

DOES ENVIRONMENTALLY FRIENDLY AND HALAL PRODUCTS IMPACT MUSLIM CONSUMERS PURCHASE INTENTION? EVIDENCE IN DKI JAKARTA

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Abstract

The limited availability of environmentally friendly halal products in Indonesia highlights the need to examine factors that shape consumer purchase intentions. This study investigates key determinants influencing Muslims' purchase intention toward products that meet both halal and environmental standards. Using data from 215 Muslim consumers in DKI Jakarta, collected through online and offline purposive sampling, the analysis was conducted with SEM-PLS. The results show that halal green awareness and attitude influence purchase intentions. Meanwhile, halal labels, eco-labels, environmental knowledge, and religiosity affect halal green awareness and attitudes. In this study, piety is also found to influence religiosity. Overall, the findings indicate that halal labels, eco-labels, environmental knowledge, piety, and religiosity shape halal green awareness and attitudes, which in turn influence Muslims' purchase intentions toward environmentally friendly halal products in DKI Jakarta. Future research may incorporate variables such as price, product quality, and digital media influence to provide a more comprehensive understanding of consumer behavior in this context.

Keywords: environmental knowledge, green product, halal green awareness, halal product, purchase intention

Apakah Produk Ramah Lingkungan dan Halal Mempengaruhi Niat Beli Konsumen Muslim? Bukti Empiris dari DKI Jakarta

Abstrak

Keberadaan produk halal ramah lingkungan yang masih terbatas di Indonesia menunjukkan perlunya kajian mengenai niat beli konsumen terhadap produk tersebut. Penelitian ini bertujuan untuk mengkaji faktor-faktor yang mempengaruhi niat beli konsumen Muslim terhadap produk yang memenuhi standar halal dan lingkungan. Data dari 215 penduduk Muslim di DKI Jakarta dikumpulkan melalui survei daring dan luring dengan menggunakan metode purposive sampling, kemudian dianalisis menggunakan SEM-PLS. Hasil penelitian menunjukkan bahwa kesadaran halal ramah lingkungan dan sikap berpengaruh terhadap niat beli. Sementara itu, label halal, label ramah lingkungan, pengetahuan lingkungan, dan religiusitas berpengaruh terhadap kesadaran halal ramah lingkungan dan sikap. Dalam penelitian ini, kesalehan juga ditemukan berpengaruh terhadap religiusitas. Secara keseluruhan, temuan menunjukkan bahwa label halal, label ramah lingkungan, pengetahuan lingkungan, kesalehan, dan religiusitas membentuk kesadaran halal ramah lingkungan dan sikap, yang selanjutnya memengaruhi niat beli konsumen Muslim terhadap produk halal ramah lingkungan di DKI Jakarta. Penelitian selanjutnya dapat mempertimbangkan variabel tambahan seperti harga, kualitas produk, dan pengaruh media digital untuk memberikan pemahaman yang lebih komprehensif mengenai perilaku konsumen dalam konteks ini.

Kata kunci: kesadaran halal dan lingkungan, pengetahuan lingkungan, produk halal, produk ramah lingkungan, niat beli

INTRODUCTION

The halal industry in Indonesia has developed without considering environmental sustainability, even though Islam requires Muslims to consume halal and thayyib products. Irfany et al. (2024) stated that the concept of thayyib is closely linked to environmental friendliness because consuming

halal and thayyib products not only ensures the safety of Muslims but also reduces negative impacts or environmental damage. This is particularly relevant when discussing contemporary environmental issues such as air pollution, greenhouse gas emissions, and global warming. As consumers increasingly seek environmentally friendly options, businesses will

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respond by creating environmentally friendly products to attract consumers (Khuan et al., 2024). Therefore, not only halal products but also environmentally friendly products are expected to minimize environmental damage. Therefore, it is crucial to study the factors that influence consumers' purchase of environmentally friendly halal products.

Irfany et al. (2024) stated that there are two main aspects that shape consumers' attitudes toward purchasing environmentally friendly halal cosmetics. The most important factor is a person's mindset, followed by their knowledge of halal and environmentally friendly ingredients. According to Al Mamun et al. (2020), consumer perceptions of environmentally friendly products can influence their purchasing decisions. Similarly, Saragi (2025) reported that attitudes significantly influence consumer purchase intentions in Indonesia, particularly regarding environmentally friendly products. The findings indicate that customers' intentions to purchase environmentally conscious halal products are significantly influenced by their attitudes.

Awareness of halal and environmental issues is the second element expected to influence the tendency to purchase eco-friendly halal goods. Albra et al. (2023) stated that customers are more likely to choose halal goods when they understand their significance because it consistently reflects their religious beliefs. Furthermore, environmental awareness leads to a greater understanding of the importance of using eco-friendly goods, which directly increases consumer purchase intentions (Ho Nguyen et al., 2022). Further exploration of the specific factors shaping halal and environmental awareness, as well as consumer attitudes, is important.

