

Structural Equation Modeling Analysis of Purchase Behavior of Halal Products

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Abstract: Indonesia is renowned for being home to the largest Islamic population globally, but the absence of a halal certification logo on products continues to be a cause for concern. For Muslim customers, their basic knowledge of halal ingredients written on the product is the only guide they can be relied on. Hence, it is crucial to understand the essential factors that influence their purchasing behavior regarding halal-certified products. This study uses the Theory of Planned Behavior (TPB) to examine Muslim customers' behavior, as a case study, in Banda Aceh. The TPB questionnaire, including attitude, subjective norm, perceived behavioral control, and purchase intention attributes, was distributed online to respondents in the Banda Aceh area using non-probability random sampling. Through Structural Equation Modeling (SEM) methodology and AMOS software, this research reveals a strong correlation between attitude and subjective norm with Muslim customers' purchasing intention. Moreover, purchasing intention shows a strong relationship with purchasing behavior. Consequently, attitude, subjective norm, and customers' intention are the critical factors that influence Muslim customers' behavior when purchasing halal-certified products in Indonesia.

Keywords: behavior analysis, halal-certified products, purchasing behavior, sequence equation modeling, theory of planned behavior

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1. Introduction

In provinces with strict Islamic laws, such as Aceh, halal-certified products become necessary. The halal certification applies not only to the product's composition but also to how it is served, stored, and manufactured. Halal food is consumed not only by Muslims but also by non-Muslims. Many entrepreneurs assume that food products already use healthy and halal ingredients and therefore believe they do not need halal certification (Kasanah et al., 2014). However, a halal-certified logo on a product is crucial because it guarantees that it is free from non-halal substances (Musaddaq, 2017) and has been handled according to halal procedures. Muslim customers need to pay attention to the halal logo and consider other perspectives when seeking halal products (Afendi, 2020; Giyanti & Indriastiningsih, 2019; Yusuf et al., 2017).

Nowadays, halal products have become a lifestyle and an important quality assurance in a country where Muslims are statistically representing most of the population of the country, one of which is Indonesia (Perdana et al., 2019). Halal products refer not only to food and beverages but also to cosmetics, pharmaceuticals, chemical products, genetically modified products, and other daily use products (Miskam et al., 2015; Nafis, 2019) and also halal supply chain management in Hotels (Sentia et al., 2022a). This situation has created a high demand for halal-certified products in Indonesia, and the demand is expected to continue to increase by 20% to 30% every year (Soesilowati, 2018). Halal-certified products are now essential to maintain customer loyalty in provinces that have stringent Islamic laws, like Aceh (Mawaddah, 2020; Wangsa et al., 2019).

To increase Muslim customers' awareness of halal products, it is necessary to identify the factors that influence their purchasing behavior toward the products they need. There are several factors related to customers' intentions in purchasing a product, as explained in the Theory of Planned Behavior (TPB). According to the TPB, an individual's behavior is influenced by several factors (Helmyati et al., 2019), including their attitude towards the behavior, subjective norms, or opinions of other people in the environment regarding the behavior, their control over the behavior, and their ability to perform the behavior and other controls (Sulaeman et al., 2017).

In this case, attitude is defined as a response toward a behavior, which can be interpreted as both a positive and negative response (Alam & Sayuti, 2011; Arifin et al., 2022). Attitudes can also be seen as a person's belief in the consequences of a behavior, and literature suggests that attitude greatly affects a person's intention to behave. Several studies have suggested that attitude has a significant effect on purchase intention among school students and has a positive effect on the purchase intention of halal food products (Septiani & Ridlwan, 2020). In this case, purchase intention is defined as a combination of the respondents' beliefs and attitudes toward a behavior, and this intention determines whether the respondent will make a purchase (Budiman, 2019).

