge of product labels, understanding product characteristics to the image of the product (Rizwan et al., 2014), and the level of attention to the environment (Suki, 2013). In previous studies, green awareness is closely related to environmental knowledge and customer perceived quality. The design of the hypothesis in this study, however, environmental knowledge and perceived quality are directly sourced from consumer experience on product attribute that is eco-label (Codini et al., 2012). Depending on the previous studies on the behavior of customer and eco-labeling, the next hypothesis design is presented.

H₅. Eco-labeling has a positive impact on increasing green awareness of the customer.

Based on a study of the theory of eco-labeling, environmental knowledge, and perceived quality on green awareness of customer behavior, we have analyzed and found five hypothetical designs. The design is examined through a model illustrated in Fig. 1.
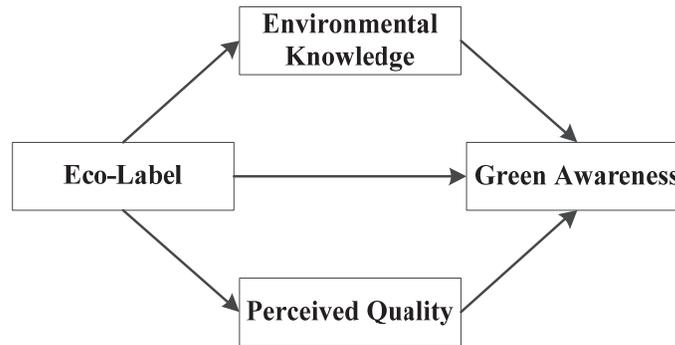

Fig. 1. The hypothesis of Research Model

3. Methods

This quantitative research has been conducted through studies on consumers who already have experience with eco-friendly products in Indonesia, especially in Bandung City, as the capital of the largest population in Indonesia. However, this research is an experimental study using 200 consumers in 2019, and the sample has been adjusted with tools of analysis (SmartPLS). Data from the customer have been obtained by a questionnaire given directly when customer shops at the supermarket, in the supermarket and there are many eco-friendly products such as organic vegetables. There are four study variables, including eco-label, environmental knowledge, perceived quality, and green awareness of the customer. The size of each variable is outlined in the questionnaire with a Likert Scale approach of the value of one for "strongly disagree" to five for "strongly agree". Furthermore, the data have been tabulated with SPSS tools before the research model test has been carried out. The data received is then tested through hypothesis testing, following the design of the research model (Fig. 1). Data were processed through Structural Equation Model (SEM) approach. Then we have used SmartPLS analysis tools to determine the relationship between variables, before analyzing the research results, a research model test was conducted so that the model can accept through several criteria for goodness-of-fit index (Hong et al., 2006).

4. Results

The data from 200 respondents have been tabulated, and the model has been tested through the Structural Equation Model. The data from respondents is known to have a female gender that is equal to 78%; this is reasonable considering that women in Supermarkets have a habit of shopping for daily necessities. Also, from an educational background, 67% of them have maintained a bachelor's education and the rest were from high school graduates. This finding explains that the knowledge of consumers who choose eco-friendly products is fairly good. Then the results of testing the research model that focuses on eco-labeling, environmental knowledge, and perceived quality are presented to examine the green awareness behavior of the customer. Model testing finishes through the SmartPLS tool shown in Fig. 2 about the green awareness behavior model. However, the detailed results of the research instrument were presented in Table 1.
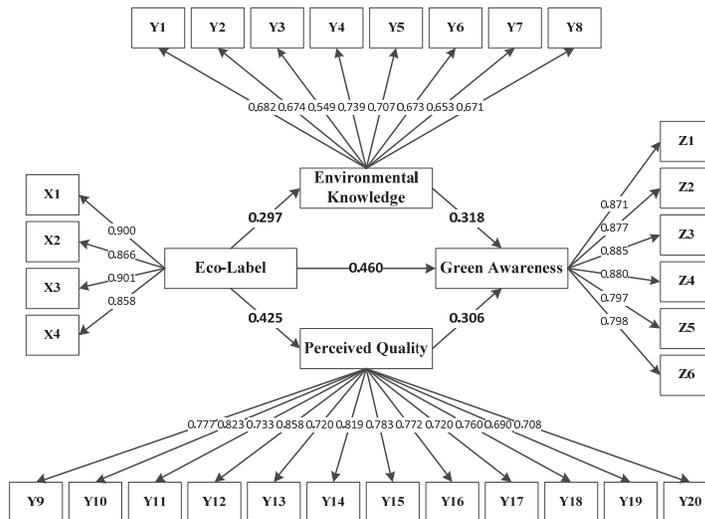