For non-Muslims, the halal mark ensures that a product is safe, hygienic, and of superior quality (Budiarti et al., 2022). Sustainability-conscious consumers tend to prefer products with the halal label, as they perceive it as a sign that the product adheres to ethical and sustainable standards. Research by Handriana et al. (2021) explains that the halal label positively and significantly influences halal awareness. Furthermore, Irfany et al. (2024) demonstrated that halal labels impact halal and environmental awareness.

According to Mardius et al. (2023), eco-friendly products are typically identified by eco-labels, which serve as a marker to differentiate them from

other products. These eco-labels serve as certification indicating that a product or service has a reduced ecological impact throughout its entire life cycle, from raw material procurement, manufacturing, and distribution to final use and disposal, compared to similar products (Khuan et al., 2024). Research by Alamsyah et al. (2021) and Santoso and Fitriani (2016) further demonstrated that eco-labels have a positive effect on consumer environmental awareness.

Environmental knowledge refers to the ability to identify symbols, concepts, and behaviors related to environmental conservation efforts, based on information obtained about environmental issues (Tian et al., 2020). Consumers with a strong understanding of environmental issues tend to be more aware of the impacts of their consumption and are motivated to choose more sustainable products. As consumers' understanding of a product's value increases, their willingness to purchase it also increases (Khuan et al., 2024). Environmental knowledge, rather than product quality assessments, is the most important factor influencing environmentally conscious consumer behavior (Putri et al., 2021). Attitude formation is positively influenced by a person's level of knowledge, according to Tian et al. (2020).

Religiosity refers to deep-seated beliefs that encourage individuals to adhere to religious teachings, including adherence to Sharia principles. According to Koc et al. (2025), the level of religiosity among Muslims shapes their consumption attitudes, leading them to reject products that do not meet halal standards and prefer products that align with Islamic teachings. People with deep religious beliefs are more committed to adhering to Islamic law, viewing Sharia compliance as a genuine religious obligation. Furthermore, Divianjella et al. (2020) showed that customers' attitudes toward purchasing halal cosmetics are positively influenced by their religious beliefs.

In psychology, awareness is described as a mental state that allows individuals to perceive their surroundings, process thoughts and emotions, and make decisions based on these perceptions. Ahmad and Zhang (2020) found that awareness significantly influences a person's attitudes. In consumption, Muslims will ensure that products comply with halal and tayyib standards, with tayyib including concern for environmental sustainability (Irfany et al., 2024). Research by Ramadhan et al. (2024) shows that awareness

significantly and positively influences consumer attitudes. Furthermore, studies by Sarasuni and Harti (2021) and Alamsyah et al. (2021) indicate that environmental awareness has a positive and significant impact on consumers' tendency to purchase environmentally friendly products.

Wahab et al. (2016) state that a Muslim's emotional competence is largely shaped by their level of piety, which indicates the depth of their faith. Piety will influence religious values such as honesty, accountability, and reliability into their professional ethics. Furthermore, piety encourages Muslims to worship Allah, carry out divine commands, cultivate greater gratitude to Him, and maintain sincerity by performing good deeds and avoiding evil. According to this study, a person's level of religiosity is influenced by their level of piety. According to Wahab's (2016) research, there is a positive correlation between religion and piety. Consequently, piety is seen as a crucial component influencing a person's level of religiosity.

Handriana et al. (2021) found that attitudes significantly influence purchase intentions. From a consumer behavior perspective, intention indicates the extent of a person's personal commitment to a particular activity, such as purchasing something. Consequently, the primary indicator of expected purchasing behavior in this study is consumers' desire to purchase environmentally friendly halal products. Furthermore, this study explores various factors influencing consumer purchase intentions related to environmentally sustainable halal products.

To examine the purchase intentions of Muslims in DKI Jakarta for environmentally friendly halal products, this study adopted the Theory of Planned Behavior (TPB) developed by Ajzen (1991). This theory is a development of the Theory of Reasoned Action (TRA). The Theory of Planned Behavior has been widely applied in consumer research to predict online purchase intentions, demonstrating strong predictive power of consumer attitudes and perceived behavioral factors on purchase intentions (Nguyen et al., 2023).