The second factor is subjective norms. Subjective norms are related to social normative presence pressures, such as a human's decision to adhere to certain behaviors that are influenced by a close community and cultural beliefs (Perdana et al., 2019). Subjective norms are also a human's perception of social pressure in the surrounding environment to conduct a certain perceived behavior (Sulaeman et al., 2017). Furthermore, behavioral control represents individual perceptions and self-restraint to perform the desired behavior (Haque et al., 2015). Meanwhile, Safira and Diantina (2021) describe behavior control as a person attitude toward perceiving a particular behavior.

The above studies and research on TPB variables provide significant consideration for understanding the process of purchasing halal-certified products among customers. However, there is still a lack of studies that investigate the relationship between the TPB variables towards purchase intention and purchase behavior among Muslim customers, especially in a province with a strict Islamic policy and regulation. Therefore, to fully understand the subject, this study attempts to explore the TPB variables by using Structural Equation Modelling (SEM). SEM is a multivariate method that can be used to model and understand the interrelationship among theoretical variables between the variable boundaries and their observed indicators (Kusurkar et al., 2013). In its application, in comparison to conventional multivariate procedures, SEM offers three key advantages: first, explicit measurement error evaluation; second, estimate of latent (unobserved) variables via observable variables; and third, model testing, where a structure may be imposed, and its data fit can be evaluated (Wardhani et al., 2020).

Therefore, this study was conducted in Banda Aceh, one of the provinces with the highest Muslim communities in Indonesia. The objectives of this study are to obtain information on the factors influencing Muslim customers in purchasing halal-certified products and to increase their awareness of selecting and consuming halal-based products. The study results will provide significant feedback for

manufacturers and sellers to consider producing, storing, and selling halal-certified products.

2. Materials and Methods

2.1. Research Framework and Hypotheses

Based on the literature review and initial observations, this study defines each TPB variable as follows. Firstly, attitude is defined as the respondent's evaluation of their behavior toward purchasing halal-labeled products (Aime et al., 2022; Arifin et al., 2022). Secondly, the subjective norm is defined as the influence of social pressure on the purchase intention of halal-labeled products (Ham et al., 2015). Thirdly, behavioral control is defined as the extent to which respondents feel they have control over their actions (Martinez & Lewis, 2016).

Furthermore, this study constructs a research framework (Figure 1) and determines the following hypotheses to understand the relationship of TPB based on previous research (Angraini, 2018; Indrawan et al., 2022; Perdana et al., 2019; Sulaeman et al., 2017):

- Hypotheses 1 (H₁): Attitudes have a significant impact on the purchase intention for the halal labeled products.
- Hypotheses 2 (H₂): Subjective norms have a significant impact on the purchase intention for halal products.
- Hypotheses 3 (H₃): Behavioral control has a significant impact on the purchase intention for halal products.
- Hypotheses 4 (H₄): Purchase intention has a significant impact on the purchase intention for halal products.

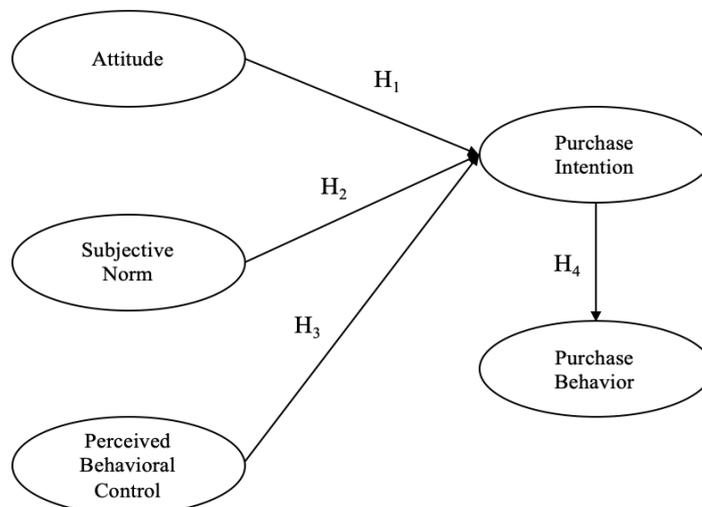


Figure 1. Framework of the research. H₁: Hypotheses 1, H₂: Hypotheses 2, H₃: Hypotheses, H₄: Hypotheses 4.