Fig. 2. Result Model of Green Awareness

Table 1
Validity and Reliability Test

Variables	Instruments	Pearson Correlation	Cronbach's Alpha	Load. Factors
Eco-Label	Recognition (X1)	0.897	0.825	0.900
	Use (X2)	0.868		0.866
	Understanding (X3)	0.896		0.901
	Trust (X4)	0.863		0.858
Envi. Knowledge	No Animal Testing (Y1)	0.682	0.905	0.682
	Natural Ingredient (Y2)	0.675		0.674
	Sustainable Forest(Y3)	0.604		0.549
	Organic Product (Y4)	0.737		0.738
	Ozone Friendly (Y5)	0.652		0.707
	Biodegradability (Y6)	0.688		0.673
	Unleaded Petrol (Y7)	0.646		0.653
	Minimum Materials (Y8)	0.678		0.671
Perceived Quality	Origin (Y9)	0.785	0.935	0.777
	Brand (Y10)	0.820		0.823
	Label (Y11)	0.736		0.733
	Variety (Y12)	0.859		0.858
	Firmness (Y13)	0.726		0.720
	Color (Y14)	0.815		0.819
	Flavor (Y15)	0.785		0.783
	Aroma (Y16)	0.763		0.772
	Damage (Y17)	0.723		0.720
	Size (Y18)	0.760		0.760
	Price (Y19)	0.685		0.690
	Freshness (Y20)	0.709		0.708
Green Awareness	Effort (Z1)	0.863	0.924	0.871
	Label (Z2)	0.868		0.877
	Slogan (Z3)	0.882		0.885
	Symbol (Z4)	0.887		0.880
	Brand (Z5)	0.803		0.797
	Concerns (Z6)	0.816		0.798

The test results of the research instruments in Table 1 explain that all research instruments are said to be valid and reliable. These results of Pearson correlation values exceed 0.5 and Cronbach's alpha values are all above 0.7. Besides all loading factor values are above 0.6, which explains that all instruments can form a study variable properly. Furthermore, the model test (good-of-fit) results summarize 200 samples summarized in Table 2 and Fig. 2.

Table 2
Result of Model Test

Goodness-of-Fit Index	Cut off Value (Nitzl & Chin, 2017)	Model Test Result	Information
Convergent Validity	>0.30	Outer Loading > 0.500	Good
Composite Reliability	>0.70	Composite Reliability > 0.800	Good
Average Variance Extracted	>0.30	AVE > 0.400	Good
Cronbach's Alpha	>0.70	Cronbach's Alpha >0.800	Good
Outer Weight	>2.032	Outer Weight >2.000	Good

From the test results of the research model, we have learned that eco-label, which is an attribute of environmentally friendly products, has a positive relationship on the creation of environmental knowledge and perceived quality. Perceived quality is a consumer behavior that is most closely related to eco-label compared to environmental knowledge. Besides environmental knowledge, which is knowledge from consumers based on evaluations of environmentally friendly products also has a positive relationship with consumer green awareness, as well as perceived quality. The latest research results note that green consumer awareness can be controlled directly by eco-labels on environmentally friendly products. This research uses a hypothesis, and then the results of the research hypothesis test are then presented based on the t-value. Hypothesis test results note that all relationships between variables are said to be significant, bearing in mind the t-value is higher than 2.061. The full list of hypothetical test results is presented in Table 3.