Many previous studies have investigated the intention to purchase halal-certified goods, as seen in Suryaputri's (2020) work. However, little research has been conducted specifically on consumer willingness to purchase environmentally friendly and halal products, such as research

conducted by Handriana et al. (2021) and Perangin-angin et al. (2024). Previous research has examined the intention to purchase halal products, such as the study by Suryaputri (2020), and numerous studies on environmentally friendly products have also been conducted by Nadiya and Ishak (2022), who examined consumer behavior and purchase intentions for environmentally friendly skincare products. Consumer intention to purchase halal and environmentally friendly products has not been studied in depth. Irfany et al. (2024) only examined cosmetic products, but this study examined halal products certified by the Indonesian Ulema Council (MUI) and environmentally friendly products certified by the Ministry of Environment and Forestry (KLHK). Piety is a novel variable in this study because, according to Wahab et al. (2016), a person's level of religiosity can be measured through piety.

This study aims to examine how consumer intention to purchase halal and environmentally friendly products is influenced by halal certification, eco-labels, environmental awareness, piety, religion, halal green awareness, attitudes, and purchase intentions. This study examined the purchase intentions of customers in the Special Capital Region of Jakarta. It is hoped that these findings will advance Indonesia's understanding of environmentally friendly halal products and provide insight into the factors that influence customers' purchasing decision intentions.

METHODS

Research Design, Location, and Time

Quantitative research method with a reflective model is employed in this study to examine latent variable relationships using construct indicators. Sample requirements include 17-year-old Muslim of DKI Jakarta residents. The research objects are Muslim individuals in DKI Jakarta who have never purchased halal and environmentally friendly products. A total of 215 people participated in this study by completing questionnaires distributed both online and offline, with 155 respondents filling them out online and 60 offline. The research was conducted in DKI Jakarta Province from April to May 2025.

Sampling Technique

Residents who were at least 17 years old and had never bought eco-friendly halal products are set

as a form of purposive sampling. Purposive sampling is a non-probability sampling technique in which researchers intentionally select participants or cases according to specific criteria or characteristics that are most relevant to the research purpose, ensuring that the collected data effectively supports the study objectives (Memon et al., 2025). Following Kurniawati and Savitri (2020), sample size is calculated using Bernoulli formula:

$$n = \frac{(z_{a/2})^2 \cdot p \cdot q}{e^2}$$

n = number of samples

Z = Z value at a certain level of confidence

- 1,96 (confidence level 95%)
- 2,58 (confidence level 99%)

p = proportion of success

$q = 1 - p$

e = margin of error

If the p value is unknown, then $p = 0.5$ and $q = 0.5$ are used to obtain the minimum sample size. Sample size is calculated using Bernoulli formula and generates 97 respondents as a minimum sample. As this research uses 215 sample, this amount is above the minimum sample required. The five point likert scale is used to measure each variables (Windiana & Putri., 2021).

Procedures for Data Collection

Primary data included sample characteristics such as identity, age, occupation, and domicile. Data were gathered through questionnaires distributed both online and offline. The questionnaire contained 36 items.

Measurement and Assessment of Variables

Likert scale of questionnaire from 1 to 5 was used for the variables measurement. Environmental knowledge, piety, religion, halal green awareness, attitude, buying intention, and halal and eco-friendly labeling were among the variables. Respondents were able to express how much they agreed with statements pertaining to each variable by using particular indicators that were described in the questionnaire.

According to Handriana et al. (2021), halal label serves as a main way for Muslim customers to confirm that a product conforms with halal regulations. This query was lifted from Handriana et al.'s (2021) research. The question "Is halal-certified products important to consumers?" has one of the highest outer loading values on the halal label indicator (0.917). A high level of internal consistency is demonstrated by the four-item halal label questionnaire, which has a Cronbach's Alpha coefficient of 0.928.

Organizations with eco-friendly labels strive to reduce environmental effect (Pinem et al., 2018). An instrument created by Irfany et al. (2024) was used to measure the eco-friendly label variable. The statement that customers trust in the eco-friendly claims printed on a product's eco-friendly label (0.896) is an example of a question item with the highest outer loading value on the eco-friendly label indicator. The Cronbach's Alpha coefficient for the five-item survey on eco-friendly labels is 0.931, indicating high internal consistency.

Environmental knowledge, which is described as an awareness of environmental concepts, related issues, and how they relate to eco-friendly acts, is necessary in order to recycle, use renewable energy, and purchase green products (Alamsyah., 2021). The question "Do consumers know that products made from natural ingredients are safe for the environment?" had the highest outer loading value on the environmental knowledge indicator (0.872). An instrument created by Irfany et al. (2024) was used to measure the variable measuring environmental knowledge. The five-item environmental knowledge questionnaire exhibits good internal reliability with 0.884 of Cronbach's Alpha value.

The operational definition of piety, according to Rahman and Jalil (2021), is the sense of God's presence or awe and fear for Him. Religious people have a big influence on environmental conservation because they can combine their religious knowledge with environmental conservation to increase public awareness of the problem (Rahman & Jalil, 2021). A questionnaire from the study is used to test the piety variable (Wahab et al., 2016). The piety questionnaire consists of four items. For instance, the statement "My religious beliefs and practices are important to me" has the highest outer loading value on the taqwa label indicator (0.941), and it demonstrates excellent internal consistency with 0.936 as Cronbach's Alpha value.