2.2. Data Collection

To obtain the respondents' opinions on halal-certified products, this study distributed an online questionnaire. The participants were selected using a non-probability random sampling method, and each respondent was required to answer every question following the given instructions, which is also known as a self-administered survey. Since this study utilizes Structural Equation Modeling (SEM), a measurement research technique that can integrate measurement and analysis (Zhang, 2022), the sample size should not be less than 100 and should range from 100 to 200 samples, with a recommended range of 5 to 10 times the number of indicators from the data range (Kock & Hadaya, 2018; Ranatunga et al., 2020; Wolf et al., 2013). Therefore, this study has 27 indicators, while the sample size used was between 135–270 (In'nami & Koizumi, 2013). In practice, SEM is commonly used to identify factors and relationships between variables in a structured survey (Zuhri et al., 2017).

2.3. Data Analysis and Statistical Testing

After obtaining questionnaire responses, this study conducted a validity analysis and reliability testing using SPSS 22.0 software (Ranatunga et al., 2020). SPSS is a statistical engineering package for social sciences that researchers widely used to analyze complex statistical data (Odeh et al., 2010; Rahman & Muktadir, 2021). The validity test was performed to determine whether the questionnaire was valid or not. A questionnaire is considered valid if the Pearson correlation is within the range of $-1 < r < 1$ and the value of sig. (2-tailed) is less than 0.05 (Obilor & Amadi, 2018). In addition, the reliability test was

carried out to assess the consistency of each indicator in the questionnaire. An indicator is considered reliable if the Cronbach alpha Score is greater than 0.6 (Schober et al., 2018; Taber, 2018).

For data analysis, this study utilized the Statistical Equation Modelling (SEM) method with the help of AMOS 22.0 software. SEM is a collection of statistical methods that enables researchers to test a series of complex relationships gradually or simultaneously (Hair et al., 2012; Waluyo, 2016). These relationships are often represented as a series of cause-and-effect interactions among one or more exogenous and endogenous variables in the form of a factor or structure built based on several directly observed indicators. SEM has several advantages, including its structural equation features, representative diagrams, and incorporation of other multivariable mathematical methods such as multiple regression, factorial analysis, and path analysis (Hair et al., 2014; Perdana et al., 2019).

The output of SEM is presented using a causal relation diagram that illustrates how each variable in the diagram influences the others. This diagram highlights numerous cause-and-effect relationships and demonstrates some of the relationships that are typically studied in social science research (Aryani & Siallagan, 2021; Sentia et al., 2022b). To collect respondents' opinions on halal-certified products, this study distributed an online questionnaire.

3. Results and Discussion

3.1. Respondent Characteristics

The study gathered data from 203 respondents who completed an online questionnaire. Most respondents were female and aged between 17–25 years old, with varying levels of education ranging from high school to doctoral degrees. The average estimated monthly income of the sample was less than 500,000 IDR, and most of the respondents were from the Banda Aceh area and surrounding suburbs. It should be noted that the sample was limited to individuals who had previously purchased halal-certified products and were at least 17 years old, as it was assumed that respondents in this age range would have the necessary understanding to complete the questionnaire. Table 1 displays the demographic characteristics of the respondents.