Table 3
Research Hypothesis Test

Hypotheses	Path Coefficients	t-value	Results
Eco-Label → Envi. Knowledge (H1)	0.297	2.982	Support
Eco-Label → Perceived Quality (H2)	0.425	5.761	Support
Envi. Knowledge → Green Awareness (H3)	0.318	4.779	Support
Perceived Quality → Green Awareness (H4)	0.306	4.032	Support
Eco-Label → Green Awareness (H5)	0.406	7.922	Support

The results of the study in Table 3 confirm the test results of the research model to assess customer green awareness, where all the results of hypothesis testing (H1, H2, H3, H4, H5) are statistically supported. The model of consumer behavior on environmentally friendly products that lead to customer green awareness, becomes the findings of this study.

5. Discussion

5.1 Eco-Label Credibility on Customer Perceived Quality

Eco-label is an attribute on environmentally friendly products (Ottman, 2011); the label provides a distinctive image for the product and is considered better by consumers than ordinary products (Suki et al., 2016). It means that eco-label is an attribute that has credibility as a better product to consume. This study is in line with previous research studies that explain the credibility of a product judged by its superior label (Cai et al., 2017). The credibility of eco-labels on environmentally friendly products is assessed from several essential things, including recognition, use, understanding, and trust of consumers. However, the more critical credibility is valued by consumers understanding and recognition, which is in line with the value of loading factors listed in Table 2. Consumer understanding is the view of consumers who judges better for environmentally friendly products compared to ordinary products; this is due to the credibility of environmentally friendly products that are free of chemicals that endanger the environment. While the submission considered as an award for environmentally friendly products that can be accepted by consumers as healthier products when consumed. Of course, both are also supported by the behavior of consumers who trust and use environmentally friendly products. This finding explains the importance of eco-labeling in giving more value to environmentally friendly products. Values that have been considered excellent by consumers contained in the eco-label, based on the results of the study, are known to have an impact on customer perceived value (H1). Besides that, there is a good relationship with environmental knowledge (H2). The results of this study are certainly in line with previous studies that eco-labeling as an attribute on environmentally friendly products plays an essential role in changing consumer behavior, namely increasing customer perceived quality in products (Atănăsoaie, 2013; Sharma & Kushwaha, 2019). The same holds for the impact of eco-labels on environmental knowledge, which is in line with previous research studies (Atănăsoaie, 2013; Rashid, 2009). This finding explains the importance of the credibility of product attributes through eco-labels in influencing consumer behavior related to consumer knowledge of environmentally friendly products. However, when examined more deeply, the results of the research model in Fig. 2 explain that eco-labeling has more effect on increasing customer perceived value compared to customer environmental knowledge. The result is given that the value of correlation on customer perceived quality is more significant than on environmental knowledge. This finding can be emphasized by highlighting the importance of the credibility of eco-labels on environmentally friendly products in increasing customer perceived value. Of course, the study of eco-labeling products is useful as additional information for companies engaged in environmentally friendly products. The implementation of a green marketing strategy that focuses on green customer behavior can sort out the benefits of eco-label attributes, make it more credible, and use it to control the value of product quality.

5.2 An Application of Environmental Knowledge to Green Awareness

Environmental knowledge is seen as knowledge of the environment and an essential element in understanding green customer behavior (Safari et al., 2018). This knowledge does not emerge at this point because it requires a process based on the experience of consumers of environmentally friendly products that are valued (Tsai et al., 2012). Often consumers are wrong in assessing environmentally friendly products, for example, in assessing the correct attributes of environmentally friendly products. Consumer ratings are still wrong, especially for organic products, still, assume all the attributes listed on organic products are attributes that are patent and in line with expectations. Though not all attributes are in line with an expectation, which is free from chemicals in the production process, where only the label "Organik Indonesia" is appropriate and recommended by the Indonesian government (Alamsyah et al., 2017). This finding certainly needs to be evaluated from the side of government regulations, so that consumers are not disadvantaged by various attributes on behalf of eco-friendly products. In assessing environmentally friendly products, knowledge from consumers is very important, given the main impact on consumers' green awareness of the product (Suki et al., 2016). It has been known before in the research findings that the attributes of environmentally friendly products through eco-labeling, have played an essential role in controlling customer perceived quality compared to environmental knowledge. Continued with other research results, the impact of environmental knowledge and consumer quality is perceived in creating consumer green awareness (H4, H5). The result is in line with research studies that explains the positive impact of consumer knowledge of products on consumer care in choosing environmentally friendly products (Paul, 2012). Thus, producers deemed necessary to explore the level of consumer knowledge of the environment in introducing environmentally friendly products as a product choice for consumption. When examining the results in Table 2, we learn that there is some knowledge that is considered necessary in environmental knowledge, especially related to organic products and ozone friendly. Consumers believe that environmentally friendly products are identical to organic products such as organic vegetable products and the production process is not harmful to environmental sustainability. This provides an opportunity to improve consumer behavior that leads to consumer green awareness. Also, related to consumer knowledge is also recognized in this study has a relationship with customer perceived quality, since everything that is considered positive by consumers has a good impact on consumer green awareness. In line with the opinion that explains that consumer care for environmentally friendly products starts from positive assumptions of consumers who dominate from negative assumptions about the products, the value (Alamsyah et al., 2017). Based on the research findings in Fig. 2, it emphasized that customer green awareness is a behavior that is more influenced by environmental knowledge compared to perceived quality. The information considered reasonable since the knowledge of consumers puts forward concern for the environment (Safari et al., 2018). Perceived quality promotes consumer selection of eco-friendly products (Lin et al., 2015). The implementation of a