According to Nurhayati and Hendar (2020), religiosity is defined by the degree a person's religious beliefs and principles influence their responses, viewpoints, thoughts, feelings, and behaviors pertaining to obedience. Irfany et al. (2024) developed an instrument to measure this variable. With a Cronbach's Alpha rating of 0.852, the four-item religiosity measure has strong internal consistency. The statement "Consumers are aware and recognize that there are several products processed in a halal and environmentally friendly manner" has the highest outer loading value (0.893) on the Religiosity index.

Halal awareness is Muslims' knowledge of Islamic legal rulings on acceptable and unacceptable behavior, according to Balqis and Zulaikha (2023). This includes understanding consumer goods, their ingredients, and production. Environmental awareness is customers' comprehension of eco-friendly products (Alamsyah et al., 2021). Irfany et al.'s (2024) work integrates halal and environmental consciousness. The four-item halal green awareness survey's Cronbach's Alpha score of 0.848 indicates strong internal reliability. The statement "Consumers are aware and recognize that there are several products processed in a halal and environmentally friendly manner" has the highest outer loading value (0.846) on the Halal Green Awareness indicator.

Ajzen (1991) defined attitude as a person's assessment of a particular behavior, indicating how much they believe that conduct to be positive or negative. Attitude was evaluated using a questionnaire created by Handriana et al. (2021). Strong internal consistency is indicated by the four-item attitude scale's Cronbach's Alpha value of 0.864. A value of 0.884, the line "Consumers always check halal and environmentally friendly labels before purchasing products" is an example

of an item with the highest outer loading value on the Attitude indicator.

The consumer's motivation to purchase a product is operationally known as purchase intention. To assess this variable, Irfany et al. (2024) developed a measurement method. The four-item purchase intention questionnaire has acceptable internal consistency, because of its Cronbach's Alpha grade of 0.812. One example of an item with the highest outer loading value on the Purchase Intention indicator is the statement "Consumers will fulfill their needs by purchasing halal and environmentally friendly products", with a value of 0.843.

Data Analysis

This study employed Structural Equation Modeling (SEM) analysis with the Partial Least Squares method. This method is used for non-normally distributed data and small sample sizes (Marliana, 2021). PLS-SEM is a non-parametric method that does not require normally distributed indicator data, making it suitable for Likert questionnaire data, which often shows deviations from normality. This study utilized the SmartPLS application, which is suitable for analyzing research using the SEM method (Hair & Alamer, 2022). Data were analyzed descriptively based on categories such as age, gender, occupation, income, and domicile. Respondents were aged 17 and older, with gender classified as male or female. Junior high school, senior high school, diplomas, bachelor's degrees, and other educational levels were among them. Students, housewives, independent contractors, workers in the private sector, and civil servants were among the occupations that were classified. "Rp500,000, Rp500,001 to Rp1,000,000, Rp1,000,001 to Rp3,000,000, Rp3,000,001 to Rp5,000,000, and more than Rp5,000,000 were the five income categories".