Attributes	Details	Frequency	Percentage (%)
Gender	Male	78	38
	Female	125	62
Age	17–25	180	89
	26–30	8	4
	>30	15	7
Educational background	High School	93	46
	Bachelor Degree	100	49
	Diploma	3	2
	Master Degree	5	2
	Doctoral Degree	2	1
Income/month (IDR)	< 500,000	77	38
	500,000–1,000,000	54	26
	1,000,001–2,000,000	34	17
	> 2,000,000	38	19
Residensial area	Banda Aceh	161	79
	Aceh Besar	42	21

3.2. Model Testing and Relationship Analysis

The SEM model testing results are presented in Figure 2, which was developed based on the research framework presented in Figure 1. The model comprises independent variables such as attitude (A), subjective norm (SN), and perceived behavioral control (PC), while the dependent variables include purchase behavior and purchase intention (P). The test examines the overall relationships and causality between the variables (Santoso, 2012). The Chi-square (CMIN) value is the main criterion for testing the overall model (Waluyo, 2016). The decision of the test results is based on the p (probability) value obtained from the AMOS software outputs, following the rules below:

- If $p < 0.05$ then H_0 is accepted
- If $p > 0.05$ then H_0 is rejected

Table 2 presents the results of the overall model test.

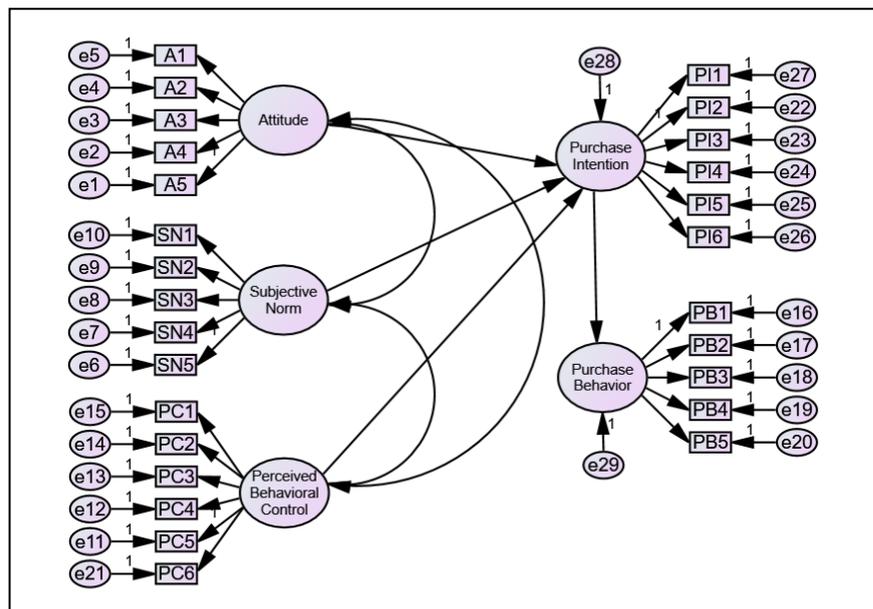


Figure 2. Full Model of the Structural Equation Modelling (SEM).

Table 2. Goodness of Fit Value for Full Model Testing from SPSS 22.0

Testing Fit	Testing Result	Compatibility Level
Absolute Fit Indices		
CMIN	912.289	CMIN Saturated Model < CMIN Default < CMIN Independence
GFI	0.745	Value between 0-1; closer to 1 the better
AGFI	0.696	Value between 0-1; closer to 1 the better
RMR	0.037	Value between 0-1; closer to 0 the better
Incremental Fit Indices		
NFI	0.689	Value between 0-1; closer to 1 the better
RFI	0.655	Value between 0-1; closer to 1 the better
IFI	0.772	Value between 0-1; closer to 1 the better
TLI	0.744	Value between 0-1; closer to 1 the better
CFI	0.769	Value between 0-1; closer to 1 the better
Parsimony Fit Indices		
PNFI	0.622	Value between 0-1
PCFI	0.695	Value between 0-1

The results of the testing reveal a satisfying outcome if the default of CMIN value falls between the CMIN values of the Saturated Model and the Independence Model (Santoso, 2012). As shown in Table 2, the default CMIN value is 912.289, which falls between the default CMIN values of the Saturated Model (0.000) and the Independence Model (2.930,135). Therefore, the constructed full SEM model is considered to be fit and valid. Furthermore, the Goodness of Fit Index (GFI) value is 0.745, and the Adjusted Goodness of Fit Index (AGFI) is 0.696; both values are close to 1. Additionally, the Root Mean Square (RMR) value is 0.037 and close to 0.000. Overall, these values indicate that the model accurately represents the actual condition and demonstrates an acceptable level of reliability.