green marketing strategy needs to prioritize consumers' knowledge of the environment when it relates to the level of consumer concern for environmentally friendly products.

5.3 Model of Green Awareness Supporting by Eco-Label

Green awareness is the primary key in this research, which is the final goal to be achieved, namely, to find determinants that can change it towards more positive directions. However, assessing the level of consumer concern for environmentally friendly products is not easy, because of the many factors, both internal and external consumers. Nevertheless, this time, we have tried to combine the two, namely internal consumers, through environmental knowledge and perceived quality and external consumers through the eco-label attributes of the product. Green customer awareness is essential to be studied by producers because of its impact on consumer buying behavior on environmentally friendly products. As well as the fact in previous studies that have a good relationship with consumer loyalty. Several factors are determining the creation of green awareness, namely consumer views of effort, labels, slogans, symbols, brands, and concerns. What is considered necessary is based on the findings in Table 2, related to efforts in finding products, knowledge of the truth of product labels, trust in product slogans, and different symbols of environmentally friendly products. All factors that determine the level of consumer awareness in principle determine consumer behavior in environmentally friendly products. The findings of this study suggest a new model related to consumer behavior at the level of green awareness. Based on previous research studies and current research studies that directly green consumer awareness is consumer behavior on environmentally friendly products that can be controlled by environmental knowledge and perceived quality through support from eco-labels (H3). However, we understand from Fig. 2 that eco-label products can change positively towards consumer green awareness. So, the research findings are confirmed that there is a model of green awareness that is supported directly and indirectly by the product attribute, namely eco-label. The results are consistent with the previous studies (Atănăsoaie, 2013; Mourad et al., 2012; Rahmi et al., 2017; Rashid, 2009; Wu & Chen, 2014), which focus on green customer behavior through green awareness. The findings of this study are that the credibility of eco-label can support several consumer behaviors.

6. Conclusions

Green customer behavior is a significant concern when it is associated with a green marketing strategy implemented by producers of the products offered. All these behaviors ultimately lead to an increase in consumer green awareness of environmentally friendly products. Based on the research findings, it was conveyed the positive impact of environmental knowledge and perceived quality on increasing consumer's green awareness, through the support of product attributes, namely eco-label. Regarding eco-labeling, perceptive customer quality plays a more critical role than environmental knowledge. Whereas in controlling green awareness, environmental knowledge has a better role. So, this research explains the importance of the credibility of eco-labels supported by environmental knowledge and perceived quality in controlling customer green awareness. This finding also reveals that we need eco-label with the mediation of environmental knowledge and perceived value to control the customer green awareness. Considering the importance of assessing consumer behavior on environmentally friendly products that support green consumerism efforts and environmental sustainability efforts. Unfortunately, this study has limitations to focus more on assessing green customer behavior through green awareness. For future studies; it expected that there would be development and improvement both in terms of the number of consumers studied or from the behavior of other consumers who have a positive impact on green awareness. The study is suggested more deeply on the clustering of internal and external factors of consumers that can increase the positive impact on consumer green awareness. Also, the culture and geographical location play an essential role in determining consumer behavior on environmentally friendly products. So that further research collaboration is needed from two different cultures and countries in assessing green customer behavior.