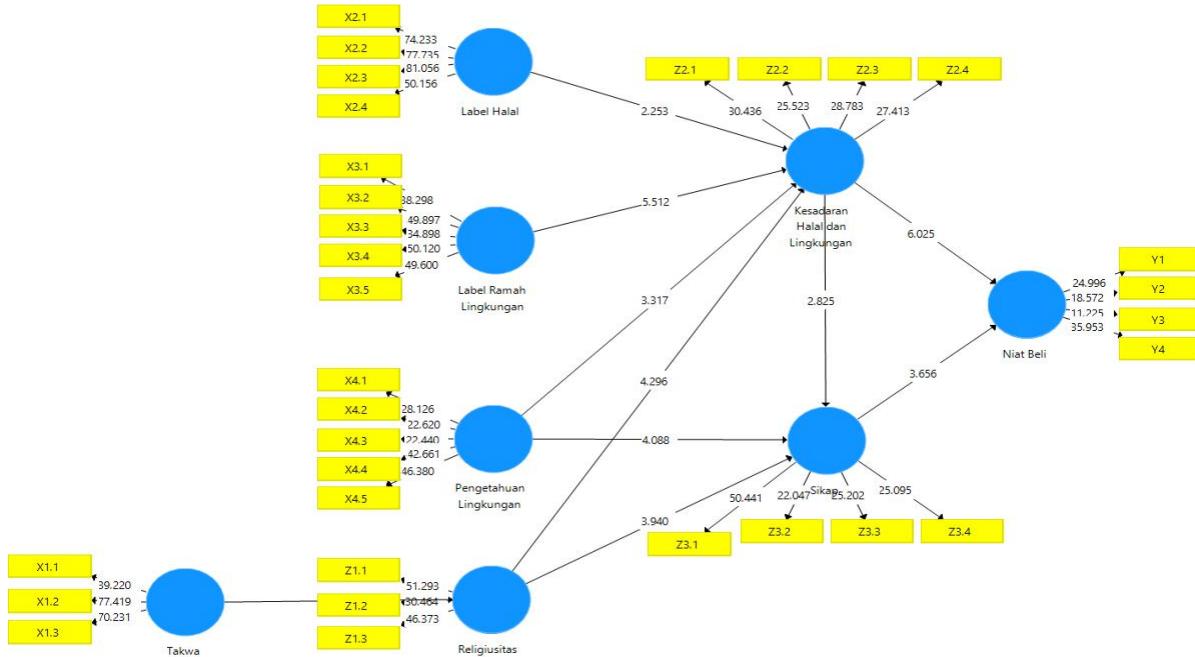


Figure 1 Estimation results of loading factors of structural models

Furthermore, following Figure 1, hypotheses in research consist of:

- H1: Halal Label can affect Halal Green-Awareness significantly
- H2: Eco-Friendly Label can affect Halal Green-Awareness significantly
- H3: Environmental Knowledge can affect Halal Green-Awareness significantly
- H4: Environmental Knowledge can affect Attitude significantly
- H5: Piety can affect Religiosity significantly
- H6: Religiosity can affect Halal Green Awareness significantly

- H7: Religiosity can affect Attitude significantly
- H8: Halal Green Awareness can affect Attitude significantly
- H9: Halal Green Awareness can affect Purchase Intention significantly
- H10: Attitude can affect Purchase Intention significantly

RESULTS

The characteristics of respondents in this study include age, gender, education, occupation, and income. The results of the respondents' characteristics in this study can be seen in Table 1.

Table 1 Respondent profile (n=215)

Characteristic	n	Characteristic	n
Sex			
Male	107	Occupation	
Female	108	Private employee	65
Domicile		Student	66
North Jakarta	25	Entrepreneur	29
South Jakarta	46	Civil servant	21
Central Jakarta	36	Others	24
West Jakarta	64	Income (Rp)	
East Jakarta	36	< 500.000	30
Kepulauan Seribu	8	500.000 – 1.000.000	27
Age		1.000.000 – 3.000.000	47
17–25	146	3.000.001 – 5.000.000	67
26–40	52	>5.000.000	44
41–50	13		
51–60	4		

The respondent profile summarizes 215 individuals, showing a nearly equal gender distribution with 107 males and 108 females. The sample is predominantly young, with the vast majority (146 respondents) aged 17-25 years old. Geographically, the largest segments of the sample reside in West Jakarta (64) and South Jakarta (46). In terms of occupation and income, the respondents are mainly Students (66) and Private employees (65). The largest single income group earns between Rp3,000,001 and Rp5,000,000 (67 respondents), followed by the Rp1,000,000 – Rp3,000,000 bracket (47 respondents). Furthermore, following Hair and Alamer (2022), reflective model in SEM-PLS has

two core analysis: outer and inner. The primary processes of outer model are discriminant validity, convergent validity, internal consistency, and indicator reliability.

Research Instrument Test (Outer Loadings)

Examining the outer loading is the first stage in evaluating the reflective measurement model (Hair & Alamer, 2022). The results are in Table 2 where in confirmatory research, an ideal factor loading exceeds 0.70, whereas in exploratory studies, loadings between 0.60 and 0.70 are considered acceptable.

Table 2 SEM-PLS model results of PLS Algorithm

Variable	Indicator	Outer Loadings	Result
Halal Label (X1)	X1.1	0.912	Valid
	X1.2	0.917	Valid
	X1.3	0.909	Valid
	X1.4	0.887	Valid
Eco Label (X2)	X2.1	0.858	Valid
	X2.2	0.892	Valid
	X2.3	0.879	Valid
	X2.4	0.880	Valid
	X2.5	0.896	Valid
Environmental Knowledge (X3)	X3.1	0.814	Valid
	X3.2	0.795	Valid
	X3.3	0.792	Valid
	X3.4	0.856	Valid
	X3.5	0.872	Valid
	X4.1	0.840	Valid
Piety (X4)	X4.2	0.941	Valid
	X4.3	0.928	Valid
	X4.4	0.933	Valid
	Z1.1	0.899	Valid
Religiosity (Z1)	Z1.2	0.844	Valid
	Z1.3	0.893	Valid
	Z2.1	0.846	Valid
Halal Green Awareness (Z2)	Z2.2	0.812	Valid
	Z2.3	0.841	Valid
Attitude (Z3)	Z2.4	0.815	Valid
	Z3.1	0.884	Valid
	Z3.2	0.824	Valid
	Z3.3	0.828	Valid
	Z3.4	0.836	Valid
Purchase Intention (Y)	Y1	0.843	Valid
	Y2	0.794	Valid
	Y3	0.728	Valid
	Y4	0.832	Valid