Moreover, the Parsimony Adjustment to the CFI (PCFI) value indicated a result of 0.695, and the value of Parsimony Adjustment to the NFI (PNFI) is 0.622. Both of those values are between 0-1. It means that the models are adequate for the test criteria of Goodness of Fit. Therefore, the overall values showed that the model resembled the actual condition and showed an acceptable level of accepted reliability.

Table 3. SEM Output from AMOS 22.0

Path	Estimation	SE	CR	P	Labeled
Purchase Intention ← Attitude	0.987	0.241	4.085	***	par_21
Purchase Intention ← Subjective Norm	0.408	0.105	3.889	***	par_22
Purchase Intention ← Perceived Behavioral Control	-0.084	0.154	-0.548	0.583	par_23
Purchase Behavior ← Purchase Intention	1.059	0.108	9.838	***	par_24

Table 3 presents the results of the hypotheses with the following details. Firstly, the Attitude factor has a significant relationship to purchase intention with a probability value that is less than 0.05 ($p > 0.05$), with a critical value ratio (CR) is 4.085, standard error (SE) is 0.241 where the values > 1.96 and P value (P) is *** which is the value is 0.000. It means that the value $< 0,05$. Therefore, H1 is accepted. It indicates that consumers' purchase intentions are influenced by their evaluation and perception of halal-labeled products. Consumers tend to prefer and prioritize buying products that have a halal logo. Additionally, the p-value is denoted by ***, which suggests a significant relationship between the attitude variable and purchase intention, further confirming the acceptance of the hypothesis.

Secondly, subjective norms also have a significant relationship with purchase intention ($p > 0.05$); thus, H₂ is accepted. This study's result follows other studies (Haque et al., 2018; Nasiha, 2018; Sulaeman et al., 2017). It indicates that pressure from customers' living, and lifestyle environments affect their purchase intentions toward halal-labeled products. Customers tend to be influenced by people around them who prioritize buying halal-labeled products. However, behavior control does not have a significant relationship with purchase intention ($p < 0.05$); thus, H₀ is accepted.

Thirdly, perceptions of halal-labeled products have no effect on their intention to purchase the products. However, purchase intention significantly affects purchasing behavior (Amalia et al., 2020). Furthermore, behavior control can predict customer loyalty toward purchasing a product, including loyalty towards buying and consuming halal-certified products. Customer loyalty leads to building trust and satisfaction, which in this study, relates to behavior control. Purchase intention has a significant relationship with purchasing behavior ($p > 0.05$); thus, H₄ is accepted. This implies that purchasing halal-labeled products is influenced by customers' intentions to buy these products, which is also influenced by attitude and subjective norms. Moreover, purchase intention can predict customers' needs for a product. Therefore, designing customer-based perceptions of products, including the halal-certified logo, can benefit in improving product competitiveness.

4. Conclusion

This study revealed that Muslim customers' attitudes and subjective norms in the Banda Aceh area influence their purchase intention on halal-certified products/halal-labeled products and indirectly affect their buying behavior towards products. Halal stands for not only product compositions or ingredients but also the way of serving, storing, and manufacturing. To increase the awareness of Muslim customers in the Banda Aceh area, the importance of purchasing and consuming halal-certified products/halal-labeled products, necessary information is needed. Further study is required to investigate customer intention and behavior on specific halal-certified products marketed in Banda Aceh, to cover skincare and beauty products, medical products, packaged products, food and beverage, and others as a concern.

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