Acknowledgement

References

Alamsyah, D. P., Othman, N. A., & Mohammed, H. A. A. (2020). The awareness of environmentally friendly products: The impact of green advertising and green brand image. *Management Science Letters*, *10*(9), 1961–1968.

Alamsyah, D. P., & Syarifuddin, D. (2017). Store image: Mediator of social responsibility and customer perceived value to customer trust for organic products. *IOP Conference Series: Materials Science and Engineering*, *288*(1), 012045.

Alamsyah, D. P., Syarifuddin, D., & Mohammed, H. A. A. (2018). Green customer behavior on eco-friendly products: innovation approach. *Jurnal Dinamika Manajemen*, *9*(2), 159–169.

Alamsyah, D. P., Trijumansyah, A., & Hariyanto, O. I. B. (2017). Mediating of Store Image on Customer Trust for Organic Vegetables. *Mimbar: Jurnal Sosial Dan Pembangunan*, *33*(1), 132–141.

Anderson, Z. R., Kusters, K., McCarthy, J., & Obidzinski, K. (2016). Green growth rhetoric versus reality: Insights from Indonesia. *Global Environmental Change*, *38*, 30–40.

Arsanti, I. W., & Böhme, M. H. (2018). Organic vegetable production in java - challenge for the chili growers. *IOP Conf. Series: Earth and Environmental Science*, 215.

Astuti, M., Meliala, A., Dalais, F. S., & Wahlqvist, M. L. (2000). Tempe, a nutritious and healthy food from Indonesia. *Asia Pacific Journal of Clinical Nutrition*, *9*(4), 322–325.

Atănăsoaie, G. S. (2013). Eco-Label and its role in the development of organic products market. *Economy Transdisciplinarity Cognition*, *16*(1), 122–130.

Beneke, J., Flynn, R., Greig, T., & Mukaiwa, M. (2013). The influence of perceived product quality, relative price and risk on customer value and willingness to buy: A study of private label merchandise. *Journal of Product & Brand Management*, *22*(3), 218–228.

Biswas, A., & Roy, M. (2015). Leveraging factors for sustained green consumption behavior based on consumption value perceptions: Testing the structural model. *Journal of Cleaner Production*, *95*, 332–340.

Bouten, L., & Hoozée, S. (2013). On the interplay between environmental reporting and management accounting change. *Management Accounting Research*, *24*(4), 333–348.

Cai, Z., Xie, Y., & Aguilar, F. X. (2017). Eco-label credibility and retailer effects on green product purchasing intentions. *Forest Policy and Economics*, *80*(October 2016), 200–208.

Chang, C. T. (2012). Are guilt appeals a panacea in green advertising? The right formula of issue proximity and environmental consciousness. *International Journal of Advertising*, *31*(4), 741–771.

Chen, H.-S., & Hsieh, T. (2011). A study of antecedents of customer repurchase behaviors in Chain store supermarkets. *Journal of International Management Studies*, *6*(3), 1–11.

Chen, Y., & Chang, C. (2012). Enhance green purchase intentions. The roles of green perceived value, green perceived risk, and green trust. *Management Decision*, *50*(3), 502–520.

Codini, A., Saccana, N., Sicco, A., Saccani, N., & Sicco, A. (2012). The relationship between customer value and pricing strategies : an empirical test. *Journal of Product and Brand Management*, *7*(7), 538–546.

D'Souza, C., & Taghian, M. (2005). Green advertising effects on attitude and choice of advertising themes. *Asia Pacific Journal of Marketing and Logistics*, *17*(3), 51–66.

Fuerst, F., & Shimizu, C. (2016). Green luxury goods? The economics of eco-labels in the Japanese housing market. *Journal of the Japanese and International Economies*, *39*, 108–122.

Gao, X., & Tian, L. (2019). Effects of awareness and policy on green behavior spreading in multiplex networks. *Physica A: Statistical Mechanics and Its Applications*, *514*, 226–234.