Internal Consistency Reliability

Cronbach's Alpha and also Composite Reliability indicators are employed to assess internal consistency reliability when the outer loading values satisfy the necessary criteria. The purpose of this assessment is to confirm that the tool measures the desired construct with precision, accuracy, and consistency (Ghozali & Latan, 2015). While reliability scores above 0.70 are frequently regarded as good, In exploratory research, values in the range of 0.60 to 0.70 are often considered acceptable. However, based on Hair and Alamer (2022), dependability values greater than 0.95 are not advised. There was a range of values for Rho A, Rho C, and Cronbach's Alpha in this research, from 0.70 to 0.95.

Discriminant Validity Test

Hair and Alamer (2022) recommend evaluating discriminant validity using the HTMT (heterotrait-monotrait ratio) technique. They advise that for models with conceptually identical constructs, HTMT values should stay below 0.90 because going above this limit could suggest issues with discriminant validity. For conceptually different conceptions, a stricter threshold of 0.85 is recommended. The Average Variance Extracted (AVE) is a widely used method for confirming convergent validity. Hair and Alamer (2022) state that "a value of 0.50 is considered sufficient". Results in Table 3 shows that AVE is more than

0.50 and HTMT values are less than 0.90, indicating satisfactory in discriminant and convergent validity in the investigation.

Results of Structural Model Analysis (Inner Model)

The R-squared, f-squared, and Q-squared tests are used to evaluate the inner model analysis. By contrasting PLS and LM, this study also illustrates the research model's predictive ability (Hair & Alamer, 2022).

R-square (R^2)

R-square shows that piety explains 0.258 (or 25.8%) of the variation in the religiosity variable, whereas factors outside the model are responsible for the remaining 74.2 percent. Additionally, the halal label, eco-friendly label, environmental knowledge, and piety variables collectively explain 0.743 (74.3%) of the variance in the halal and eco-friendly awareness variable, while 25.7 percent is influenced by external factors. Environmental knowledge, religiosity, and halal and eco-friendly awareness contribute 0.609 (60.9%) to the attitude variable, leaving 39.1 percent explained by other influences beyond the model. Lastly, attitude and halal and eco-friendly awareness together account for 0.560 (56%) of the variance in purchase intention, with the remaining 44 percent attributable to variables outside the scope of this model.

Table 3 Heterotrait-monotrait ratio (HTMT) and AVE (n=215)

Variable	AVE	Halal Green Awareness	Halal Label	Eco Label	Purchase Intention	Environmental Knowledge	Religiosity	Attitude	Piety
Halal Green Awareness	0.686								
Halal Label	0.821	0.634							
Eco Label	0.785	0.885	0.569						
Purchase Intention	0.641	0.846	0.825	0.798					
Environmental Knowledge	0.683	0.752	0.384	0.675	0.669				
Religiosity	0.772	0.852	0.598	0.718	0.773	0.667			
Attitude	0.711	0.809	0.533	0.699	0.796	0.769	0.794		
Piety	0.841	0.659	0.706	0.603	0.792	0.468	0.578	0.545	

(F²) Test

The degree to which the predictor latent variables have a mild, moderate, or high influence on the structural model is assessed using the f-square test (Ghozali & Latan, 2015). According to Ghozali and Latan (2015), the evaluation criteria include weak influence if f^2 value is 0.02, 0.15 for moderate influence, and 0.35 for strong one.

F-square test in this investigation found several correlations. Halal label, environmental knowledge, religiosity, and religion and attitude and purchasing intention had little effects on halal green consciousness. Environmental knowledge, piety, and halal green consciousness moderately affected attitude, religiosity, and purchasing intention. Finally, the eco-label had the greatest impact on halal green consciousness in this study.

Q-square Test

Q-square value below zero denotes insufficient predictive relevance (Ghozali & Latan, 2015) of a model, and vice versa. In this study, the Q-square values for the variables are as follows: religiosity scored 0.195, halal green awareness scored 0.490, attitude scored 0.425, and purchase intention scored 0.349. These results demonstrate that all models examined in this research exhibit predictive relevance because their Q-square values are above zero.