Gao, Y. L., Mattila, A. S., & Lee, S. (2016). A meta-analysis of behavioral intentions for environment-friendly initiatives in hospitality research. *International Journal of Hospitality Management*, *54*, 107–115.

Grajkowski, J., Ochman, I., & Muliński, Z. (2007). Firmness and antioxidant capacity of highbush blueberry (Vaccinium corymbosum L.) Grown on Three Types of Organic Bed. *Vegetable Crops Research Bulletin*, *66*(1), 155–159.

Green, T., & Peloza, J. (2015). How did the recession change the communication of corporate social responsibility activities? *Long Range Planning*, *48*(2), 108–122.

Hong, S., Thong, J. Y. L., & Tam, K. Y. (2006). Understanding continued information technology usage behavior: A comparison of three models in the context of mobile internet. *Decision Support Systems*, *42*(3), 1819–1834.

Hung, S., Chen, C. C., & Huang, N.-H. (2014). An Integrative Approach To Understanding Customer Satisfaction With E-Service Of Online Stores. *Journal of Electronic Commerce Research*, *15*(1), 40–58.

Jain, S. K., & Kaur, G. (2004). Green marketing: An Indian perspective. *Decision*, *31*(2), 168–209.

Joosse, S., & Hracs, B. J. (2015). Curating the quest for "good food": The practices, spatial dynamics and influence of food-related curation in Sweden. *Geoforum*, *64*, 205–216.

Kim, H. Y., & Chung, J.-E. (2011). Consumer purchase intention for organic personal care products. *Journal of Consumer Marketing*, *28*(1), 40–47.

Lian, S. B., Safari, M., & Mansori, S. (2016). The effects of marketing stimuli factors on consumers' perceived value and purchase of organic food in Malaysia. *Jurnal Pengurusan*, *47*, 119–130.

Lin, C. P., Tsai, Y. H., Chiu, C. K., & Liu, C. P. (2015). Forecasting the purchase intention of IT product: Key roles of trust and environmental consciousness for IT firms. *Technological Forecasting and Social Change*, *99*, 148–155.

Lin, L., Yu, C., & Chang, F. (2018). Determinants of CSER practices for reducing greenhouse gas emissions : From the perspectives of administrative managers in tour operators Determinants of CSER practices for reducing greenhouse gas emissions : From the perspectives of administrative manage. *Tourism Management*, *64*(February), 1–12.

Martínez-Carrasco, L., Brugarolas, M., Martinez-Poveda, A., Ruiz, J. J. J., Garcia-Martinez, S., Martínez-Poveda, A., Ruiz, J. J. J., & García-Martínez, S. (2012). Modelling perceived quality of tomato by structural equation analysis. *British Food Journal*, *114*(10), 1414–1431.

Mourad, M., Serag, Y., Ahmed, E., & Ahmed, Y. S. E. (2012). Perception of green brand in an emerging innovative market. *European Journal of Innovation Management*, *15*(4), 514–537.

Nicolò, D. (2015). Towards a theory on corporate reputation and survival of young firms. *Procedia Economics and Finance*, *22*(November 2014), 296–303.

Nikhashemi, S. R., Tarofder, A. K., Gaur, S. S., & Haque, A. (2016). The effect of customers' perceived value of Retail Store on relationship between store attribute and customer brand loyalty: Some insights from Malaysia. *Procedia Economics*

and Finance, 37(16), 432–438.

Nitzl, C., & Chin, W. W. (2017). The case of partial least squares (PLS) path modeling in managerial accounting research. *Journal of Management Control*, *28*(2), 137–156.

Omar, S., Othman, N. A., & Jabar, J. (2017). Effect of eco-innovation practices on sustainable business performance. *Pertanika Journal of Science and Technology*, *25*(S5), 123–128.

Ottman, J. A. (2011). *The New Rules of Green Marketing: Strategies, Tools, and Inspiration for Sustainable Branding*. Greenleaf Publishing.

Paço, A. M. F., Raposo, M. L. B., & Interior, B. (2010). Green consumer market segmentation: Empirical findings from Portugal. *International Journal of Consumer Studies*, *34*(1996), 429–436.

Panzone, L., Hilton, D., Sale, L., & Cohen, D. (2016). Socio-demographics, implicit attitudes, explicit attitudes, and sustainable consumption in supermarket shopping. *Journal of Economic Psychology*, *55*, 77–95.

Paul, J. (2012). Consumer behavior and purchase intention for organic food. *Journal of Consumer Marketing*, *29*(6), 412–422.

Phillip, K., Gus, M., Rodney, a, & John, a. (2003). Customer repurchase intention. *European Journal of Marketing, 37*(11), 1762–1800.

Rahim, M. H. A., Zukni, R. Z. J. A., Ahmad, F., & Lyndon, N. (2012). Green advertising and environmentally responsible consumer behavior: The level of awareness and perception of Malaysian youth. *Asian Social Science*, *8*(5), 46–54.

Rahmi, D. Y., Rozalia, Y., Chan, D. N., Anira, Q., & Lita, R. P. (2017). Green brand image relation model, green awareness, green advertisement, and ecological knowledge as competitive advantage in improving green purchase intention and green purchase behavior on creative industry products. *Journal of Economics, Business & Accountancy Ventura*, *20*(2).

Rashid, N. R. N. A. (2009). Awareness of eco-label in Malaysia's green marketing initiative. *International Journal of Business and Management*, *4*(8), 132–141.

Rashid, N. R. N. A., Khalid, S. A., & Rahman, N. I. A. (2015). Environmental corporate social responsibility (ECSR): exploring its influence on customer loyalty. *Procedia Economics and Finance*, *31*(15), 705–713.

Rizwan, M., Mahmood, U., Siddiqui, H., & Tahir, A. (2014). An empirical study about green purchase intentions. *Journal of Sociological Research*, *5*(1), 290–305.

Safari, A., Salehzadeh, R., Panahi, R., & Abolghasemian, S. (2018). Multiple pathways linking environmental knowledge and awareness to employees' green behavior. *Corporate Governance: The International Journal of Business in Society*, *18*(1), 81–103.

Shao, S., & Yang, L. (2014). Natural resource dependence, human capital accumulation, and economic growth: A combined explanation for the resource curse and the resource blessing. *Energy Policy*, *74*(C), 632–642.

Sharma, N. K., & Kushwaha, G. S. (2019). Eco-labels: A tool for green marketing or just a blind mirror for consumers. *Electronic Green Journal*, *1*(42), 1–22.

Shepherd, R., Magnusson, M., & Sjödén, P. (2005). Determinants of consumer behavior related to organic Foods. *Ambio*, *34*(4–5), 352–359.

Shewmake, S., Okrent, A., Thabrew, L., & Vandenbergh, M. (2015). Predicting consumer demand responses to carbon labels. *Ecological Economics*, *119*, 168–180.

Suki, N. M. (2013). Green awareness effects on consumers' purchasing decision: Some insights from Malaysia. *International Journal of Asia-Pacific Studies*, *9*(2), 49–63.

Suki, N. M., Suki, N. M., & Azman, N. S. (2016). Impacts of corporate social responsibility on the links between green marketing awareness and consumer purchase intentions. *Procedia Economics and Finance*, *37*(16), 262–268.

Tsai, M. T., Chuang, L. M., Chao, S. T., & Chang, H. P. (2012). The effects assessment of firm environmental strategy and customer environmental conscious on green product development. *Environmental Monitoring and Assessment*, *184*(7), 4435–4447.

Tsai, W. H., Chang, Y. C., Lin, S. J., Chen, H. C., & Chu, P. Y. (2014). A green approach to the weight reduction of aircraft cabins. *Journal of Air Transport Management*, *40*, 65–77.

Tsao, W. Y. (2013). The fitness of product information: Evidence from online recommendations. *International Journal of Information Management*, *33*(1), 1–9.

Wang, Y. Y., & Tsai, C. C. (2014). The relationship between brand image and purchase intention: Evidence from award winning mutual funds. *International Journal of Business & Finance Research*, *8*(2), 27–40.

Wu, S.-I., & Chen, Y.-J. (2014). The impact of green marketing and perceived innovation on purchase intention for green products. *International Journal of Marketing Studies*, *6*(5), 81–101.