Comparison of RMSE and MAE (PLS vs LM Model)

According to Hair and Alamer, (2022), to evaluate the model's robustness, researchers should use predictive statistical measures like Mean Absolute Error (MAE) or Root Mean Square Error (RMSE). PLS-Predict divides the PLS model's predictive power into three categories: high, moderate, and weak. To determine if a PLS model is strong, we compare it to benchmark models such as the Lisheal Method (LM) and look for indicators that show fewer prediction errors (RMSE or MAE) (Table 4). If only some indicators perform better in the PLS model, the predictive power is moderate. Conversely, if more indicators have greater errors in PLS than in LM, the model's predictive power is weak. In this study, although the PLS model's RMSE and MAE values are smaller than LM for several indicators, they do not dominate. Therefore, the model is interpreted as having moderate predictive power.

In particular, the results indicate that the RMSE values of measurement items Z2.1, Z2.2, Z2.3, Y1, Y2, Y3, Z3.1, Z3.2, Z3.3, and Z3.4 are lower in the PLS model than in the LM model. Furthermore, compared to LM, Z2.1, Z2.2, Z2.3, Y1, Z3.1, Z3.2, Z3.3, and Z3.4 show reduced MAE values in PLS. The conclusion that the PLS model has moderate predictive power is supported by the fact that most measurement indicators in the model have smaller RMSE and MAE than those in the LM model.

Table 4 PLS vs LM Model

Item	Model PLS		Model LM	
	RMSE	MAE	RMSE	MAE
Z2.1	0,719	0,571	0,772	0,603
Z2.2	0,727	0,577	0,771	0,595
Z2.3	0,719	0,550	0,746	0,556
Z2.4	0,690	0,554	0,635	0,511
Y1	0,694	0,525	0,703	0,528
Y2	0,706	0,556	0,720	0,534
Y3	0,711	0,563	0,735	0,540
Y4	0,683	0,539	0,667	0,508
Z1.1	1,041	0,820	0,968	0,724
Z1.2	1,069	0,869	1,042	0,784
Z1.3	1,058	0,839	0,992	0,746
Z3.1	0,824	0,63	0,888	0,663
Z3.2	0,824	0,638	0,898	0,667
Z3.3	0,841	0,638	0,868	0,647
Z3.4	0,838	0,659	0,907	0,698

DISCUSSION

The results of this study indicate that halal labels have a positive and significant effect on halal green awareness. These findings align with those of Aprilia and Saraswati (2021) and Handriana et al. (2021), who found that halal labels increase halal awareness by ensuring that products comply with Sharia law, thereby increasing consumer knowledge about halal. The Theory of Planned Behavior (TPB) is used to support this study because it emphasizes the role of attitudes and purchase intentions in shaping consumer behavior. Halal labels serve as information that protects consumers, especially Muslim consumers, thereby reducing doubts about consuming products. The clarity of halal labels increases consumer awareness of a product's halal status, which in turn forms a positive attitude and drives purchase intentions.

The next hypothesis test examined the effect of eco-friendly labels on halal green awareness, which proved to be significantly positive. This result aligns with the research of Alamsyah et al. (2021) and Irfany et al. (2024), which stated that eco-friendly labels are used to reinforce the perception that halal products are environmentally friendly, which encourages increased halal awareness focused on environmental issues. According to Herianto et al. (2025), eco-friendly labels influence halal green awareness, shaping young consumers' awareness and intentions when purchasing environmentally friendly halal cosmetic products.

Based on the hypothesis testing of this study, environmental knowledge positively and significantly influences halal green awareness. This aligns with research conducted by Munawar et al. (2019), Bashirun and Nuranee (2020) and Putri et al. (2021), which states that consumer awareness. Theory of Planned Behavior in this study is used to explain that halal green awareness is influenced by environmental knowledge, which subsequently increases environmental awareness and influences purchase intention.

These findings also indicate a positive and significant relationship between environmental knowledge and attitudes. These findings align with research by Putri et al. (2021), which states that environmental awareness has a positive and significant effect on customer sentiment toward environmentally friendly halal products. This is

because consumers are more attracted to eco-friendly products when they understand the environment and eco-friendly products, especially through direct experience. Theory of Planned Behavior in this study is used to explain that environmental knowledge functions as a factor in shaping consumer attitudes toward environmentally friendly and halal products. When consumers have good knowledge of environmental issues, they tend to develop positive attitudes toward products that meet these criteria (Sari et al., 2024).

The results of this study indicate that piety has a positive and significant effect on religiosity. This aligns with research conducted by Wahab et al. (2016), which found that piety has a positive influence on religiosity. This implies that a person's level of religiosity increases with their level of piety. Piety is one factor that drives religious behavior and influences a person's inclination toward things that align with their religious beliefs. The results of the hypothesis testing regarding the influence of piety on religiosity included an indicator asking respondents to answer the statement, "My religious beliefs and practices are important to me." The goal was to assess the extent to which respondents view religious beliefs and practices as important, as a reflection of the influence of piety on their level of religiosity.

Religiosity positively and significantly influences awareness of environmentally friendly halal products. This aligns with the conclusions of Nurhayati and Hendar (2020) and Jalil and Hidayatullah (2022), who stated that religion has a positive and significant influence on consumer awareness. This indicates that more religious individuals place a greater value on environmentally friendly halal products. According to Albra et al. (2023), religiosity comprises internal and external dimensions in the Theory of Planned Behavior (TPB). A positive consumer attitude must emerge before purchase intention arises. The internal dimension encompasses religious identity, which shapes personal attitudes, values, and beliefs, while the external dimension reflects religious practices and experiences in daily life. Therefore, consumers with high levels of religiosity tend to be more conscious and selective in choosing halal products for consumption.

Furthermore, the analysis shows that religiosity has a positive and significant influence on attitudes. This aligns with research conducted by Nurhayati and Hendar (2020), Handriana et al. (2021) and Balqis and Zulaikha (2023) stated that religiosity has a

positive and significant effect on attitudes. This indicates that the higher a person's religiosity, the more positive their attitude toward environmentally friendly halal products. The Theory of Planned Behavior is relevant in this study because religiosity is a fundamental value internalized within an individual through religious teachings, thus influencing behavioral beliefs and shaping attitudes reflected in daily behavior (Sulistiwati et al., 2023).

Based on hypothesis testing, there is a positive and significant effect between halal green awareness and attitudes. This aligns with research conducted by Handriana et al. (2021), Albra et al., (2023), and Irfany et al. (2024). This indicates that the higher a consumer's awareness of halal and environmental issues, the more positive their attitude toward supporting or choosing products that align with these values. In this study, the Theory of Planned Behavior (TPB) was used to demonstrate the relationship between awareness and attitude. The higher a Muslim's understanding of halal, the more positive their evaluation and readiness to engage in behaviors consistent with halal principles in their daily lives (Novitasari et al. 2021).

Based on these findings, halal green awareness has a positive and significant effect on purchase intention. This aligns with research conducted by Handriana et al. (2021), Alamsyah et al. (2021), and Irfany et al. (2024), which found that awareness of halal green has a substantial influence on purchase intention. The higher consumers' awareness of a product's halal and environmentally friendly aspects, the stronger their intention to purchase halal and environmentally friendly products. Individuals who recognize the importance of a product's halal certification and its impact on the environment are more motivated to choose products that align with these values. The influence of Halal-Green Awareness on purchase intention can be explained through the Theory of Planned Behavior (TPB), which highlights the role of attitude as a primary factor in shaping an individual's intention to engage in a particular behavior (Sari et al., 2024).

Hypothesis testing results indicate that attitude has a positive and significant influence on purchase intention. This aligns with research conducted by Suparno (2020), Handriana et al. (2021), and Irfany et al. (2024), which found that attitude has a positive and significant influence on purchase intention for environmentally friendly halal products. This indicates that the more positive a person's attitude, the higher their intention to purchase environmentally friendly halal products. The TPB

explains that purchase intention is directly influenced by attitude toward behavior because attitude represents the consumer's internal evaluation, which forms the basis for purchasing decisions (Octavia et al., 2025).

CONCLUSION AND SUGGESTIONS

Based on the results of this study, consumer awareness of halal and environmental issues increased significantly due to the presence of eco-friendly labels, halal labels, religiosity and environmental knowledge. This indicates that clear information and consumers' values both play a crucial role in shaping awareness. Within the Theory of Planned Behavior (TPB) framework, this awareness serves as an initial factor in shaping consumer beliefs, which then influence their attitudes. This study also found that religiosity and environmental awareness have a positive and significant influence on consumer attitudes, meaning that the stronger the religious values and concern for the environment, the more positive the consumer's attitude toward halal and environmentally friendly products. Furthermore, piety has been shown to have a positive influence on religiosity, indicating that spiritual commitment strengthens the values underlying consumer behavior. Most importantly, the higher the consumer awareness of halal and environmental aspects, the stronger their intention to purchase halal and environmentally friendly products. This finding is in line with the TPB, which explains that positive beliefs and attitudes will lead to stronger behavioral intentions.

Ultimately, this study aims to encourage the community to prompt producers to create products that align with Sharia principles and simultaneously emphasize environmental sustainability. These efforts would foster consumption practices that are ethically grounded in religion and ecologically responsible. Based on the findings, stakeholders are encouraged to strengthen consumer education on halal and environmentally friendly products, provide clearer labeling, and promote both religious and environmental awareness campaigns to enhance Muslim consumers' purchase intentions. Future research could broaden the scope to include non-Muslim respondents and incorporate additional variables such as price, product quality, and the role of digital media, thereby ensuring more comprehensive analysis and stronger external validity.

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